## 1923

UTENSLAND.

## ANNUAL REPORT

## OF THE

# DFPARTMENT OF AGRICULTURE ANI) STOCK 

THE YEAR 1922-1923.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE :
BY AUTHORITY : ANTHONY JAMES CUMMING, GOVERNMENT PRINTER.
A. 83-1923.

## INDEX.



| Insecticides | $\begin{gathered} \stackrel{c}{\text { PaGE }} \\ 8,31 \end{gathered}$ |
| :---: | :---: |
| Journal | 7 |
| Land Settlement | 73 |
| Maize | 4, 73 |
| Mangoes | 5 |
| Oats | 49 |
| Pests, Fruit | 71 |
| Pineapples | 51, 67 |
| Pools | 2, 3 |
| Poultry | 20 |
| Quarantine Act | 85 |
| Seeds | 8, 48 |
| Seed Analyses | 32, 59 |
| Seed Electrification | 50 |
| Slaughtering Act | 86 |
| Stock, Chief Inspector's Report | 9, $82=$ |
| Stock Experiment Stations | .10, 88, 91 |
| Stock Foods ................ | 48, 66 |
| Strawberries | 5 |
| Sugar | 19 |
| Tobacco |  |
| Tomatoes | 67 |
| Weeds and Poisonous Plants | 53 |
| Wheat | .14, 74 |
| Wool | 10 |
| FOR LIVE STOCK INDEX, see, p. 103. |  |
| FOR AGRICULTURAL PROD | c p. 127. |

# REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1922-23. 

## TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE AND STOCK.

Str,-I have the honour to submit my Report for the year ended 30th June, 1923.

It has been a year of great departmental extension and activity, the principal factors having been the larger knowledge obtained of the needs of rural life in Queensland through the deliberations of the Council of Agriculture and its subordinate organisations, and to the expansion of the cotton industry, which would have been much greater-probably doublehad the season been normal. The year, however, has been very dry, and much hardship has been borne by agriculturists and by pastoralists ; in many cases crops have failed and stock have died. Meteorologically, too, the year has been bad, and for the first three months of 1923 , when there is usually a good rainfall, the average in agricultural districts was less by 10 inches than the average for a like period since records have been kept. This absence of a sufficient rainfall in the summer months made the period of drought of greater severity than in 1902, because in that year summer rains fell, but this year the summer rainfall was very meagre. The pastoral industry has had to bear a twofold weight, because, in addition to the abnormal season, very low prices have ruled for stock, and the at-one-time prosperous export trade in meat received a severe check throngh the competition from North and South America on the European market. The difficulties of the industry in this respect have been so great that a Federal Council with a State Advisory Board has been formed, with the object of opening up new markets in Asia and other countries where it is expected that a profitable trade can be found.

The Federal Statistician has calculated that the Australian export of farm and dairy pro-
duce, in which latter honey exports are included, amounted in value in 1921-2 to the sum of $£ 11,004,649$, and that production of these commodities was of the value of $£ 195,561,000$, or about equal to $£ 359$ s. 10 d. per head of population, but in considering these figures it muist be remembered that the Federal statistics are for the financial year, and that those for Queensland are for the year to 31st December in each case; consequently the figures given, though a good guide, are not quite correct so far as they relate to Queensland.

The number of owners engaged in cultivation, in comparison with the population, show a slightly better proportion for 1922 than in the preceding four years; but the proportion has not yet reached that of 1917, when it was one owner to 3.29 per cent. of population. Cattleowners in proportion to population have decreased in the different classes, as also have the sheepowners excepting among those owning from 1,001 to 5,000 head, in which class there is a small gain of 2 points per cent. Detailed information of the different classes is given in the following schedules.

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 <br> Engaged in Cultivation, | Proportion to <br> Population. |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |



| Year. | Number of Owners up to 1,000 . | Proportion to Populatlon. | Number of Owners from 1,001 to 5,000 . | Proportion to <br> 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 | $\stackrel{0}{\%}$ | 339 | \% ${ }_{\text {\% }} 0499$ | 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 |
| 1922 | 2,090 | -266 | 1,008 | $\cdot 128$ | 445 | . 056 | 410 | -051 |

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:-

|  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |

The serious position in which farmers and pastoralists in certain parts of the State have been placed through the drought has caused further help to be given towards tiding over the unprofitable period-a period that has often occurred during late years; and it may not be out of place to recapitulate the help that has been given by the Government during the last few years for similar purposes.

In 1915 about 8,700 bushels of wheat for seeding were distributed to farmers at a cost of $£ 30,700$, and 1,748 tons of fodder costing £12,410; maize was distributed among 239 farmers to the extent of 3,333 bushels, and 33 sugarcane-growers were helped in obtaining cane sets. The total expenditure for this year for the foregoing was $£ 47,000$. In 1919 about 16,000 bushels of seed wheat were distributed, of the value of $£ 8,000$. In 1920 about 12,228 bushels of seed wheat were issued, valued at $£ 7,602$; and 1,109 tons of fodder were purchased at a cost of $£ 10,275$, but, owing to a change of the season before it could reach Queensland, the farmers did not want it, and the fodder had to be sold at a considerable loss. The expenditure for this year in this connection was, however, $£ 17,877$. It will thus be seen that during the years 1915-20 the Government expended during drought times, towards helping the agriculturists to tide over bad times, the sum of $£ 62,877$; and, though much of the advances made has been repaid, there is yet the considerable balance of $£ 28,000$ outstanding, and in addition many of the debts have been written off.

The advances made during the year to 30th June. 1923. only commenced late in the year, but the expenditure has amounted to the present to over $£ 49,000$. This expenditure was for manures, seeds, fodder, and monetary advances, and is to be repaid by those receiving advantage from the action of the Government. Not only have districts been so stricken that herbage had disappeared, but hail also in the summer created havoc in the wheat-fields and in the Stanthorpe district when the fruit was upon the trees. In certain areas sugarcane-growers were supplied with cane sets to enable them to make a fresh start. The petty sessions districts in which the drought has been so bad that it has been necessary to distribute relief therein areClifton, Cooyar, Dalby, Dugandan, Esk, Gatton, Helidon, Jondaryan, Laidley, Lowood, Nanango, Oakey, Pittsworth, Roma, Rosewood, Stanthorpe, Wowan.

The figures so far obtainable relative to the destruction of opossums during the short season of two months wherein trapping was allowed this year indicate that the slaughter approximated $1,500,000$ animals.

During the year, the following pools have been dealt with under the Primary Products Pools Act:-

Egg Pool.-This was constituted after a referendum which resulted in its favour, the voting being 550 for the pool and 70 against. It applies, until the 31st May, 1925, to all eggs
(exclusive of those for breeding purposes) produced in that part of Queensland east of a straight line drawn from Bundaberg to Goondiwindi by persons owning 100 fowls or over.

Tomato Pool.-The Tomato Pool was constituted for the tomato-growing district of Stanthorpe, and it operated from the 8th January to the 14 th April, 1923. This was constituted after a referendum which resulted in 509 votes in favour of the pool and 136 against. It is understood the tomato-growers of Stanthorpe intend asking for a similar pool for the fortheoming tomato crop of early next year.

Atherton Tableland Maize Pool.-This was constituted without any opposition, and applies for a period of ten years to all maize produced from seed sown after the 1st July, 1923, in the petty sessions districts of Atherton, Herberton, and Chillagoe. The Boand administering this pool is arranging to erect a proper plant for the drying and storage of the maize crop produced on the Atherton Tableland.

Atherton Tableland Pig Pool has been constituted without any opposition, and applies to all pigs grown in the petty sessions districts of Atherton, Herberton, and Chillagoe, and will remain in existence until the 30th June, 1925.

Cheese Pool has been constituted until the 30th June, 1924, and is really a continuation of the Cheese Pool which was originally established under "The Cheese Pool Act of 1921," and which Act had expired by effluxion of time.

Pincapple Pool.-The referendum for a Pineapple Pool for that part of Queensland south of Gympie was hostile to the formation of the proposed pool, which accordingly lapsed. The voting in connection with this pool was 329 in favour and 385 against. The voting for an alternative pool, to be confined to smooth-leaf pineapples, was 245 in favour and 332 against.

Milk Pool.-Notice has been given of the intention to create this pool, which is to have a five-year existence and is to apply (if the pool is constituted) to milk produced within a radius of 50 miles of Brisbane and delivered to any spot within a $\overline{5}$-mile radius of the General Post Office, Brisbane. The pool will not apply to hot-milk suppliers-that is to say, milk producers who produce milk and, either by themselves or by persons exclusively employed by them, deliver same direct to consumers within five hours after such milk has been drawn from the cows. It will not apply to milk intended for butter, cheese, or for condensed milk manufacture, and will primarily deal with what is known as "cold" milk-that is, milk sent from the country to the metropolitan area for subsequent distribution for domestic consumption.

Butter Pool.--Arrangements are now in progress for the issuing of the notice of the intention to create a Butter Pool to apply to the whole State.

Banana Pool.-A poll was held in August, 1922, as to whether a Banana Pool should be constituted, with the result that 654 voted against the proposed pool and 433 votes in favour of it. The matter of the pool accordingly lapsed.

Maize F'ool.-An expression of opinion was obtained in 1922 from maize-growers as to the desirability of constituting a Maize Pool for the whole State. Only a proportion of the total maize-growers of Queensland voted. The majority of those voting were in favour of a pool, but such majority was not a three-fourths one. However, this particular referendum was not taken under the Primary Products Pools Act.

The number of areas under cultivation, or otherwise the number of owners engaged in the cultivation of land, was 25,812 ; and, of these, 3,323 cultivated areas under 5 acres, 8,596 areas over 5 acres and under 20 acres, 6,897 areas over 20 and under 50 acres, and 6,966 areas over 50 acres. The general trend of cultivation in the State is therefore under 20 acres to the farm, and a similar position obtained in 1921. The total area under cultivation-in which is included fallow land, ground broken up but not cropped, permanent artificial grass, as well as land under crop-was $1,090,816$ acres, an increase of 45,474 acres, the major portion of which increase can be attributed to the cultivation of cotton; but in market values there was a drop of $£ 349,689$, the total value for 1922 being $£ 10,164,970$. The decreases were in grain crops by $£ 247,737$, hay and straw by $£ 302,223$, root crops by $£ 54,052$, and in sugar-cane by £230,279.

To carry out the agricultural and dairying operations of the State, 72,277 persons were employed, and, for the purposes of their employment, farming, dairying, irrigation, and travelling machinery and implements were required of the value of $£ 3,727,656$.

The very dry periods of the last few years should naturally draw attention and interest towards irrigation and ensilage, and, as regards the latter, the officers of the Department are continually impressing the great need for the preservation of fodder in that form; but though there has been an increase of 3,050 acres under irrigation in 1922 as against 1921 when the area was 11,264 acres, the production of ensilage was reduced by 1,275 tons and the number of makers fell from 96 in 1921 to 65 last year. In only five petty sessions districts did the quantity preserved equal 400 tons or over in the
year, the greatest quantity made being in the Esk district, where 888 tons were preserved. On, the other hand, the area devoted to the production of fodder crops and permanent artificial grasses, which last year stood at 741,912 acres, is annually steadily increasing, and since 1918 there has been an advance in area of 188,038 acres, or an average of about 37,610 acres a year for the five-year period. There were 475,226 acres under artificially-grown pastures, the petty sessions district carrying the largest area being that of Helidon with 89,609 acres. Of the grain crops, there were in 1922 145,492 acres for a production of $1,877,836$ bushels, the disposition of which is explained in the statement prepared by the State Wheat Board and included in this Report, but compared with the preceding year there was a reduction in area, largely owing to the drought, of 19,178 acres, and in the average returns for each acre of 5.46 bushels to the acre. But, notwithstanding the extremely unfavourable season, the average yield to the acre for a period of ten years has been greater in Queensland- 12.89 bushels to the acrethan in any other State in the Commonwealth excepting Tasmania; and yet there are people who decry the State for wheat-growing. To treat the crop of the year eleven mills were in operation, which gave employment to 273 people who operated on $2,496,011$ bushels of wheat and produced flour, meal, bran, and pollard to the value of $£ 193,309$.

Maize, which may be termed our principal grain crop, covered 149,048 acres, an increase of 14,014 acres, and the crop harvested amounted to $3,217,848$ bushels, or at an average of 21.59 bushels to the acre. Upon a ten-years average to the acre, however, Queensland with 21.22 bushels is much behind New South Wales with 26.22 bushels and Victoria with 43.61 bushels. The reason for this condition of affairs cannot be attributed to the Southern States being more adapted to the maize plaint in soil or in climate, but it is probable that the cause may be in the greater attention those States give to cultivation, rotation, and selection of seed. This latter matter the Director of Agriculture is continually urging upon growers, and the Department is always trying, through its officers, to inculcate unon the farmers the importance of this aspect of maize cultivation. The premier position held in past years by the Atherton district as having the largest area under maize has been successfully challenged by the Nanango district, which had 15,233 acres as against 10,770 acres at Atherton, but the latter still holds its own with regard to production, with an average of 35.46 bushels to the acre as against 19.33 bushels in the Nanango district. The great difficulty with the Northern area owing to moisture is, how-
ever, about to be overcome by a system of drying silos, strongly advocated by the Council of Agriculture, and which it is hoped will be in operation before the harvest of 1924. By these means, the great obstacle to a successful trade with the Southern States at a time when the market there is good will be overcome.

In the market report issued in London during May last, it is prophesied that maize would be in short supply for some months after that time. America, which is credited with the production of about three-quarters of the commercial production of the world, is expected to be short in its supplies and that its maize-eating stock had increased. Argentine, another large producer, has suffered through drought and carnot be expected to export nearly as much as its usual quota; and Eastern Europe is not likely to have any maize to export this year. Though this situation will not have a great effect upon Australia directly, because there is no export trade to Europe, yet it will indirectly, because the position bears directly upon the much-discussed question of the importation of maize from South Africa. There a good season has been experienced, and it is quite possible that the good market in Europe will have the effect of attracting the surplus South African maize to that quarter instead of to Australia.

The interest in the cultivation of two crops which might well become prominent in our rural economy-viz., tobacco and coffee-is still languishing, the area under each diminishing annually. Both crops thrive here and should be profitable, but, whatever the cause, cultivators as a whole seem to consider them of but little concern. The amount of unmanufactured tobacco imported into Australia in 1921-2 was $1,710,435 \mathrm{lb}$., of the value of $£ 2,178,765$; and our share in the tobacco trade was $163,078 \mathrm{lb}$, of the value of $£ 12,935$. Coffee, though of lesser degree in the volume of imports, occupies a similar position. The imports into Australia of chicory and coffee, both of which can be successfully produced here, amounted to $3,314,647 \mathrm{lb}$. in 1921-2, of the value of $£ 123,466$, yet to this trade this State contributed but 9,368 lb ., of the value of $£ 351$. To both industries encouragement has been given, and instructors have been brought from other countries. Of tobacco the Australian leaf used in factories throughout the Commonwealth amounted to $1,386,248 \mathrm{lb}$. weight, but the imported leaf similarly used totalled $15,480,647 \mathrm{lb}$.; and this in a continent admirably adapted for the cultivation of tobacco. Offers have been made by the Government to prepare the crops for market, advances being also offered against the sale of the crops, and plant has been purchased and set up for treating the crops, but without avail.

Of what may be termed the major fruits, that is as regards the area under cultivationbananas, pineapples, oranges, mangoes, strawberries, and apples-there was an increase in area of 1,284 acres. The total area of those mentioned during 1922 was 23,310 acres, of which bananas lead the way with 10,797 acres, followed by pineapples with 4,195 acres. The greatest area to carry bananas was in the petty sessions district of Maroochy, and its near neighbour Gympie had 2,570 acres. In production a total quantity of $2,158,464$ bunches was harvested. Of pineapples there were 4,195 acres for a production of 895,372 dozen, and the district of Maroochy again carried the largest area. The area planted with oranges is much the same as that with pineapples, the area being 4,173 acres for a production of 282,174 bushels, the district of Maroochy again having the largest area with 1,550 acres; and thus this district holds the position of the premier fruit-growing district of Queensland. Though other districts cultivate apples it is with Stanthorpe that this fruit is mostly associated, and there 3,457 acres were under crop out of a total of 3,747 acres, the total production equalling 117,223 bushels, a reduction of 1,295 bushels over the preceding year. Of the other fruits-minor as regards area, excepting peaches with 2,004 acres and plums with 1,008 acres-there were 4,656 acres.

The area under vines bearing and not bearing was 1,242 acres, a reduction of 39 acres as against 1922, the average production for the State being 2,188 1b. to the acre. Excluding the quantity used for table purposes, sixty-five makers of wine made 53,171 gallons of wine and 905 gallons of distilled wine spirit, the greatest quantity of wine being manufactured in the Roma district.

Arrowroot for some jears, excepting from 1918 to 1921 when the area under crop gave indications of increasing, has not varied much from 300 to 400 acres, but during last year the growers desired to test the European market and so encourage an increase in area under cultivation and trade. A parcel of arrowroot from the variety Canna edulis was made available by the growers, and was packed by this Department in containers suitable for the trade and sent to London to ascertain the prospects of a market, but unfortunately it met the same fate as former experiments, and could not make headway against the arrowroot in common use, produced from Maranta arundinacere. The Agent-General went to a good deal of trouble over the matter; and that full knowledge may be at the service of growers upon the debated question of Canna versus Maranta, the following extract from his report will be interesting
to those who still hope to obtain a market in Europe:-
"For many years past efforts have been made by this office to endeavour to obtain a remunerative market here for our arrowroot, but without success.
"In the first place, we have to contend with the fact that our product is not known to the trade as 'Arrowroot,' nor is it defined as such in commercial dictionaries. 'Arrowroot,' as known to the trade, is derived from plants of the genus Maranta, whereas the Queensland product is from the Canna edulis, and is described commercially as 'Tou-les-mois starch, used as a substitute for arrowroot.' To any person well aequainted with starches, it is at once distinguishable from the customary arrowroot, principally from the fact that its granule is much larger.
"It therefore follows that the Queensland arrowroot is considered a substitute for 'Arrowroot,' and the difficulty is to convince the retailer and consumer that Tou-les-mois starch possesses all the qualities of arrowroot. This could only be done by extensive propagandawhich would mean a considerable expenditure; and when it is considered that the present consumption of arrowroat in the whole of the United Kingdom is little more than 500 tons per annum, it is doubtful, even provided the exporters were prepared to incur the expenditure involved, whether such would be justified. The consumption of Bermuda arrowroot is very small. It is mainly sold as an invalid diet, and the high price it realises, as compared with other arrowroots, is due to its scarcity and to the fact that great care is taken in its preparation. It has also, I understand, certain qualities which commend it to the medical profession as a food for invalids."

## STOCK.

The reduction in the herds of cattle was equal to 1.30 per cent., of sheep 4.14 per cent, but pigs, on the other hand, increased by 16.71 per cent.; and, after reducing all stock to terms of sheep, Queensland, notwithstanding its great area and capacity for carrying stock of all kinds, is not only behind the other principal States of Australia but also other stock-carrying countries of the world. The Registrar-General has found the number to be 141 head to the square mile, but against this the United Kingdom can find room for 1,334 , the Argentine 350, the United States of America 309, and South Africa 347 to the square mile. Apart from the total number of cattle and sheep in the State, there are indications that owners are being reduced in numbers. The owners of cattle in 1921 numbered 48,719 , but last year the number was
reduced by 207 . With sheep the case is much the same, there being 137 fewer owners than in 1921, when there were 4,090 . The greatest number of cattle owners during the last decade was in 1921, and of sheep in 1915.

The increase in the population can perhaps be responsible for the additional consumption within the State, in so far that 251,562 head of cattle, 36,404 calves, 694,144 sheep and lambs, and 54,620 pigs were slaughtered for the use of the population of this State-a total which gives 226.49 lb . of meat to each head of population during the year. This quantity has only been passed twice in the last ten years, in 1913 with 262.35 lb . and in 1914 with 229.74 lb . to each person. This average is probably the highest or nearly the highest in the world, though New Zealand is not far below, but it is about twice the quantity of the consumption in the United Kingdom and far in excess of any country on the continent of Europe, which do not exceed 100 lb ., excepting perhaps in Germany, Italy being at the lower end with about 30 lb . per head.

Business in relation to slaughtering for preservation, for food, for freezing, or for tallow-or, in other words, for the export trade -showed a slackness in trade. There were seventeen establishments operating, but the number of people employed fell from 3,641 in 1921 to 3,161 in 1922, a reduction of 480 persons; and the stock operated upon during the two years were-


And the value of the products for consumption, excepting the edible fats, was in $1921 £ 3,721,211$, and in 1922 £2,190,512, a difference of $£ 1,521,699$, which in some measure indicates the loss to pastoralists through the fall in prices and the lessened European market. The value of the machinery and plant used in the business of meat-preserving and bacon-curing was less than in the preceding year by $£ 65,566$, and of the land and premises by $£ 66,196$.

Though the number of sheep shorn varies each year, the total for 1922 was $18,465,471$, and exceeded the annual number in any one year since 1915, but in 1914 the number went up to $22,059,015$ head. It is, however, in the value of the wool that the great change has come about. In 1914 the oversea export value for greasy wool was $10 \frac{1}{2} \mathrm{~d}$. a lb . and for scoured wool 19 d ., but last year the figures stood at 14 d . a lb . for greasy and $24 \frac{1}{4} \mathrm{~d}$. for scoured; and the total estimated value of production was $£ 6,707,000$ and $£ 10,825,811$ for each year respectively. Practi-
cally the whole of the wool raised is exported, but very little under half-a-million pounds being used locally.

Under the departmental scheme of classing and selling wool for farmers whose flocks do respectively not exceed 1,500 head, wool has been received from many parts of Queensland, from the border in the South up to and including the neighbourhood of Burketown and as far west as Cunnamulla. The total handled equalled after classification 369 bales, and good prices were realised. For merino wool the highest price secured was $27 \frac{1}{2} \mathrm{~d}$. a lb . and the lowest 5 d ., the average being $20 \frac{1}{2} \mathrm{~d}$. For cross-bred wool the values received ranged from $22 \frac{1}{2} \mathrm{~d}$. a lb. down to 3 d ., the average being about 13 d . for all qualities.

The quantity of wool exported overseas in the years 1914-15 and 1921-2 indicates the great advance the industry has made, notwithstanding that in the former year there were more sheep shorn than in the latter year. The figures are-

Lb.
$\begin{array}{lllr}1914-15 & \ldots & \ldots & 78,206,793 \\ 1921-2 & \ldots & . . & 140,302,968\end{array}$
The explanation of this change is mainly to be attributed to the policy of grazing farms, in place of the large stations that were the custom in the earlier days.

The percentage of agricultural and of pastoral exports for the last two years respectively stood at 96.94 per cent. and 98.58 per cent. of the whole exports of the State, the agricultural products exported for 1921-2 being worth $£ 3,787,860$, and the pastoral products $£ 3,068,660$; but the latter went back, in comparison with the preceding year, in relation to live stock by $£ 63,921$, and in the export of meat by $£ 1,640,373$; but, notwithstanding this great reduction, the total pastoral exports exceed in value the exports for $1920-21$ by $£ 3,000,000$.

## SUBSIDIES-AGRICULTURAL AND HORTICULTURAL SOCIETIES.

When, upon the motion of Mr. Pugh, M.L.A., in 1867, Parliament granted subsidies to agricultural societies, it was clearly the intention, and that intention still holds good, that the subsidy is intended for the advancement and encouragement of agriculture and stockraising; also that it should be used for that object in other ways than by holding a yearly show. To-day, however, an agricultural society considers its existence fully justified if it holds a show once a year and then goes into recess until the time arrives for the preparation for the succeeding event. And even at the annual show the operations are not equally divided between agriculture and stock; the latter have far the greater share of the prize money, and
the result is that the agricultural exhibits are falling off in quality and quantity - a state of affairs that is not to be wondered at with the poor encouragement offered. It is to be admitted that horses, cattle, sheep, swine, poultry, \&c., are component parts of farming, but in the economy of agriculture the first place must of necessity be allotted to production, but at agricultural shows it has to be content with second place. Ring events draw the public, but here again the intention of Parliament is being defeated, because, owing to the better prize money, the horse competitions, instead of encouraging the local improvement of horses, have called into being a professional show class which travels from show to show, and so the local man is discouraged. Seldom are there to be seen in a show programine any prizes offered of purely local character, but instead they are for open competition, of which the professional owners are not slow to take advantage. The first care of an agricultural society should be the primary products and the direct manufactures from them, for upon them the whole wellbeing of the rural community is built.

## JOURNAL.

The Queensland Agricultural Journal maintains its high standard for matter and in regard to its presentation, and frequent congratulations are offered to the Editor for the excellent information he places at the service of the agricultural community. It is a publication that necessarily is limited to what may be termed educational matter, and cannot be allowed to include the lighter literature, as agricultural papers generally have the opportunity of doing, but it has attained the position of a recognised authority upon technical subjects in relation to agriculture. Purely news matter cannot find a place within its pages, and this elimination keeps the Journal from the plane of being a competitor with agricultural newspapers generally. Much space last year was naturally devoted to bringing the scheme of organisation of agriculture before the public, but now the Council of Agriculture issues its own newspaper there wiil be more space available in the Journal during the coming year for the publication of matter which should rightly find a place in an official agricultural journal. Dairying, sugar, and fruit-growing, have been the principal features during the last year, and during the coming year to complete the cycle general farming will have prominence, and a regular series on elementary agriculture is proposed, with a monthily survey of technical exchanges covering abstracts and reviews.

The monthly circulation of the Journal has now reached 5,500 copies.

## GATTON AGRICULTURAL COLLEGE.

Mr. Potts, in his Report upon the Agricultural College-the last to be issued by him as Principal after eight years in that capacity, and the last Report of the College as a branch of the activities of this Department before the transfer of the institution to the Department of Public Instruction-emphasises two main points - on the educational side, the increase in the number of students, which during the half-year ending 30th June last, numbered 50 ; and secondly in relation to the prolonged drought at the College, with the corresponding value of consistent fodder production. The number of persons who have received instruction at the College has been 1,588 , and among them have been a goodly number of school teachers and officials who in the course of their duty should have some general knowledge of agriculture.

For field operations the season was most unfavourable, and during the nineteen months preceding the 30th June there were only two months during which the rainfall exceeded the average-a serious matter in a place where so many stock were carried in addition to the actual requirements from an educational point of view ; but notwithstanding those drawbacks, the Principal was able during 1920-21 to conserve enough fodder to enable him to feed the stock without purchasing from outside any fodder other than bran and pollard. Most of the work of the year was directed towards repairs of the farmy buildings, painting, clearing, stumping, and burning off-an opportunity offered by the adverse season; and in the erection of a new hayshed, which was built upon a new design as regards the roofing, in so far as by doing away with all the cross-trees in the roof the holding capacity of the area covered is much increased. This form of roofing is well worth the attention of farmers who intend to build haysheds.

The number of stock during the year wasHorses 81 head, cattle 154 head, made up of 70 Ayrshires, 38 Jerseys, 5 Shorthorns, 24 Friesians, 13 Guernseys, and 4 steers; pigs 222 head, poultry 890 head, and sheep 265 head.

The report gives details of the revenue derived from the different branches of the College work. During the year the report of the special committee appointed to inquire into the best means for improving the methods of instruction at the College was presented.

## AGRICULTURAL CHEMIST.

The analytical work of the Agricultural Chemist has considerably exceeded that of former years, and, had the dipping fluids been sent in for testing as they should have been, the expansion would have been much more noticeable,
but dipping fluids for analysis have fallen from 1,083 in 1920-21 to 375 for 1922-3, therefore the Department is to that extent ignorant of the efficacy of the fluids used and consequently the part played in keeping down the tiek pest. The number of analyses of soils increased from 132 in 1920-21 to 385 last year, and, although the analyses are made for farmers at a very low rate, proposals have been received that soil analyses should be made free of charge. To do so would cause a large increase in the staff and a greater loss to the revenue than is now carried, the charge to the farmer being less than the cost of material, glassware, \&c., without taking into account salaries, \&c., which are not charged for.

The results of the soil analyses attached to the report of the Agricultural Chemist are very interesting, and particularly so in relation to the Bunchy Top disease in bananas. The analyses made in this connection were for use in the investigations arranged for with New South Wales, to be carried on by Dr. Darnell Smith and Mr. H. Tryon, into the Bunchy Top disease, but which arrangement has since been superseded by the addition of the Commonwealth Government, which has joined in the investigation. The analyses made of cottonfield soils and maize lands at Tolga, as explained by Mr. Brünnich, are very interesting as indicating the failure in the crops being due to badly balanced supplies of plant foods.

The samples of water received for analysis can be taken as evidence of the dry weather obtaining during last year, and of the 116 samples received 62 only were found fit for use; but the Agricultural Chemist points out that the limit of salt allowed in water determined to be fit for stock is far lower than the allowance fixed for Victoria and South Australia, where 400 grains to the gallon are allowed for horses, 600 grains for stock, and 700 grains for sheep; here the allowance all round is 100 grains to the gallon.
'Deaths of stock through allegedly eating poisonous plants was the cause of twenty-eight samples of viscera being examined, and of these poisoning was determined in fourteen casespoisoning from eating treated prickly-pear being a fruitful source of death.

The work done for the dairy branch of the Customs Department in relation to export business increased greatly, and was of such volume that help had to be given to the analyst who carries out this work. -

Mr. Brünnich points out that the parchment paper used for the packing of butter boxes may be the cause of the growth of moulds upon the butter, a matter that has received much attention of late-that is, if the paper contains glucose or other soluble loading matter. The

Dairy Act of this State prohibits the use of parchment papers containing soluble matter, but of 53 samples of parchment papers examined, 11 of them contained large amounts of soluble matters.

The use of para-dichlorobenzole, which has of late been brought prominently to the public notice for use in the destruction of the sugarcane grub and other similar pests, was suggested by Mr. Brünnich as far back as 1913, and a small quantity was then obtained from Berlin, and an attempt by him to obtain a liquid chlorobenzole called globol, which he searched for as being probably of greater value for the purpose, was unsuccessful owing to the war.

## PURE SEEDS, FERTILISERS, AND INSECTICIDES.

During the year an additional branch, under the charge of Mr. Coleman, was createdfor the administration of the Stock Foods, Pure Seeds, and the Pest Destroyers Acts, which latter has but recently become law and will soon be in full operation. It is an Act specially designed to protect farmers and fruit-growers and others against exploitation by sellers of sprays, insecticides, and vermin destroyers. Similar Acts are in force in Victoria and in South Australia, and the need for such an Act in Queensland was supported by the Council of Agriculture. In the United States of America Insecticide Acts have been in force for many years, and but lately the United States Department of Agriculture had to draw attention to an exploitation of cotton farmers through the marketing of secret boll weevil nostrums. That department proved that it cost the cotton farmers as much as 200 and 300 per cent. more to purchase these nostrums than it would have cost them to prepare effective insecticides themselves. Here in Queensland a nostrum for sugar-cane grub was discovered as being on sale to growers which was found to be sawdust impregnated with some matter that was claimed to be poison. The charge to the buyer was $£ 4$ a ton with freight added, which in some places would double the first cost, but the poisonous ingredient was found on analysis to consist of soluble arsenious acid of the value of about 10 s . a ton. A transaction of such a kind clearly illustrates the need for the Act.

The Seeds, Fertilisers, and Insecticides Report is with this Report, and it shows that during the year 488 samples of seeds were received for determination, with in addition 97 samples which contained no identification of the senders' names; but those who communicated correctly were supplied with certificates giving the percentages of purity and germination, with percentages of the various foreign ingredients found in the samples. A principal trouble with
seeds in bulk is the quantity of foreign ingredients, and a study of the Table will show the importance of the Pure Seeds Act in this respect. Growers generally are not able to detect these impurities, and many do not take the trouble after germination to eliminate them from their fileds, with the result that from these opportunities many of the weeds, some of them injurious, that we now know but which are not indigenous to Queensland, have established themselves. It is important, therefore, that all seeds, particularly those from overseas, should be rigidly examined at the port or place of entry into this State. It is admitted that this proposition is extremely difficult to carry out in its entirety, because there are so many avenues; for instance, notwithstanding the stringency regarding cotton seed, it has been learned that since the stringency was enacted cotton seed arrived here from Egypt through the post-a very small parcel certainly, and the resulting plants have been found to be clean, but in that parcel lay the possibility of several diseases.

A cause of much trouble with seeds is the fact that growers, when purchasing oats for planting, seldom ask for seed oats, but purchase from sellers offering the lowest prices, and they do not take care to see that the invoice is for seed oats, with the consequence that if the germination is not up to expectations they have no case; nor can the Department help them against the seller, because the invoice marked "Oats only" has been accepted without protest, and the account has perhaps been paid. This has been the general experience, coupled with the notuncommon fact that seeds are not sent for examination until after an irregular and unsatisfactory germination, at which time it is too late to enforce the machinery of the Act against the seller, owing to the difficulty of identification, and the opportunities offering for the seller to allege many things, such as indifferent planting, seasons, \&e. All growers, if they wish to have the advantage of the Act, should have their seeds tested as soon as possible after purchase, if not before actually buying, and before planting.

The electrification of seeds, about which so much has been written and published, has received attention by the Department, notwithstanding that upon the whole the results in other parts of the world have been somewhat of a negative character, when judged by the effects of eleetricity only, because there are so many other factors that may have contributed to the successes that have been published; but whether electrification has the power of increasing germination to the extent clained for the process or not, the process has made no general headway, as would have been expected from the many good things written of it. To test the process under

Queensland conditions, 35 samples of seeds treated with electricity were placed under field tests in May last, and with the season that has been experienced here this year the experiment should be very valuable.

At the request of the Council of Agriculture, the groundwork of a series of lectures upon Fertilisers has been prepared, the first of which has appeared in the Journal, so that the values and the pitfalls to be avoided with regard to fertilisers may be placed before those who purchase and use this material. A fault in the Fertilisers Act, made apparent from experience, is that no standards are prescribed, so as to permit arrangements for the variations in manufacture that must necessarily happen, as for instance in the meatworks and similar fertilisers.

The number of examinations under the Stock Foods Act was 284, of which 161 samples were sent in by merchants, 81 samples were taken by officers of the Department, 14 samples were sent in for analysis by sellers and 28 by buyers. This Act, as were the Fertilisers and the Pure Seeds Acts, was principally enacted for the protection of the farmer, but during the year complaints have been received from the merchants that they have been misled by growers incorrectly labelling or not labelling consignments true to description, and, as sales are generally made directly from railway trucks according to invoice descriptions and to marking, much trouble is caused upon discovery. In the remarks upon pure seeds mention was made concerning foreign matter, and they apply equally to the Stock Feods Act. During the year the veterinary surgeons had to investigate the cause of the deaths of horses, and it was found that seeds of the Datura stramonium (Thorn Apple) had been fed to them in chaff that had been sold in the ordinary course of business. The seeds of this plant, which has been proclaimed a pest, are highly poisonous; and in the case mentioned, in which a parcel of 120 bags of chaff was involved, the presence of this highly poisonous seed was equal to 1 per cent. by weight. Efforts have been made for several years past to secure the extermination of this plant, but as it makes a protective hedge and is by no means unsightly it is difficult to make people understand the danger of maintaining the plant. .

## CHIEF INSPECTOR OF STOCK.

The Chief Inspector of Stock draws attention to restrictions placed upon our stock in the Southern markets - a complaint that has been made many times, but without avail-and which are to a considerable extent the cause of the low prices of our fat stock. Were these restrictions reduced to the common-sense of the experience gained here during many years in relation to
ticks, the principal cause of the restrictions, there would be no cause for complaint, but the regulations of the Southern States are still based upon the fear of invasion that was felt in the South in the early days of tick infection. Moreover there has been a suspicion of late that the regulations have not been administered in a fair manner, with the consequence that some people have been able to cross the border with cattle while others have not been so favourably treated. At present, from certain portions of the State, stock have to undergo a quarantine of three months before crossing the border, but with our knowledge it is considered that it would be perfeetly safe were New South Wales to allow our cattle from these areas to eross the border under similar rules to those applied in that State when passing cattle from affecteri to clean country, and that is by means of a sufficient number of dippings. Were this agreed to, the relief to our cattle industry would be enormous.

Both cattle and sheep have had to be removed from large areas of country to other places for agistment owing to the drought, but, while these difficulties have added to the burdens of the cattlemen, the sheep owners have remained prosperous.

At the Stock Experiment Stations, Yeerongpilly and Townsville, the investigations, experiments, and other work naturally suffered through the drought, but nevertheless at the former institution 330 specimens were subjected to bacteriological examination, 69 stud cattle were made immune against tick fever, 8,910 doses of natural pleuro-pneumonia virus were sent out, and 1,690 doses of blackleg virus were distributed. Interesting tests were also made in relation to contagious abortion in 78 cases, and positive reaction was obtained in 21 cases. At the Townsville station 34 head of cattle were made immune against tick fever, and investigations were made into an outbreak of so-called impaction paralysis of cattle. Analyses of dipping fluids and other work were also carried out.

Instruction in wool and the sale of wool on account of small sheep holders progressed satisfactorily during the year. The equal of 369 bales of wool was classified and sold on behalf of farmers, at prices that they would have been unable to obtain themselves owing to their inability to class the small clips. The prices obtained reached $27 \frac{1}{2} \mathrm{~d}$. per lb., with an average of $20 \frac{1}{2} \mathrm{~d}$. per lb .

The receipts under the Brands Act amounted to $£ 1,316$, and the transactions of different kinds for the year numbered 3,557 , but the depression in the cattle industry reflected upon the registration of cattle brands and earmarks, and there was a reduction in issue as compared with the preceding year.

Seventy-two stallions were examined, of which 9 , or 12.5 per cent., were rejected. The examinations for 1922-3 will be the last under the existing system, which, through the Stallions Registration Act becoming law, inspections will in future be under the regulations of that Act.

The number of dips for cattle have increased from 4,163 in 1921-2 to 4,240 for 1922-3, and the number of samples of dipping fluids analysed was 648 , and of dip concentrates 25. In the Helidon cleansing area three infestations occurred, and the areas where they happened have been quarantined, and will remain so until after rain has fallen. In the other cleansing areas, the South Burnett and the Niles-Chinchilla areas, the drought has prevented operations that had been intended. The removal of stock within these areas, for food and water, cause relaxation of the usual restrictions, but it is not anticipated that any adverse consequences will follow. There were thirty outbreaks of pleuro-pneumonia during the year, scattered through fifteen districts; the largest number of outbreaks in any district number five, and these were in the Brisbane and Bowen areas respectively. The tuberculin test was applied to 634 animals as compared with 381 in 1922, and of that number there were 23 positive reactions. Special veterinary attention was also given to the dairies, 89 of which were visited and 2,791 cows were examined, of which 21 were condemned as being diseased. There are in the metropolitan area alone 41 licensed slaughter-yards, at which during the year to 31st December, 1922, about 59,377 cattle, 25,248 calves, 320,860 sheep, and 15,273 pigs were killed and the carcasses examined. These figures are given to show the almost insurmountable difficulty for proper inspection in our system of scattered private yards, and the great need for the establishment of the abattoir system. Seventy new slaughterhouses were erected during the year under the regulations of the Act, and a central depôt for the inspection of farmers pork and veal was established in Brisbane.

## BACTERIOLOGIST.

The number of specimens examined bacteriologically and otherwise by the Government Bacteriologist number 330, and covered many things, such as water from dairy factories, brine, milk for tuberculosis, contagious abortion and contagious mammitis, milk and cream for bacteriological examination, pus for tubercle, tick fever organisms, pathological specimens, and other matters. The extraordinary fall in values of stock has of course had a great effect upon business in relation to stad stock, and consequently the number of animals received at Yeerongpilly for immunisation against tick fever was much less than when values encourage stockowners to improve their herds; nevertheless 69 head were treated, all being of the beef breeds excepting six dairy cattle. There was not any great outbreak of pleuro-pneumonia among cattle during the year, and the demand for natural preserved virus covered 8,910 head of eattle only. The blackleg vaccine prepared at the laboratory was issued in double doses sufficient for the treatment of 1,690 calves; it is of a uniform quality and quite reliable. The tick dip investigations during the year have been very important and interesting, principally following the investigations of a committee of officers of this Department and of the Department of Agriculture in New South Wales. The details of the experiments will shortly be published, but in the opinion of Mr. Pound the results have not proved any improvement upon the American method of tick eradication.

## DIRECTOR OF AGRICULTURE.

The Director of Agriculture, when commenting upon the indifferent year from an agricultural point of view, makes a strong comparison in favour of a cotton crop as a great revenue producer in such seasons as the drought the State has experienced during last year, and mentions the natural ability of the cotton plant, not only to live but to produce a crop, as being in marked contrast to the maize plant, which has suffered so severely in the Southern and Central districts. The moral of the experience is, therefore, that no farmer in the districts where cotton can be grown within a payable distance of a ginnery should make his arrangements for the year without including a paddock of cotton. The agricultural branch has been called upon during
the year to give much time and help to other departments in matters which, although indirectly having a bearing upon agriculture, were not strictly departmental business.

Though the maize crop in the Southern and Central districts has not been good, the crop in the North has been generally satisfactory, and good yields are expected from the Atherton Tableland. The work of improving the quality of the maize grown here has continued despite the season, and thirty separate experiment plots were established, covering 120 acres. Some failed, others gave but a light return, but where conditions were favourable, heavy yields were obtained; upon the Imbil experiment plot, up to 50 bushels to the acre with Funk's 90 -day, and in that district yields of 68,75 , and 90 bushels to the acre were secured from the Yellow Dent plots. At another plot Star Leaming returned 80 bushels to the acre.

Mr. Quodling again emphasises his oftrepeated advice for early and systematic prepparation of land for cropping, particularly in relation to wheat. The seed wheat improvement scheme instituted by the Department and carried out with the help of the State Wheat Board was continued, and in face of a late planting and irregular seasons the results were fairly good, the returns from 523 acres giving an average yield of $22 \frac{3}{6} \overline{0}$ bushels to the acre, the highest recorded being a return of 40 bushels to the acre in the Roma district from Roma Red wheat.

The demonstration plots in the Burnett and Callide districts, formed to help the land settlement scheme of the Lands Department, whereby intending settlers can actually see what the land will produce, have taken shape and crops have been planted. The work on these plots is entirely educational, and there is no intention of establishing permanent State farms; and as soon as the objects of the Lands Department have been attained the plots will be opened for selection, with protection for the improvements effected. In addition there were fifty-six other experimental plots in the State for crops and for fertiliser experiments; but here again the season has been responsible for a very variable success. Instructional work in fodder conservation was vigorously carried out, and, though the advice and instruction were sympathetically received, there has been but little fodder for the farmers to save.

## DIRECTOR OF DAIRYING.

The Director of Dairying, when deploring the effects of the dry year upon the dairying industry, draws attention to the fact that the milk production in 1922 decreased by $17,000,000$ gallons; but of the total production $134,000,000$ gallons, about 77 per cent., was used in the manufacture of butter, about 506,957 gallons for domestic purposes, and the balance for cheese and condensed milk. From these figures it will be seen that the average consumption of fresh milk is smali-a little over 7 gallons to the head of population-but the local consumption of condensed milk, particularly in country districts, is high. The vendors of milk in Brisbane and the suburbs are endeavouring to arrange a pool whereby the supply and price can be regulated, but at the time of closing this report the completion of a pool had not been effected. Butter and cheese consumption has reached a high level in proportion to the number of inhabitants in the State.

There were in 1922 about 21,931 dairying establishments (an increase of 236) ; and among them were 48 butter facteries (an increase of one factory), 79 cheese factories (a decrease of 4 factories), and 3 condensed milk factories (an increase of one factory in comparison with the preceding year). There were over 500,000 cows used in dairying, and the number of dairymen increased somewhat; and at the rate of progress the period is visible, given normal seasons, when Queensland will be in the foremost rank of Australian exporting States of dairy produce; a position that was attained in 1921, and this after twenty-five years only of progress, because during the closing years of the last century Queensland was able to produce, by an effort, its own needs.

The quantity of butter produced in 1922 was about $23,995 \frac{1}{2}$ tons, a decrease of about 3,125 tons, but higher grades were manufactured. All butters received in Brisbane are examined by the dairy staff, defects noted, and conveyed to the manufacturing factory, so that exrors can be remedied. The principle of neutralisation and pasteurisation of cream has been in more general application, and the consequent improvements in the keeping qualities of cream have resulted. Mr. Graham emphasises the benefits to factories that use this principle, particularly in relation to export butters; and he also mentions the greater freedom from alkaline or cooked flavours in the butters from such factories. The word taint, to which notice has been drawn in the Press and elsewhere, is a resuscitation of a complaint from which Queensland has been free for some years, and is mainly caused by the timber used in the containers, but as a general rule only a small percentage of the whole is affected that way.

Unseasoned and unsuitable parts of trees used in making boxes have been determined as being the cause, and care should be exercised, otherwise it is inevitable that a tainted box will suffer in classification. Be that as it may, it is peculiar that the charge of wood taint occurs in the interstate trade, and not in the oversea trade, where the bulk of our produce is sent; but nevertheless a thorough investigation of the matter has been undertaken by the Director of Dairying, and a perusal of his report, herewith, will be of value to those interested. The manufacturers who entered for the dairy competitions at Islington last year, open to the British Empire, are to be congratulated upon obtaining four out of the six prizes in competition with Victoria, New South Wales, South Australia, Canada, New Zealand, and South Africa.

There has been a general improvement in the methods of placing cheese upon the market for export, the factories having given more attention to the ideas of their buyers and to the demands of the markets, and, notwithstanding the abnormal season, Queensland maintained the lead in Australia as an exporter. The principle of pasteurisation has been adopted in some factories, and the results are being closely watched by those factories that have not reached that position, but it is a remarkable fact that, notwithstanding the higher quality of pasteurised cheese, a higher value has been obtained for some consignments that had not been so treated.

The demand from factory managers throughout the year for advice and assistance when difficulties arose has been welcomed, and there is evidence that the help of our instructors is annually being sought in increasing demands.

Herd testing has been continued despite the weather, and this State can now claim the possession of animals with official records practically equal to the records of any country, and it is evident that the scheme which has now been in operation for several years is bearing fruit. A comparison of the tested milk yield with 1912-13 shows for 1922-3 an increase of $7 \frac{1}{2}$ per cent., and the latter year was a dry year, the increased percentage being valued at about $£ 375,000$ a year. At that percentage, upon a basis of monetary value of the industry of $£ 5,000,000$ annually -but even if half only is credited to herd test-ing-a sum of $£ 187,500$ will be found.

## DIRECTOR OF FRUIT CULTURE.

From a fruit-growing point of view, the year, in the opinion of the Director of Fruit Culture, has been unsatisfactory, all the districts in which fruit-growing is prominent having suffered more or less from the unsatisfactory weather conditions, so that amongst other fruits
the yield of bananas and citrus fruits was materially affected; and, to add to these misfortunes, hailstorms, particularly in the Stanthorpe district, created much havoc.

The unsatisfactory state of the oversea markets in canned fruits caused much difficulty in the disposal of the main crop of pineapples, notwithstanding the help given to the growers by the Government, and our main market was limited to Australia and New Zealand, but prices were so low during the glut period that little or no margin of profit remained. The question of a satisfactory market for our pineapples has received much consideration by the Southern Queensland Fruitgrowers' Association and by the Council of Agriculture, with the result that a marketing scheme has been evolved which, when it is accepted and understood by growers to the extent that it will be followed wholeheartedly, will result in great benefit to those concerned in the industry.

The difficulty of finding a market for canned goods has not been experienced by Queensland alone; other States have suffered in a similar manner, owing to the slump on the European market, which was unable to absorb the American crop of 1922 . The result with regard to the 1923 crop may be better, because second-class goods, which have been almost unsaleable excepting at a very low figure, will not be forced upon the market, and therefore the situation for firstclass goods will be much irnproved.

The recommendations, which were approved, offered by the Council for Agriculture for standards of quality for pineapples and bananas, will have a good effect in the markets for the advantage of the growers because the buyers will now understand that the old ways have been left behind, and that dependence can be placed upon the description on the case. Citrus fruits still remain unprovided for with regard to standards, but attention is being given to the matter, and, as soon as the packing instructor has completed the experiments now being made by him, the Council of Agriculture will consider the recommendations it will make with regard to quality.

The instruction in packing fruit, and particularly the lessons given to State schools, have been very successful, and already the improved manner in which our fruit appears upon the market is very noticeable. Mr. Benson draws attention to the need for utilising the waste products from our fruit factories, which now are indeed waste but should be put to profit. From time to time spasmodic attempts have been made in this direction, but no one seems inclined to really try to use this product in a commercial manner.

Interesting experiments in relation to fruit culture have been made during the year, the
most important of which is probably the successful experiment in relation to the gumming of our citrus trees, with which so many of our orchards are unfortunately affected. The Director of Fruit Culture describes in his report the methods by which this affection can be counteracted, and if followed the result will be the transformation from an unprofitable to a profitable orchard. Another and perhaps to many a curious experiment was to determine the value of paper mulch for pineapple. The experiment is not original, because paper mulching is practised profitably in Hawaii, but it has not before been tried here, and it is quite possible that conditions in this State may not produce similar results to those achieved in Hawaii ; but, though sufficient time has not passed to decisively announce results, the experiments promise to be successful.

The affection known as "banana rust," which is particularly prevalent in the Yeppoon and Pialba districts, has not yet succumbed to the trials that have been made from which a remedy could be announced. The disease, if it may be so called, is brought about by insects sucking the skin of the fruit, which afterwards attains a rusty appearance, which detracts from the commercial value of the fruit but does not affect the quality of it. Scale has been very prevalent in the citrus orchards, and, as Mr . Benson points out, the only proper remedy is the use of cyanide. Indeed, one well-known and succesful citrus grower admits that the cyaniding of his trees is the cause of the difference between his success and non-success.

The number of packages of fruit and vegetables brought into Queensland and inspected under the Diseases in Plants Act, exclusive of the parcels post, or under the Quarantine Act, was $1,331,465$; interstate at the parcels post, 2,043; and sent out of the State, 1,249,708 packages ; and under the Quarantine and Commerce Acts, 86,208 packages.

## BOTANIST.

The Government Botanist has had to deal with several important matters, reference to which is made in his report, but outside the general work of his office. Amongst these may be mentioned an expedition to the BellendenKer Ranges in company with the Curator of the Botanic Gardens, in search of native mangosteen -a journey taken at the desire of the United States Department of Agriculture, and a journey that was in a manner a further prosecution of a journey of inquiry made by his grandfather, Mr. F. M. Bailey, in 1889 , who when Colonial Botanist first discovered these native mangosteens. Another investigation being conducted is in relation to an attempt to produce a nut with a thinner shell than is usually found, by propagation from nuts with thin shells found
upon the property of Mr. Waldron, of Upper Eungella, Tweed River, who has for many years been investigating the nut family. If the inquiry is successful it will be of considerable commercial value, in so far that it will bring produce upon the market that heretofore has only been found in small quantities, and this because of the hard-shelled kind that is generally common. The improvement of our pastures has had much attention, and the problems have been the laying down of new grasses or the improvement of old pastures, and the eradication of objectionable grasses, such as the sour or yellow grass of Ravenshoe and Millaa Millaa.

The issues of plants by the Curator of the Botanic Gardens totalled 5,694 for the year, and of that number State schools received 2,280, local authorities 302 , religious institutions and cemeteries 177, hospitals 141, memorials, recreation reserves, \&c., 350 ; the remainder of the distributions being divided between the Railway Department, the Queensland Agricultural College, other botanic gardens, and sundries.

Much improvement work has been done with the funds available. The asphalt walks have been repaired and top-dressed, the hardwood edging to paths has been renewed, seats have been painted, and horticulturally much improvement has been effected in the Gardens. Though the Domain is much used for the purpose of games and for the children's playground, it is a pity that funds are not yet available for laying it out as a garden, to compensate for the loss of ground through the river improvements. It was so intended when the Domain was included in the Botanic Gardens, which as gardens are far too small for the annuaily increasing population.

## WHEAT.

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 for the operations of 1922-3.

| Wheat Delivered to the Pool. |  |  |  |  |  |
| :--- | :--- | :--- | ---: | ---: | ---: |
|  |  | Bags. | Bushels. | Per cent. |  |
| No. 1 Milling | $\ldots$ | 494,509 | $1,494,067 \cdot 25$ | $84 \cdot 33$ |  |
| No. 2 Milling | $\ldots$ | 41,381 | $119,966 \cdot 57$ | $7 \cdot 05$ |  |
| No. 3 Milling | $\ldots$ | 26,554 | $76,903 \cdot 58$ | $4 \cdot 52$ |  |
| No. 1 Feed | $\ldots$ | 23,085 | $65,572 \cdot 49$ | $3 \cdot 93$ |  |
| No. 2 Feed | $\ldots$ | 641 | $1,739 \cdot 25$ | $\cdot 10$ |  |
| Chick $\quad \therefore$ | $\ldots$ | 170 | $451 \cdot 05$ | $\cdot 03$ |  |
| Total |  | $\ldots$ | 586,340 | $1,758,701 \cdot 39$ |  |

Shown opposite the respective classifications is the percentage of each quality, and it is gratifying to note the high percentage of milling wheat.

## Sales.

Wheat sold to the 31st July $1,633,703$ bushels. Gross realisation .. .. $£ 503,604$ 11s. 2d. Or an average gross realisation of 6 s .1 .98 d . per bushel.


## Stocks.

Stocks on hand at the 31st July show approximately 116,705 bushels, the milling portion of which has already been disposed of to milling companies and is awaiting delivery. The remainder is composed of inferior wheats and seed wheat; the latter being held in case of any late rains. The former will be disposed of on the Roma-street markets within the next two months or so.

We anticipate having disposed of all our stocks before the new season's harvest commences to come to hand.

## Hail Insurance.

The Board made arrangements with twentyfour insurance companies to cover the whole of the crop grown in Queensland against hail damage, at a rate of $1 \frac{1}{5} \mathrm{~d}$. per bushel, and at a value of 4 s . per bushel on the farm.

The total quantity of wheat grown, according to our records, which are based upon the wheat delivered to the pool, plus wheat retained by growers for feed and seed purposes, plus wheat damaged by hail, is $2,073,785$ bushels, and the premium on this quantity amounts to $£ 10,36818 \mathrm{~s} .7 \mathrm{~d}$.

Severe hailstorms occurred, more particularly at the southern end of the Downs, and approximately 800 claims were dealt with, with the result that the insurance companies were called upon to pay out $£ 31,38916$ s. as a result of the damage. From the growers' point of view these figures should be considered very satistactory indeed.

The Board has made available to growers approximately 33,000 bags of seed wheat from its depôts, and most of this was graded at the Maltings, which was purchased from Messrs. Wm. Jones and Sons by the Queensland Government on behalf of the Board some three months ago. Graded seed was supplied at 7s. 6d. per bushel on rails, nearest railway station to the grower, and this price compares more than favourably with seed merchants, who were charging 8 s . and 8s. 6d. per bushel.

The Board, at its inception in November, 1920, had only storage accommodation for approximately 250,000 bushels, and it was early realised that to successfully handle the crop more storage accommodation must be obtained. We therefore approached the Government to build a large shed in Toowoomba. This was done, and a shed of approximately 100,000 bags capacity has been erected at Water street, at a cost of approximately $£ 5,948 \mathrm{19s}$. 2 d . Under our arrangement with the Government the shed is vested in the Commissioner for Railways, the Board having undisturbed tenancy during its existence. The capital cost is borne by the Government, and the Board pays interest at the rate of $£ 510$ s. per cent. per annum and depreciation at $£ 119$ s. 1d. per cent. per annum on the amount of money expended.

Subsequent to the erection of this shed we approached the Government to assist us to erect sheds at different points throughout the wheat belt, on the same terms and conditions. The Government agreed to our request, and sheds were erected at the undermentioned centres:-

| Freestone | Inglewood |
| :--- | :--- |
| Boora Mugga | Brookstead |
| Yangan | Berat |
| Goomburra | Dalby |
| Roma | Hodgson |
| Milmerran | Clifton |
| Nobby | Cunningham. |

The total cost of the erection of these sheds was approximately $£ 37,895$.

We also approached the Government to enlarge the existing sheds by raising the roofs, and where possible this has been done, the total cost being $£ 5,040$, the Board paying increased rental at the rate of 6 per cent. per annum on the amount of money expended on each place.

We deemed it necessary also to have grading machinery at our depôt in order to treat inferior wheat for marketing purposes, and also to supply seed wheat to growers, and with this end in view the Government was approached to purchase the Maltings premises. This was eventually done at a price of $£ 10,500$ "walk-in walk-out," the capital cost being borne by the Government, and the Board paying interest and redemption on the same terms and conditions as those on which other sheds had been erected.

The outlook for the forthcoming season has up to the present been very good, but we are now requiring from 1 to $1 \frac{1}{2}$ inches of general rain. If we are fortunate enough to have this downfall we anticipate that the yield of the 1920-21 season will be exceeded.

The wheat in the Maranoa country is looking particularly well, I believe.

Wheat Statistics, 1913-1922.


## HORSES.

In 1900 the population of the State consisted of 494,166 persons, and we then had a horse population of 456,788 , or roughly one horse to each person; in 1922 the human population was 790,522 and the horse population was 715,055 ; so that it would seem that the intrusion of mechanical traction has not had the effect it was expected to have if allowances be made for the effect of the war and for drought. The latter has much effect upon breeding, as instanced by the drop to 399,122 in 1902, a set-back that took years of recovery until in 1912 we had

674,573 horses. The deterioration of the horse stock, the improvement of which has just been taken in hand by the Government, is a far more important matter, and particularly so in relation to draught horses. Since the stud of draught horses belonging to Messrs. Wienholt Brothers, of Maryvale, was broken up, no breeder has attained the success or reputation of the noted AW1 brand, which carried with it the best prices in the market. Many good entires have been and are still held in Queensland, but there äre also more stallions which are not worth breeding from, and it is to these latter that much
of the deterioration is due, because the low-priced stallion has to a great degree driven out the better animal.

In all the leading European countries, the Governments occupy a prominent position in connection with the horse-breeding industry. So directly is breeding considered to be of high importance in France, that racecourses are directly under the control of the Minister for Agriculture; no races are permitted that do not have for their aim the improvement of the breed of horses, and prizes are given under the conditions that the Goverminent has the right to claim the winner. The other European countries control horse-breeding much on similar lines, and so the standard of the horse stock is maintained; and similar conditions could easily be applied here for blood and draught stock.

The reputation which we earned is rapidly fading, and it is very difficult now to obtain in Queensland animals of the class in sufficient numbers to satisfy the foreign demand, let alone the domestic market. Victoria has always vecognised the importance of good breeding, and now leads all the States in that respect. It is for this State to challenge that position and regain its reputation; but there is a factor in attaining that end, to which attention has before been drawn but to which the Commonwealth Government has not seen fit to consider of any importance, and that is the export of mares. It is notorious that foreign buyers when here always give preference to mares suitable for their purposes, and the result is obvious-the country is gradually being drained of the best mares.

The commencement which the Government has made, by the purchase of six draught stallions, is a beginning which it is hoped will grow into a breeding establishment for the supply of good and well-bred stallions and perhaps mares at low prices, particularly to the farming community. Though the establishment of a stud will take years to accomplish, the germination of such a stud is to be found in the transfer of fifteen mares from the Queensland Agricultural High School and College to the State Farm, Gindie. All these mares are pure-bred draughts from imported stock, and, as Gindie is a good place for breeding horses, the breeding should be continued at that place, where there is also a breed of pure-bred Suffolk Punch horses.

The absence of qualified veterinary help in the Central and Northern districts has long been a trouble to those resident in those areas, no qualified surgeons having found it profitable to practise their profession in the Central and Northern cities; and excepting at Townsville it has not been found necessary to station a veterinary surgeon under the Diseases in Plants Act.

Government veterinary surgeons are not permitted to undertake private practice for fees, and though, whenever cases requiring help become known to them when in a district, medical advice is given free of charge, yet the needs of the community are not sufficiently met by this casual assistance. Arrangements have now been made whereby a veterinary surgeon will be established in Rockhampton and on the tableland at Atherton, who will be paid retaining fees under which Government business will have preference, and who will also have the right of private practice. Thus it is expected that in a short time veterinary surgeons will find it to their advantage to practise in the country districts of the State.

## COTTON.

The late year was a vital one for the cotton industry, which it is hoped is now well on its way to acquire a position as one of the great primary industries of the State. To illustrate the results of the departmental efforts to establish the industry, the following figures may be quoted:-

| Year. | Area under Cotton in Queensland. | Yield of Seed Cotton. |
| :---: | :---: | :---: |
| 1920 | acres. 166 | $\underset{57,065}{\text { lb. }}$ |
| 1921 | 1,967 | 940,125 |
| 1922 | 8,176 | 3,876,673 |
| 1923 | 28,695 (ab | out) $11,615,413 \mathrm{lb}$. |

The value of the 1923 crop was $£ 261438$, and the number of growers who participated in this was 7,500 or thereabouts. Had it not been for a comparatively dry season, the return would probably have at least been doubled.

In October, 1922, the British Cotton Delegation, consisting of Messrs. Crompton Wood (managing director for Smith, Rathbone, and Company), Harold Parker (of William Calvert and Sons, Limited), - Asheroft, H. C. Armstrong (directors of the Australian Cotton Growing Association), and R. Harding, visited Queensland and inspected the cotton lands of the State, including the Dawson Valley, Gladstone, Capella, Rockhampton, the Upper and Lower Burnett, Dalby, Darling Downs, and West and East Moreton. They expressed themselves as highly impressed with Queensland possibilities in the matter of cotton-growing, and, as they were thoroughly representative of the cotton manufacturing industries of the United Kingdom, it can be confidently stated that their visit was of far-reaching importance to this State, in so far that it will mean the recognition of Queensland by Lancashire spinners as an important factor in the future of the cotton production of the world.

In view of the further rapid development of the industry, no efforts have been spared to
secure the best technical advice to ensure that cultural and other methods will be on the right lines from the beginning. Mr. Geoffrey Evans, who is now Director of Cotton in Queensland, has full charge and responsibility in all matters relating to cotton in this State. He was lent to the Queensland Government by the Empire Cocton Growing Corporation, an organisation established under Royal Charter on the 1st November, 1921. This corporation received a grant from the Imperial Government of $£ 987,715$, and it is also financed by a compulsory levy on all cotton imported into the United Kingdom. One of its main objects is to strengthen the agricultural departments in the British dominions. For the three years prior to coming to Queensland, Mr. Evans was Director of Agriculture for Bengal, and prior to that had been twelve years in the Central Province, the largest cotton-growing section of India. During the war, he was Director of Agriculture in Mesopotamia while that country was in occupation by the British. He had full control of agricultural matters there, having three or four thousand men under him. He was in charge of the original work conducted on the growth of long-staple cotton in Iraq. He is the author of "The History of Experimental Cotton Cultivation on the Plains of Bengal."

The Cotton Specialist is Mr. W. G. Wells, who commenced life in the service of the United States Department of Agriculture at the Experiment Station of San Antonio, Texas. This station devotes three-fourths of its energies to cotton problems, for Texas is the largest cotton-growing State in the Union. Mr. Wells, from the beginning, specialised in plant-breeding matters, and worked through all the various enterprises of the United States Department as a plant-breeder. He next became plant-breeder in charge of a station devoted to Pima cotton, and also worked and bred Upland varieties in Government stations in Arizona. He subsequently undertook demonstration work for his department in various sections in Texas, California, and Arizona. In March, 1920, he resigned from the department and joined a subsidiary company to the Goodyear Tyre Company, an organisation which grows its own cotton. At the time of his engagement with the Queensland Government he was in charge of one of the company's ranches growing cotton in Arizona.

Mr. Gudge, the Cotton Classer, was specially selected by the Agent-General upon the advice of Sir James Currie, of the Empire Cotton Growing Corporation. Mr. Gudge's whole life has been spent in the classing and buying of cotton in Lancashire and in Texas, United States of America.

A competent staff of Australians is being collected for training by the above gentlemen.

The Cotton Industry Act is now in operation, and the enactment gives statutory authority and support to the Government's policy with regard to the grading, ginning, and marketing of cotton. The decision of the Government to make an advance over a term of years on all clean seed cotton (the "Government guarantee" as it is called) necessitated arrangements for the ginning and marketing on the part of the Government, and the aequiring of all cotton in the State under the Sugar Acquisition Act. That goodquality cotton can be grown in Queensland on hundreds of thousands of acres of now comparatively unused land is beyond doubt, and that the price advanced by the Government so far-viz., $5 \frac{1}{2} \mathrm{~d}$. per lb. for good-quality annual seed cottonis a payable proposition to the grower, is shown by the way the industry has advanced. So far, under our scheme, the grower has had no obligation except to produce cotton and deliver it at any railway station or port, the Government really taking all the responsibility of the transport, ginning, and marketing of the crop for the growers. It is not intended that the Government should continue indefinitely to do this. By 1926 the industry should be established on a sound footing, and it should keep on progressing and become in time as much to Queensland as the great wool industry. It is important we should start properly by producing and exporting the best possible article, and thus avoid the damage that has occurred to many of our primary industries through the export of inferior material. As matters apparently now stand, the industry can only fail from one of two causes - (1) failure to produce the article the trade wants, and of a quality that will command a payable price to the growers, or (2) because of the intervention of foreign pests such as the Mexican boll-weevil and the Egyptian pink boll-worm. The prohibition against ratooning is amply justified on both these grounds.

There have now been established in Queensland ginneries at Whinstanes, Rockhampton, Wowan, Dalby, Gladstone, and Gayndah. These six ginneries have forty-four gins among them, each of which is capable of turning out 500 lb . (one bale) of clean cotton lint per hour, but owing to stoppages, \&c., the average can be put down at 400 lb . per hour per gin. This means that the six gimneries are capable of treating, each working day of one shift of eight hours, 422,400 lb . of seed cotton. There is an oil-mill practically completed at Whinstanes (Brisbane), and the machinery is here for another mill.

The Government agreement with the BritishAustralian Cotton Association, which has established the foregoing ginneries, \&c., expires on the 31st July, 1926. It is to be remembered that this agreement simply provides for the association acting, at Irescribed rates of remuneration, as the servant of the Government for ginning the Queensland cotton crop, and subsequently seliing it to the best advantage in the open markets of the world. The conditions under which advainees will be made to growers of seed cotton for the season ending the 31st July, 1924, are briefly as follows :-

1. Good-quality cotton is defined as being seed cotton of good quality, free from disease and from the following defects:-
That it is not ratoon cotton, it is clean, properly packed, and not immature, stained, dirty, or otherwise damaged.
2. The term "ratoon cotton" is applied to the second or any subsequent growth made by plants which have already been raised from seed, irrespective of whether such plants have borne a crop or not.
3. Seed cotton is cotton in the seed from annual plantings.
4. An advance will be made for cotton of good quality, free from disease and defects-
(a) To growers of seed cotton of $1 \frac{1}{4}-\mathrm{in}$. staple, $5 \frac{1}{2} \mathrm{~d}$. per lb. ;-
(b) To growers of seed cotton of less than $1 \frac{1}{4}$-in staple, 5 d. per lb.;
delivered at the nearest railway station or port, or as may otherwise be arranged by the Department of Agriculture and Stock; but no advance will be paid to any grower for the product of more than 50 acres in any one season.
5. Any grower having a greater area of seed cotton than 50 acres can send his cotton, from the area exceeding 50 acres for which advances are made, to the ginnery for ginning and marketing on owner's account and risk. Every grower of more than 50 acres of seed cotton must notify the manager of the ginnery and furnish him with full particulars of the excess quantity ; failure to give information may jeopardise an advance on the first 50 acres.
6. The advances mentioned in No. 4 are minimum advances, and any profits accruing, after deducting the cost of
ginning and marketing, will be divided, pro ratâ, amongst those who supplied seed cotton.
7. No ratoon cotton will be received at the gins.
8. Seed cotton delivered at the ginnery that is found to be of bad quality, and not free from disease or defects as mentioned in condition No. 1, may be precluded from any advance, may be classed at a lesser value than the full advance, or treated on the owner's account as the Minister may decide.
9. All grading and inspection of cotton at ginneries, subject to an advance, will be under the supervision and direction of officers of the Department of Agriculture and Stock, whose decision, subject to the right of an appeal to the Minister, shall be final.
10. All cotton must be grown from seed obtained through the Department of Agriculture and Stock.
From the above it will be noted that the present flat rates for seed cotton are-

Five and a-half pence per lb. for goodquality cotton, clean, free from disease, and not immature or damaged, $1 \frac{1}{4} \mathrm{in}$. in staple.
Five pence per lb. for similar cotton but under $1 \frac{1}{4} \mathrm{in}$. in staple.
Primarily to ensure that the cotton is properly classed and graded when it reaches the consumer, the good-quality cotton, clean and free from disease, is graded into A, B, and C grades-

C grade is equal to, or rather slightly above, the Middle American standard grade of Liverpool.
A and B grades are higher qualities still.
D grade is the next grade. It does not comply with the definition of goodquality cotton, clean, free from disease, and not immature or damaged. A halfpenny per lb. less is given for it. This cotton, injured by the weather or by insects, is low in grade, and the Government would lose heavily if full price were paid for it.
E grade is still lower in quality, and a deduction of one penny per lb. is made on it.
For anything below E grade, two pence altogether is given. Strictly such cotton should not be picked.

Next year a Government grader will be stationed at each ginnery, and this grader will also check all growers' weights.

## SUGAR.

The second highest yield of sugar in Queensland was produced last year-viz., 287,785 tons, the record output being 307,714 tons in the year 1917. Although the yield of sugar was so good in 1922, it was the result of the greatly increased acreage of cane planted as the outcome of the 1920 agreement between the Federal and State Governments and the high sugar content in the cane, rather than of an increased yield of cane per acre, as climatic conditions generally were unfavourable to a maximum crop. During the wet season period, January to April, 1922, the usual volume of rain did not fall, the Southern rainfall being particularly low. Good rains were experienced in June and July which considerably improved the crop for the time being, but the remainder of the year unfortunately proved very dry. The 1922 season was the last one covered by the agreement whereby the price of raw sugar was fixed at $£ 30.6 \mathrm{~s} .8 \mathrm{~d}$.

Under this agreement the sugar industry progressed very considerably. At the commencement of the three-year period there was a feeling of security in knowing that the industry was not to be interfered with for that time. As pointed out in last year's report, this led to the bringing of new areas under cane, the opening up of new districts, and the increasing of the capacity and efficiency of nearly every sugarmill. The yield of sugar in 1921 and 1922 overtook the consumption, and conclusively proved what could be done if stability were afforded to the industry.

The total acreage under cane in 1922 was estimated by the Government Statistican to be 202,303 acres, the greatest area ever put under this crop, being an increase of 39,584 acres above that of 1920 and 17,690 above that of 1921 . Of this area 140,850 acres of cane was crushed, this being also the largest area ever cut, exceeding by 17,894 the acreage cut in 1921.

The balance of 61,353 acres not cut during the 1922 season included cane allowed to stand over till 1923, cane cut for plants, and cane planted for 1923. The average yield of cane per acre, due to the drought, was not so good as in the previous year, being only 15.39 tons as against a yield of 18.60 tons in 1921. The total tonnage of cane harvested was $2,167,990$ tons, a decrease on the previous year's figures. The yield of sugar per acre was 2.04 tons per acre, also lower than the yield of 1921 .

It is pleasing to note that, due to the activities of the Bureau of Sugar Experiment Stations and the Cane Prices Board creating a demand for better varieites of cane, and also due to higher efficiency in our raw-sugar mills, the tons of cane taken to make 1 ton of sugar has improved considerably in recent years, but the year 1922
saw the lowest figure yet obtained in this respect-viz., 7.53 tons of cane to 1 ton of sugar. This was, however, partly owing to the dryer season producing a higher-density cane in areas such as Babinda and Innisfail.

Turning to the present season, the year opened badiy, the dry weather continuing in a great measure up to the time of writing. The rainfall in the Lower Burdekin district up to the end of May had not reached 2 inches, and the Mackay and Proserpine rainfalls were very much below the average. The districts of Bundaberg and Childers also suffered considerably for the first quarter of the year, but a heavy thunderstorm at Bundaberg yielded 5 inches of rain in April, and improved the crop in that district considerably. Unfortunately the Isis district did not participate. Above Townsville, however, whilst the rainfall was much below the average there was sufficient to induce good crops of cane, and by far the largest part of the 1923 vield will be produced in that area in this year.

The agreement previously referred to having unfortunately ceased, sugar-growers and millers will have to submit to a reduction in the price this year from $£ 306 \mathrm{~s}$. 8d. for raw sugar to $£ 27$ per ton as fixed by the Federal Government. Next year the price is uncertain. An embargo against the importation of black-grown sugar has been granted by the Federal Government for a period of two years. These terms have not been regarded as satisfactory by the industry generally, as they do not afford that measure of stability which is so urgently required.

The work of the Sugar Experiment Stations, a branch of this Department, is still increasing owing to the general expansion of the industry. Arrangements have been made with other canegrowing countries for new supplies of good varieties of sugar-cane, and many of these have now come to hand. In addition to this, over 300 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.

Considerable interest is being shown by cane-growers in the educational work of the Experiment Stations, and the experiments in cultivation, fertilsation, and variety work are being carefully watched and noted by farmers. Highly successful field days were held at the Bundaberg, Mackay, and South Johnstone Sugar Experiment Stations during the year, the attendance of farmers being most satisfactory. Growers were conducted over the stations for the purpose of seeing the work done, and addresses were given on matters of interest.

The entorological work of the Sugar Bureau is proceeding satisfactorily at Meringa,
near Cairns. The entomologist in charge, Mr. Edmund Jarvis, has carried out successful and very promising experiments with the chemical known as para-dichlorobenzene as a cane-grub destroyer, which have aroused considerable attention. A pathologist to deal with cane diseases is also being appointed.

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.

## POULTRY.

The Diseases in Poultry Act, that has recently become law, was mainly brought about by the need for supervision of poultry offered for sale in the markets, it having been discovered that poultry were brought forward for sale and sold that were unfit, by reason of disease, for food or for breeding. The Southern States, excepting New South Wales and Tasmania, have included poultry under the heading of "Stock" in the legislation in those States, but here it was not possible, and an Act of Parliament, modelled on the Diseases in Stock Act, became necessary; indeed, the Poultry Act, so far as it can be applied, has been taken from the Diseases in Stock Act. In the last issue of the Commonwealth Statistics the value of the poultry and eggs of Australia is placed at $£ 9,022,786$ in 1921-2 as against a value in the preceding year of $£ 9,846,104$, of which Queensland is credited in 1920-21 and in 1921-2 with $£ 449,827$; so that even at those values the need for some supervision is presented. But in using the Commonwealth figures it must always be remembered that the Federal statistics are for the financial year to the 30th June, but Queensland, Western Australia, and Tasmania cover the calendar year.

There has been controversy concerning the possibility of a market for eggs in Great Britain, but it would not seem that there is much business in the proposal during Jannary and February, months that it would be expected to show high prices in England. The AgentGeneral in his report for the year has been good enough to quote London values for last January and February. These as compared with the values of Queensland eggs laid down in London upon the basis of Brisbane prices works out thus :-


But in the values given no allowance has been made for breakage, ullage, \&c., so that on the whole there would be no commercial promise of good business. The average monthly values in the Brisbane market for hen-eggs during the year to 30th June last were:-

| 1922- | $s$. | d. | 1923- | s. $d$. |
| :---: | :---: | :---: | :---: | :---: |
| July | 2 | $0 \frac{1}{4}$ doz. | January | $13 \frac{1}{2} \mathrm{Coz}$. |
| August . . | 1 | $1 \frac{1}{2}$ | February | $18 \frac{3}{4}$ |
| September | - 1 | 012 | March. | $110 \frac{3}{}$ |
| Oetober | - 1 | 0 | April | 273 |
| November | - 1 | $0 \frac{1}{2}$ | May | $25 \frac{3}{4}$ |
| December | 1 |  | June | $20 \frac{3}{4}$ |

The poultry population for the year num-bered-Fowls 861,152 , ducks 37,030 , geese 7,143 , turkeys 15,712 , and other poultry 4,609 ; or ronghly about $1 \frac{1}{8}$ birds of all ages to each head of human population. The production of eggs was $3,542,018$ dozen.

## CO-OPERATIVE AGRICULTURAL PRODUCTION ACT.

The tables here given are a clear index of the effect of the meteorological conditions during the year, and of the hesitation of the farming community to risk incurring indebtedness with the chance of losing the result of their enterprise. The total number of applications under the Act fell from 236 for 1921-2 to 90 for 1922-3, and the number of advances approved from 102 to 62. The total number of applications since the Amending Act came into operation has been 705 , and of that number 411 were approved for advances, 140 were withdrawn, and 204 were declined.

As mentioned in the report for last year, the opportunity for assistance for the erection of silos is not sought after, there having been but one application during the year. Whether or not it be that the amount allowed for this purpose is not enough to encourage borrowers, the fact remains that since the Act came into operation four people only have made use of its benefits for that purpose. The year was on the whole very discouraging from the point of the idea governing the Act, which was to assist farmers, at the outset of establishment upon the land, to secure an income at a time when capital had been spent in making improvements, and at terms for repayment which could not be obtained from any financial institution. The total advances to the 30th June last have been $£ 44,417$, and the balance outstanding at that date was $£ 33,734$.

| Details. |  |  |  |  | To 30th June, 1922. | During 1922-3. | Total, 30th June, 1923. |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

* Includes a number of applications approved and subsequently withdrawn.



## DINGO AND MARSUPIAL DESTRUCTION ACT.

Particulars of Destruction.

| Year. | Kangaroos and Wallaroos. | Wallabies. | Bandicoots, Paddamelons, and Kangaroo Rats. | Dingoes (including Foxes). | Total. | Bonus Paid. |  | Governm Endowme | ent |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\left.\begin{array}{l} \text { From } 1877 \text { to } 30 \text { th } \\ \text { June, } 19.6 \end{array}\right\}$ | 7,935,175 | 10,665,694 | 639,936 | 279,873 | 19,520,678 | $\begin{array}{cc} £ & s . \\ 541,435 & 6 \end{array}$ |  | $\begin{gathered} £ \\ 243,558 \end{gathered}$ |  |  |
| 1906-7 | .. | 398,284 | 81,746 | 9,758 | 489,788 | 11,990 11 |  | 3,146 | 5 | 1 |
| 1907.8 | .. | 474,387 | 127,618 | 11,493 | 613,498 | 13,25914 |  | 5,515 | 4 | 2 |
| 1908 -9 |  | 509,006 | 105,110 | 13,897 | 628,013 | 16,063 16 |  | 5,399 | 3 | 6 |
| $\left.\begin{array}{l} \text { IstJuly, 1909, to 31st } \\ \text { Dec., } 1910 \end{array}\right\}$ | . | 1,198,059 | 103,534 | 23,828 | 1,325,421 | 31,419 17 |  | 5,260 | 7 | 9 |
| 1911 | . | 708,501 | 40,055 | 21,508 | 770,064 | 18,657 19 | 9 | 5,887 | 101 | 11 |
| 1912 | .. | 912,795 | 43,267 | 23,743 | 979,805 | 25,340 8 | 7 | 6,271 | 16 | 9 |
| 1913 | .. | 787,558 | 18,627 | 18,757 | 824,942 | 19,535 13 |  | 6,541 | 8 | 3 |
| 1914 | . | 433,325 | 9,044 | 21,061 | 463,430 | $15,665 \quad 4$ | 6 | 3,467 | 19 | 8 |
| 1915 |  | 319,437 | 14,048 | 25,924 | 359,409 | 17,596 $\quad 1$ |  | 4,063 | 7 | 0 |
| 1916 |  | 202,612 | 5,330 | 26,525 | 234,467 | 17,143 3 |  | 3,596 | 5 | 6 |
| 1917 | .. | 220,721 | 4,197 | 18,916 | 243,834 | 14,472 111 |  | 3,223 | 19 | 3 |
| 1918 | . | 211,306 | 5,287 | 22,206 | 238,799 | 17,264 191 |  | 3,450 | 18 | 6 |
| 1919 | . | 154,246 | 7,882 | 42,292 | 204,420 | $43,781 \quad 18$ | 4 | 5,000 | 0 | 0 |
| 1920 |  | 129,98) | 35,215 | 52,333 | 217,528 | $54,721 \quad 1$ | 2 | 5,000 | 0 | 0 |
| 1921 | . | 86,862 | 3,198 | 40,427 | 130,434 | 43,041 13 | 4 | 5,000 | 0 | 0 |
| 1922 |  | 155,932 | 7,300 | 54,369 | 217,601 | 58,421 17 | 1 | 5,000 | 0 | 0 |
| Totals | 7,935,175 | 17,563,712 | 1,251,394 | 703,910 | 27,462,191 | 95J,811 4 | 5 | £319,382 | 3 | 6 |

Appended is a table of operations of the various Boards throughout the State for the year ended 31st December, 1922 :-

| Name of Board. |  |  |  | Number of Soalps Paid for. |  |  |  | Total. | Bonus Paid. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Dingo. | Fox. | Wallaby. | Others. |  |  |
|  |  |  |  |  |  |  |  |  | £ s. $d$. |
| Adavale |  |  |  | 611 | 115 |  |  | 726 | 726 0 0 |
| Aramac |  |  |  | 638 | 11 |  |  | 649 | $97310 \quad 0$ |
| Barcoo |  |  |  | 585 | 85 |  |  | 670 | 670 0 0 |
| Belyando |  |  |  | 1,013 |  | 12,718 | . | 13,731 | 1,330 190 |
| Booringa | $\cdots$ | $\cdots$ |  |  |  | .. |  |  |  |
| Boulia |  |  | $\ldots$ | 1,008 | . | . | . | 1,008 | 1,008 00 |
| Bowen | $\cdots$ | . | .. | 1,057 |  | . | .. | 1,057 | 1,057 00 |
| Bulloo | $\cdots$ |  | $\cdots$ | 1,583 | 72 78 | $\cdots$ | . | 1,655 | 1,655 493 0000 |
| Burnett | $\cdots$ |  | $\cdots$ | 2,173 | 160 | . |  | 2,333 | 2,333 00 |
| Carpentaria |  |  | . | 855 | . |  |  | 855 | 85500 |
| Clermont |  |  |  | 519 | . | 35,743 |  | 36,262 | 1,511 214 |
| Burke |  |  |  | 200 |  |  | $\cdots$ | 200 | 200 0 0 |
| Cloncurry .. | . |  | $\ldots$ | 2,602 |  |  |  | 2,602 | 2,602 00 |
| Condamine.. |  |  |  | 717 | 78 |  |  | 795 | 795 0 0 |
| Cook |  |  | $\cdots$ | 2,423 |  |  |  | 2,423 | $\begin{array}{lll}2,423 & 0 & 0 \\ 1,501 & 0 & 0\end{array}$ |
| Dalrymple |  |  |  | 1,501 479 |  |  |  | 1,501 19,751 | $\begin{array}{rrrr}1,501 & 0 & 0 \\ 3,222 & 17 & 11\end{array}$ |
| Darling Downs |  |  | $\cdots$ | 479 2,333 | 2,605 | 16,606 | 61 128 | 19,751 2,461 | $\begin{array}{rrrr}3,222 & 17 & 11 \\ 2,334 & 1 & 4\end{array}$ |
| Diamantina |  |  |  | 1,143 |  |  |  | 1,143 | 1,143 00 |
| East Moreton |  | $\cdots$ |  | 527 | 280 | 3,294 | 69 | 4,170 | 85159 |
| Gregory . . | . | . | . | 1,124 |  | .. |  | 1,124 | 1,686 00 |
| Gogango .. | . | . | . | 2,029 | 2 |  | 2,101 | 4,132 | 2,057 5 5 3 |
| Hughenden | . | . |  | 930 | . . |  |  | 930 | 19280 |
| Kennedy . |  |  |  | 1,299 | . . |  |  | 1,299 | 1,299 00 |
| Leichhardt East |  |  |  | 1,228 |  |  |  | 1,228 | 1,228 00 |
| Leichhardt South |  |  |  | 1,787 | 29 | 80,833 | 431 | 83,080 | 2,831 16 |
| Mitchell West |  |  |  | 826 | 10 | ... | . . | 836 | 1,249 00 |
| Paroo . | $\cdots$ |  |  | 227 | 2,739 |  |  | 2,966 | 2,966 00 |
| St. George . . | $\cdots$ | $\ldots$ |  | 1,127 | 4,618 | 1,816 | . | 7,561 | 5,767 140 |
| Tambo | $\cdots$ |  |  | 288 | 131 | 4,922 | .. | 5,341 | 50180 |
| Warrego .. | . | . | . | 1,840 | 1,134 | .. |  | $\stackrel{2,974}{ }$ | $\begin{array}{lll}2,974 & 0 & 0 \\ 2,162 & 0 & 0\end{array}$ |
| Western Downs | - | $\ldots$ | . | 428 | 1,734 | . |  | 2,162 1,225 | 2,162 1,225 0000 |
| West Moreton | . | . | . | 533 | 692 43 |  |  | 2,394 | 1,225 2,394 0 |
| Wide Bay . . | . | $\ldots$ | .. | 1,324 | 30 |  | 4,510 | 5,864 | 1,467 $17 \quad 6$ |
| Totals |  | .. | . | 39,723 | 14,646 | 155,932 | 7,300 | 217,601 | £58,421 17 |

Appended are reports from the Principal of the Queensland Agricultural College, the Agricultural Chemist, Seeds, Fertilisers, and Stock Foods Investigation Branch, the Director of Fruit Culture, the Director of Agriculture, the Director of Dairying, the Government Bacteriologist, the Director of the Stock Experiment Station at 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.

## RAINFALL CHART.

QUEENSLAND AGRICULTURAL COLLEGE.


## REPORT OF THE PRINCIPAL OF THE QUEENSLAND AGRICULTURAL COLLEGE.

Sir,-I have the honour to submit the Annual Report of the Queensland Agricultural College for the year 1922-23.

The outstanding features of the year's work are-

On the educational side(1) The increase in the number of students; (2) The greater number of students attending full courses of instruction and the higher standard reached in examinations.
On the practical side-(1) The prolonged period of dry conditions; (2) The value of consistent fodder conservation.

## Educational.

The session ending June, 1922, closed with forty-six students on the rolls. Of these three left and thirteen new students joined, bringing the total enrolment for the session to fifty-six.

After the annual examinations in December, twenty-seven students left, seven having completed full diploma courses and the remainder sundry short courses. As twenty-one new students joined, the enrolment for the JanuaryJune session, 1923, was fifty, distributed as follows:-

| Third year in Agrisulture | .. | $\ldots$ | $\ldots$ | 6 |
| :---: | :---: | :---: | :---: | ---: |
| Second year in Agriculture | . | $\ldots$ | $\ldots$ | 9 |
| First year in Agriculture | $\ldots$ | $\ldots$ | $\ldots$ | 14 |
| Second year in Dairying | $\ldots$ | $\ldots$ | $\ldots$ | 5 |
| First year in Dairying | $\ldots$ | $\ldots$ | $\ldots$ | 2 |
| Sundry short courses ... | $\ldots$ | $\ldots$ | $\ldots$ | 14 |
| Total | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ |

Thas, since the inception of the College, the number who have received direct instruction at the institution are


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

At the annual examinations, held in December, 1922, the following results were obtained:-

Third Year in Agricullure.-S. F. Murphy. K. V. Henderson, L. C. J. Clifton, T. Y. Bonar, and K. M. Tait obtained the third-year certificate and the diploma in agriculture.

Second Year in Agriculiure.-W. Knust, M. B. Blake, S. Pegg, R. M. Wallace, and E. J. A. Crabtree passed in December, and W. A. G. Diamond and A. W. Strachan at a deferred examination, thus gaining their second-year certificates.

First Year in Agriculiure.-L. H. Radel, S. M. Seamer, D. E. Benham, M. R. O'Brien, M. F. Hill, and A. J. Edwards passed in December, and D. H. Stephens, A. A. Tyler, and II. C. Parr at deferred examinations, thus gaining their first-year certificates.

Second Year in Dairying.-James Kelsey gained his second-year certificate and diploma in dairying.

First Year in Dairying.-G. E. Sampson, S. S. Brimblecombe, and A. Cockburn gained their first-year certificates.

State Milk and Cream Testing Certificates were gained by W. Knust, M. B. Blake, S. E. Pegg, R. M. Wallace, E. J. A. Crabtree, A. W. Strachan, E. J. Bateman, W. A. G. Diamond, D. G. Williams, G. E. Sampson, S. S. Brimblecombe, A. Cockburn, W. J. G. Stewart, A. Broad, J. Jordan, J. Wilkinson, and N. S. Townsend.

Third-class Engine-drivers' Certificates were gained by W. Knust, M. B. Blake, S. E. Pegg, R. M. Wallace, E. J. A. Crabtree, A. W. Strachan, E. J. Bateman, W. A. G. Diamond, D. G. Williams, J. Kelsey, G. E. Sampson, S. S. Brimblecombe, A. Cockburn, A. Broad, and J. D. MeCarthy.

Short Farm Certificate was gained by J. D. McCarthy.

## The Seagons.

Reference to the table of monthly rainfalls and to the rainfall chart shows clearly that the past year has been exceptionally unfavourable. Out of the past nineteen monthis there have been two months only when the rainfall was above the average, and these were separatel by a period of a full year.

As a result, the winter crops for 1922 were almost an entire failure ; while for summer crops, 1922-3, the season was such as to insist on repeated plantings. Rain would fall sufficient for a seeding and to germinate the seed; then would follow a period of dry weather, killing off the young plants. As illustrating how severe these conditions were, I have included a detailed report (see later) of the operations in each of the paddocks of the farm.

This year winter crops are an entire failure.

## Fodder Conservation.

During 1920-21 the College conserved large quantities of hay; stacks were to be seen all over the property. This fodder has been of incaleaable value. Very little grass giew during last summer, and we have been hand-fecding constantly for the past eighten months. Further, our stock-holding was greater than usual, owing to the fact that conditions were so dry throughout the whole couritry that it was practically impossible to sell our surplus animals.

But, even in face of these exceptionally adverse conditions, the College has been able to maintain all its stock without the purchase of outside fodder. Practically every stock-owner in the district is, at present, a purchaser of fodder.

## Improvements and Repairs.

During the year a new hayshed was erected. This shed is of special design, doing away with all crosstrees in the roof and so greatly increasing the holding capacity for the ground area covered.

A new steam plant was installed at the dairy factory, giving a much-needed relief to the power plant at the College.

Two new concrete water-troughs were built in the home paddocks.

Most of the efforts this year were directed towards repairs of the farm buildings. Thus, amongst cther things, the woodwork and guttering of the stables were repaired and painted. The same was done for the piggery feed-shed, the orehard-shed, and the power-house. The fuelbins of the power-house were completely renovated. The upper floor of the barn was repaired and made more suitable for agricultural demonstrations. Much clearing in the paddocks was carried out, removing and burning old dead timber and stumps.

The drainage system of the dairy factory was overhauled and repaired.

The Agriculturist's Report.
Creek 1 Paddock.-The balance of early maize crop was harvested, the average yield per acre being 25 bushels. The field was then ploughed, harrowed, and planted with cattle pumpkins, yielding 20 tons 16 cwt The dise cultivator was kept busy between the pumpkin drills. Insect and fungus pests were not severe on the crop. The lucerne area in the above field was renovated, but, owing to dry weather, very little hay was produced. The creek bank was kept clear of prickly-pear and burr. Owing to the prevalence of nut-grass and the desire to establish more artificial grass areas, when the pumpkins were taken off and an adjoining area of lucerne which was rather poor had been ploughed up, the land, with an acreage of 44 acres, was sown with prairie and Rhodes grasses, with a quantity of white Dutch clover throughout the latter. The planting was done after a fall of 160 points of rain on 12th March, 1923, 22 acres being allotted to each grass. Germination was not good at first, the soil drying rapidly, but after a further` fall of 213 points early in June the balance of the seed came through, with the result that the field showed a very even secding. Unfortunately the weather has been extremely dry since and the young plants have made little growth. A new fence, about 20 chains in length, was put up to divide an area in this paddock.

Garden Paddocks 1 and 2.-Pumpkins planted 10th November, 1922, yield, 26 tons 16 cwt. Rape and mustard planted 13th March, 1923; grazed by sheep.

Garden Paddock 3.-Canary grass and flax were sown 10th to 14th July. The former was cut in October, but, after cutting and stooking, wet weather was experienced, making it difficult to cure. The flax was cut in December, a very inferior crop resulting. The paddock was ploughed in January, and planted with skinless barley and tares in April. An area of $5 \frac{1}{2}$ acres has been reserved by the Director of Agriculture for planting with cotton.

Pump Paddock-This area was planted with maize during September, October, and November, 1922. The result was poor and the crop was put in silo. The wheat planted in July, 1922, was a failure and was fed off. The land was ploughed in February and March, 1923, on a rainfall of 219 points, with Huguenot wheat. The soil was in fair condition at the time of planting and the germination was good. The crop did well for a time but now requires more rain.

Sections Paddock.-The last of the maize crop was pulled on 19th July, 1922. This crop was planted on 22 nd January, 1922, some being used for silage, and the balance matured grain yielding 35 bushels per acre. It was ploughed in August and September, 1922. A portion was planted dry with Huguenot wheat in May, 1922, and was harvested in the first two weeks of October; a small area ( 5 acres) was harvested for seed, giving a yield of 20 bushels per acre. Maize was planted in a portion of this field at the end of November, 1922; the crop was poor and was cut for silage in February and March, 1923. It was again ploughed early in April, and suwn with Huguenot wheat and skinless barley in second week in June.

Gatton Paddock 1.-Ploughed early in August, 1922, cross-ploughed September, disccultivated October. Planted with Sudan grass at end of Octcber, but failed. Replanted 7th and 8th December, 1922; harvested late in January and early in February. There was a pretty good stand, but it required much handling on account of light showers during harvest. From February to June the grass grew well, although the ground was for the most part dry, and aftorded good feed for a number of sheep which kept it bare, but on their removal it made good growth again. This practice was carried out three or four times. On 27 th June last the ploughing of this paddock commenced.

Gatton Paddock 2.--This field has been under Sudan grass for nearly two years, but last August was ploughed and cross-ploughed during October. Sorghum was planted on 25th and 27 th November, but, as there had not been much done in the conservation of soil moisture, the young crop did not survive, and a large portion was removed and replanted during December
and January. The resulting crop never showed vigorous growth, attaining a height of 2 feet 6 inches only, and was utilised as feed for the dairy herd. Ploughing out the ratoons commenced on 11th June last and the paddock lies in bare fallow.

Gatton Paddock 3.-This paddock for the greater part was sown with Florence wheat in the middle of June, 1922, but did somewhat badly and was grazed off by the dairy herd. An area in this field ( 6 acres) was reserved for potatoes. Rows were worked and planted on 12th and 13th March, but the weather prevailing afterwards was too severe for the crop to do much good. The crop was harvested on 12th and 13th June, but the yield was very poor. During June, 1923, the area that failed with wheat in this paddock was put under Algerian oats. The seeding was successful and the field looks well.

## Gatton Paddock 4.-Old lucerne field...

Gatton Paddock 5.-Potatoes were planted in this field during August. The crop was poor. A moderate crop of mangolds was taken from this area and an area ploughed 11th June, but, owing to poor germination, it is doubtful whether they are worth leaving.

Experiment Paddock 1.-This area has been out of cultivation for a while, but was recently ploughed un and on 9th June was sown with skinless barley and tares.

Piggery Paddock.-Ploughed in September and planted in October with Planter's Friend, which failed. Disc-cultivated early in December and sorghum again planted, which failed also. Ploughed in January and planted with rape and mustard in March. The germination was rather uneven, but the erop did fairly well, considering weather conditions, and provided good feed for fattening sheep. It still has possession of the field.

Railway Paddock 1.-A large area was sown with wheat and oats in July, 1922, but provided nothing more than grazing for stock. During October this area was ploughed with mouldboard ploughs and cross-ploughed during February It has been harrowed, disc-cultivated, and graded, the original intention being to put it under lucerne. After the rain early in June, the spring-tooth harrow was put over it to create a good soil mulch and conserve the moisture, which should be very useful to any crop planted later on.

Railway Paddock 2.-T'his area has not been under cultivation for a year. Some burr grew on it, but this has been removed. An attempt should be made to get this field under artificial grass, thereby enhancing its carrying capacity.

Railway Paddock 3.-This field has an area of 76 acres, 43 of which are under lucerne, and it was from this that most of our lucerne hay was obtained during the year; 33 acres were under maize and averaged nearly 40 bushels per
acre. This area includes manurial plots. After harvesting the maize, ploughing commenced in August and Giant Panicum was planted in October. The binders were put into this crop in February, and the yield was 17 cwt . per acre of fair-quality hay. The land was turned over by the middle of February. Later it was harrowed, disked, and planted with Huguenot wheat at the end of April. The seed was in the ground for six weeks before rain fell to germinate. The germination was fairly evell and the young crop looks well. The lucerne field has been renovated by tractor and harrow.

The haulage from Gatton and siding has been very heavy, due largely to the installation of steam plant at dairy factory.

Two grass paddocks, Railway 1 and 2, have received a considerable cleaning up. Unsightly stumps have been removed, timber not suitable for use fired, and about 40 tons of firewood procured. To procure the firewood, explosives, together with maul and wedges, were used, the logs being large and twisted in the grain. The firewood was hauled to the College saw-bench and is being used for College requirements.

The following statisties will show the positions on the various sections of the farm.

Rainfall, 1st April, 1922, to 30th June. 1923.


The rainfall over a similar period last year was 31.28 inches, and for the three months prior to July, 1921, 9.09 inches.
Farm Returns, 1st July, 1922, to 30 th June, 1923.
$\begin{array}{lllll} & & \text { £ } & s . & d . \\ \text { Cash sales and services } & \ldots & & \ldots & \\ 420 & 1 & 9 & d .\end{array}$
Interdepartmental sales and


Total returns
£1,669 $13 \quad 5$

Crops Harvested, 1st July, 1922, to 30th June, 1923.
Tons cwt. Tons ewt.

|  |  |  |  |  | Tons cwt. Tons cwt. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Silage-Maize | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 137 | 1 |

Standing Crops on 30th June, 1923.


Stock at College, 30th June, 1923.

| - | Stud Bulls. | $\begin{aligned} & \text { Stud } \\ & \text { Cows. } \end{aligned}$ | $\begin{aligned} & \text { Young } \\ & \text { Bulls. } \end{aligned}$ | Heifers. | Total. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Ayrshires | 5 | 30 | 9 | 26 | 70 |
| Jerseys | 2 | 23 | 4 | 9 | 38 |
| Shorthorns |  | 3 |  | 2 (grade) | 5 |
| Friesians | 2 | 11 | 3 | 8 | 24 |
| Guernseys | 2 | 5 | 1 | 5 |  |
| Totals | 11 | 72 | 17 | 50 | 150 |
| Steers | . | . | . | .. | 4. |
| Grand total | - | . | .. | . | 154 |

Returns from College Datry Factory.

| Purchases from- <br> Suppliers <br> College dairy herd | $\begin{array}{r} \mathcal{£} \\ 4,106 \\ 696 \end{array}$ | $\begin{array}{rr} s . & d . \\ 8 & 7 \\ 19 & 0 \end{array}$ |
| :---: | :---: | :---: |
| Total | £4,803 | $7 \quad 7$ |
|  | £ | s. $d$. |
| Cash sales, butter and cheese (incomplete) | 5,002 | $17 \quad 7$ |
| Sales to College dining hall .. | 696 | $18 \quad 4$ |
| Skim and whole milk fed to calves | 69 | 181 |
| Skim and butter milk fed to pigs .. | 59 | 1911 |
| Skim and butter milk fed to calves | 31 | 190 |
| Total | £5,861 | 1211 |

Sales of Pigs-lst July, 1922, to 30th June, 1923.


Porkers and baconers sold for cash, 134 head $\quad 410 \quad 10 \quad 0$ Service of sows, 27 head .. .. .. 615 Charges for keep, sows sent for service $\quad$.. $\begin{array}{llll}3 & 3 & 6\end{array}$ Pig crate .. .. .. .. .. 0 Sale of bones .. 250

Total of sales for which cash received
Killed for College dining-hall, 38 head
Total returns from piggery
$\begin{array}{rrr}926 & 3 & 6 \\ 55 & 13 & 2\end{array}$
£981 $16 \quad 8$

|  | Stud Boars. | Stud Sows. | Young Stock and Bar- rows | Total. |
| :---: | :---: | :---: | :---: | :---: |
| Berkshires | 4 | 21 | 101 | 126 |
| Yorkshires |  | 12 | 61 | 75 |
| Tamworths | 1 | 8 | 12 | 21 |
| Totals | 7 | 41 | 174 | 222 |


Total .. .. .. .. £365 16 11

Sheep on Hand, 30th June, 1923.
Old merino ewes .. .. .. .. 60
Lincoln crossbred merino ewes .. .. 80
Border Leicester crossbred merino ewes .. 87
Corriedale crossbred merino maiden ewes. . 28
Corriedale grade wether hoggets .. .. 6
Two Corriedale rams .. .. .. 2
One Romney Marsh ram .. .. .. 1
One Dorset Horn ram .. .. .. 1
Total .. .. .. .. ... 265

Sales of Poultry and Eggs, 1st July, 1922, to 30th June, 1923.

| Breeds. | Birds. | Settings | Value. |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| White Leghorns | 42 | 94 | $\begin{array}{lll} £ & s . & d . \\ 43 & 1 & 6 \\ 62 & 13 & 0 \end{array}$ |  |  | $d$. |
| Brown Leghorns | 27 | 23 | $\begin{array}{lll} 21 & 14 & 0 \\ 17 & 16 & 6 \end{array}$ |  |  | 6 |
| Black Orpingtons .. | 61 | 20 | $\begin{array}{lll} 48 & 19 & 6 \\ 14 & 18 & 9 \end{array}$ |  |  |  |
| Rhode Island Reds | 26 | ii | $\begin{array}{rrrr}15 & 2 & 0 \\ 6 & 11 & 6\end{array}$ |  |  |  |
| S. L. Wyandottes | 13 | 3 | $\begin{array}{rrr}13 & 1 & 0 \\ 2 & 1 & 0\end{array}$ |  |  |  |
| Indian Game | 1 | 31 $\frac{1}{2}$ | $\begin{array}{rrr} 0 & 15 & 0 \\ 3 & 2 & 6 \end{array}$ |  |  |  |
| Muscovy drake | 1 |  | . | 0 | 10 | 0 |
| Totals | 171 | $154 \frac{1}{2}$ | .. | 250 | 6 | 3 |
| Table birds sold for cash, 17 head |  |  | $\cdots$ | 1 | 19 | 0 |
| Table eggs sold for cash, 239 doz. |  |  | .. .. | 21 |  | 8 |
| Total sales for which cash was received |  |  |  | 274 | 0 | 11 |
| Supplied to College dining-hall- |  |  |  |  |  |  |
| Table fowls, 116 head |  |  | .. .. | 16 |  | 0 |
| Table eggs. 622 dozen |  | . | .. . | 30 | 17 | 6 |
| Total returns from poultry |  |  | . £ | 321 | 11 | 5 |

Poultry at College on 30th June, 1923.
Head.


Egg-laying Competition.
Statement of receipts and expenditure.
Expenditure.
£ $s . \quad d . \quad £ \quad s . d$.


Returns from Garden and Orchard, 1st July, 1922, to 30 th June, 1923.
Sales of fruit and vegetables for cash $\quad$ £ s. d.
Supplied to College dining-hall, fruit and 2
vegetables .. .. .. .. $147 \quad 12$ 2
Total .. ... .. $\overline{\text { £218 } 15 \quad 4}$
CUTHBERT POTTS, Principal.

## REPORT OF THE AGRICULTURAL CHEMIST,

Sir,-I have the honour to submit to you herewith my Annual Report of the work of the Chemistry Division of your Department, for the year ended 30th June, 1923.

## Work Performed and Staff.

The work, as seen from the table below, has been very much increased, as the numbers of soils and waters analysed are doubled, the number of butters more than trebled, and the number of cheeses increased from 22 to 123.

| - | 1920-1. | 1921-2. | 1922-3. |
| :---: | :---: | :---: | :---: |
| Soils | 132 | 192 | 385 |
| Waters | 65 | 66 | 116 |
| Dipping fluids .. | 1,083 | 612 | 375 |
| Dip concentrates | 5 | 7 | 23 |
| Milks and creams | 250 | 134 | 127 |
| Butters | 124 | 233 | 754 |
| Margarines | 2 | 7 |  |
| Condensed milks | 28 | 54 | 25 |
| Cheeses | 32 | 22 | 123 |
| Fertilizers .. | 97 | 80 | 137 |
| Wheats and flours | 41 | 51 | 10 |
| Seeds, grasses, plants, \&c. | 104 | 73 | 13 |
| Stock foods | 46 | 212 | 155 |
| Leathers | 31 | 35 | 51 |
| Viscera, stomach contents, \&c. | 56 | 49 | 28 |
| Sugar-canes .. | . | 4 | 6 |
| Sugars, molasses, syrups, \&c. | 9 | 53 | 14 |
| Salts and preservatives | 15 | 11 | 6 |
| Limestones, \&c. | 15 | 16 | 78 |
| Rocks .. . | 7 | 7 | 10 |
| Ashes .. | 2 | 4 |  |
| Jams and preserves | 50 | 50 | 5 |
| Canned fruits | 68 | 214 | 70 |
| Sweet potatoes .. | 37 | 9 |  |
| Wine musts $\quad \therefore$ |  |  | 16 |
| Woods and barks | 6 | 6 | 6 |
| Parchment papers |  |  | 53 |
| Miscellaneous | 98 | 94 | 49 |
| Total | 2,403 | 2,338 | 2,635 |
| Glassware tested | 6,244 | 4,991 | 4,269 |

A considerable amount of work was carried out for the Bureau of Sugar Experiment Stations: 137 samples of soil and a large number of waters, limestones, and fertilisers being submitted for analysis. The whole of the staff did very good work, and only by working some overtime an accumulation of samples was prevented. W. J. Cartmill and N. G. Cassidy were appointed as cadets, and made very good progress.

For some time I have recommended the appointment of a competent officer as special inspector under the Fertilisers Act and Stock Food Act, in order to secure a more thorough administration of these important Acts. Mr. F. B. Coleman has been appointed to this position, and has already done good work, and I expect a greatly increased number of samples to be taken during the coming year.

The administration of the Fertilisers Act and Stock Food Act was taken over by Mr. F. F. Coleman, officer in charge of the seed-testing laboratory, in whose report a large amount of our analytical work appears in tabulated form.

A conference of agricultural chemists was held in Melbourne, at which New South Wales, Victoria, South Australia, and Queensland. were represented. The principal subjects discussed were-

Fertilisers: To bring about uniformity in the various States with regard to legislation, description and labelling of fertilisers, and methods of analysis.
Insecticides and Fungicides: Preparation of a Bill covering all pest. destroyers, and fixing of standards for same.
Stock Foods: Fixing of standards and making suggestions to get uniformity of legislation in all States.

## SoILS.

The results of the soil analyses are recorded on Table I., and cover samples from all parts of $c$ Queensland.

Samples 1817 to $182{ }^{\circ}$ were submitted in connection with the "bunchy top disease" of bananas, and are given in condensed form on Table II. These soils belong to the class of volcanic soils characteristic of many of our banana-growing districts. They contain a fairly high amount of "clay," more particularly samples 1817 and 1820 .

Soil 1817, where the disease is very pronounced, is not in a favourable physical condition, and, although it contains a large amount of total potash soluble in hydrochloric acid, the actual amounts available as determined by the solubility in citric acid solution, in water containing carbonic acid, and in $\frac{n}{5}$ nitric acid, are very small. The soil also contains a great excess of magnesía over lime, and has a great acidity and lime requirement.

In the adjoining sample 1818, where the bananas showed very little disease, the soil condition is more favourable, and, although the total amount of potash is much less, the available amount is more than double.

The difference of the available potash in the soils 1819 and 1820 is distinctly shówn in the $\frac{n}{5}$ nitric acid solution.

The amounts of total and available plant foods in the soil 1821, where the bananas are in excellent condition, are very high, as compared with the available amounts found in the soils where disease exists. The difference in the composition of the soils clearly indicates that poverty of the soil must be one of the contributing factors of the bunchy top disease. As flowers of sulphur has been recommended as one of the remedies, the total amount of sulphur was determined in the soils, and the amounts found were quite satisfactory in all cases.

Samples of soils were taken from a cotton field, on which the plants made a most promising
growth but did not produce any crops; the analysis of the soils clearly shows that this failure was due to a badly balanced supply of plant foods. On the soil 1899 practically no bolls were produced, and close by on soil 1900 only a very small crop. The latter soil contains double the amount of available phosphoric acid of the former, and phosphoric acid is unquestionably one of the dominant constituents necessary for successful cotton culture. Many of cur soils, and some of the most fertile ones, are deficient in available phosphoric caid, and this deficiency will have to be made up with the aid of artificial fertilisers containing this constituent, which fortunately is the cheapest of all the fertilising constituents.

Of equal interest are the analyses 1918 and 1919 taken from a field of maize at Tolga, on which in some patches the corn crop was a failure. Sample 1918 was taken from the patches which gave practically no yield. Great deficiency in available phosphoric acid is undoubtedly the cause, ard even in the good soil the amount of phosphoric acid, although three times as high, is too low. The great excess of lime in the sterile patches may be another contributing factor, as maize is not a lime-loving plant. The amount of available potash in the good soil is nearly double the amount present in the poor patches.

## Water.

A sure sign of droughty conditions is the number of waters submitted for analysis, in order to ascertain their fitness for use for stock or for irrigation.

Of the 116 samples analysed, only 62 were found fit for use.

I must take the opportunity to point out that we fix the amount of salt allowed to be present in water fit for irrigation at 100 grains per gallon, and consider water fit for continuous use for stock if it contains not more than 300 grains of salt per gallon.

In Victoria and South Australia, waters are used for stock which contain very large amounts of salt. Water with 400 grains of salt per gallon is used for horses, 600 grains per gallon for cattle, and 700 grains per gallon for sheep. Water containing as much as 900 grains of salt per gallon has been used for sheep, and appeared to do no harm, as long as the precaution was taken to allow the sheep to drink only at nighttime.

## Dipping Fluids.

Only 375 samples of dipping fluids were analysed, which is only one-eighth of the number analysed in 1916-17, and evidently clause 29 of the regulations under "The Diseases in Stock Act of 1915," which provides for regulai bi-annual analyses of all dipping fluids, is not enforced.

## Viscera.

During periods of drought always a great number of cattle are poisoned by eating poisonous plants, which they would not touch if plenty of green feed is about.

Twenty-eight samples of viscera were analysed and in fourteen cases the cause of poisoning was ascertained.

Several cases of stock being killed by eating poisoned prickly-pear have come again under our notice. The actual fatal dose of arsenic is hard to ascertain, as it is influenced by a large number of conditions. About 30 to 60 grains of arsenic in a soluble form may be considered a fatal dose for a horse or a bullock. If the arsenic is in very fine division, or in a very soluble form, the toxicity is greatly increased, which is also the case if the arsenic acts through absorption by wounds, which of course would take place when the palate of the animal is injured by the fine spicules. As a rule stock do not eat pricklypear readily, but as soon as pear is poisoned and partially withered cattle arpear to eat it more readily. Although the amount of arsenic necessary to kill pear is very small, much larger amounts than actually necessary are generally supplied, or may accumulate on certain parts of the pear plants, and therefore it would be illadvised to let cattle have free access to country on which prickly-pear has been poisoned with arsenic.

## Dairy Produce.

The number of samples of butters, cheeses, \&c., taken by the Commonwealth Dairy Inspection Branch for analysis was very much increased, and could only be dealt with by giving the analyst, whose whole time was devoted to this work, occasionally extra assistance.

The analysis of some preservatives and dairy salts on the market are herewith given, and show that the salts are of very high quality :-

| Preservatives. |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| - | No. 330. | No. 331. | No. 335. | No. 1283. |
| Free and combined water, $\mathrm{H}_{2} \mathrm{O}$ | $36^{\%} \cdot 64$ | $46 \cdot{ }_{24}$ | $38^{\%} \cdot 35$ | $3 \stackrel{\%}{\%} \cdot 28$ |
| Boric anhydride, $\mathrm{B}_{2} \mathrm{O}_{3}$ | $54 \cdot 41$ | $51 \cdot 05$ | $50 \cdot 38$ | $52 \cdot 50$ |
| Sodium $\mathrm{Na}_{2} \mathrm{O}$ oxide, | $5 \cdot 58$ | $2 \cdot 57$ | 2-91 | $13 \cdot 08$ |
| $\underset{\mathrm{NaCl}}{\text { Sodium }}$ chloride, | $3 \cdot 47$ | Nil. | $8 \cdot 54$ | $0 \cdot 29$ |
| Total | $100 \cdot 10$ | $99 \cdot 86$ | $100 \cdot 18$ | $100 \cdot 15$ |
| Total boric acid $\mathrm{H}_{3} \mathrm{BO}_{3}$ | $96 \cdot 40$ | $90 \cdot 40$ | $89 \cdot 30$ | $93 \cdot 00$ |

Datry Salts.


Testing of Dairy Glassware, \&c.

| - |  |  | ¢ O 兄 4 |  | 趜 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cream bottles | . | 2,272 | 2,259 | 7 | 6 | - 3 |
| Milk bottles | . | 864 | 863 | 1 | . | -1 |
| Cream pipettes | $\ldots$ | 307 | 302 | 2 | 3 | -7 |
| Milk pipettes | $\cdots$ | 239 | 235 | 1 | 3 | - 4 |
| Thermometers |  | 581 | 484 | 94 | 3 | $16 \cdot 2$ |
| Hydrometers |  | 6 | 6 | .. | . |  |
| Total |  | 4,269 | 4,149 | 105 | 15 | $2 \cdot 5$ |

Prepared 182 bottles $\frac{n}{10}$ alkali, 1 bottle N acid, 100 pints standard iodine solution.

Past experience has proved that parchment paper, used for the packing of butter boxes, may be the cause of growth of moulds on the butter, if the paper contains glucose or other soluble loading matter. "The Dairy Produce Act of $1920^{\prime \prime}$ prohibits the use of parchment papers containing soluble matters, but still we found, among the fifty-three samples of parchment papers submitted for analysis, eleven containing large amounts of soluble inatters. One sample of paper actually contained 40 per cent. of watersoluble solids, of which 35 per cent. was gluense.

## Fertiliser-Agriculitural Lime.

Mr. F. B. Coleman made an inspection of the principal lime deposits in Queensland from which burnt lime and agricultural lime are supplied. The analyses of numerous samples show that very high-grade lime is available, but that the deposits also contain some inferior strata, and unless great care is taken it will be difficult to supply agricultural lime of uniform quality and up to the guaranteed analysis.

It must also be noted that some of the deposits are worked in a most primitive manner, which cannot ensure a supply of agricultural lime at low cost to the farmers. The inspection clearly shows the importance and absolute necessity of having lime included under the Fertilisers Act and its regulations.

A peculiar situation has arisen with regard to artificial fertilisers supplying phosphoric acid
in citrate-soluble form. Certain crops, like pineapples for instance, are very susceptible to injury by acidity, and cannot tolerate superphosphate containing water-soluble phosphoric acid. Again, in many soils the water-soluble phosphoric acid in superphosphate reverts readily to very insoluble forms, and for these reasons phosphoric acid in citrate-soluble form, like that present in bonemeal, basic slag, \&e., has been found of great value. With the great scarcity of basic slag existing for many years, the manufacture of basic superphosphate was started and the farmers actually pay about 32 s . per ton more for the basic superphosphate than for superphosphate.

The farmers in New Zealand are very much better off, as they pay the same price for superphosphate and basic superphosphate, the latter costing $£ 2$ per ton less than the price paid in Brisbane. Basic superphosphate is by no means an ideal mixture, because, although the phosphoric acid is all citrate-soluble, about one-half. is also water-soluble, and like our superphosphate contains a large amount of useless filling material, for which freight has to be paid. A substitute at very reduced cost will be found in finely crushed Nauru phosphate, which contains a very high amount of total phosphoric acid, in average about 40 per cent., which is largely in citrate-soluble form. Excellent results with this fertiliser by itselif, and also when mixed with superphosphate, have been obtained in New Zealand.

Analyses of Nauru phosphate, basic slag of good quality imported from England, and hasic superphosphate are given below, with the determination of citrate-soluble phosphoric acid, according to various methods. Small amounts of basic slag and basic superphosphate were mixed with a red volcanic soil, allowed to stand for some days, and the amount of citrate-soluble phosphoric acid again determined. It will be noted that the amount of citrate-soluble phosphoric acid was greatly reduced, as was to be expected. These experiments will be repeated with various soils and fertilisers, as they are of far-reaching importance.

SOLUBILITY of Phosphoric Acid $\left(\mathrm{P}_{2} \mathrm{O}_{5}\right)$ in Various Fertiusers.
Nauru Phosphate, passing through
100-mesh
Nauru Phosphate, passing through
40-mesh, retained by $100-$
mesh sieve

| Basic Superphosphate |
| :--- |$\quad \ldots$


| Basic Slag, passing through |
| :--- |
| mesh |


| 를oo000000 | Water-soluble Acid. |  |  |  | Citrate-soluble Phosphoric Acid in 2 per cent Citric Acid Solution. |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  | 1 Gram Fertiliser Mixed with 100 Grams Soil, standng for- |  |  |  |
|  |  |  | 4 days. | 14 days. |  |  |  |
| $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ |  |  |  |  | $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$ | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ | $\mathrm{P}_{2} \mathrm{O}_{5}$. | $\begin{aligned} & \text { Total. } \\ & \mathrm{P}_{2} \mathrm{O}_{5} . \end{aligned}$ |
| \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% |
| $40 \cdot 67$ |  |  | $3 \cdot 75$ | 9-2 | $7 \cdot 28$ | $17 \cdot 9$ | $6 \cdot 86$ | 16.9 | $22 \cdot 41$ | $55 \cdot 1$ |  |  |  |  |
| $40 \cdot 91$ |  |  | 2-24 | $5 \cdot 5$ | 5-77 | $14 \cdot 1$ | 5-55 | $13 \cdot 6$ |  |  |  |  |  |  |
| 20-87 | 11.56 | $55 \cdot 4$ | 19.73 | $94 \cdot 5$ | 20-41 | 97.8 | . 46 | $2 \cdot 2$ |  |  | 7.07 | $33 \cdot 9$ | 6.60 | $31 \cdot 6$ |
| 19.72 |  |  |  |  | $15 \cdot 30$ | 77.6 | $\cdots$ |  | 17.60 | $89 \cdot 3$ |  |  | 6.92 | $35 \cdot 1$ |

## Insecticides.

Dichlorbenzole.-It is very pleasing to me to learn that this chemical is now successfully used for the destruction of sugar-cane grubs, as I was the first to suggest its use for this purpose, and to obtain a supply for experimental purposes.

In 1913 I noted the use of dichlorbenzole in Germany for the destruction of moths, cockchafers, \&c. Having personal practical experience with the use of bisulphide of carbon for the killing of cane-grubs, and knowing the great disadvantages of this highly volatile and inflammable chemical, I at once was impressed with the advantages of dichlorbenzole. I wrote, therefore, to the manufacturers, Actien Gesellschaft für Anilinfabrikation, Berlin, pointing out the possibilities of using this new insecticide for the destruction of cane-grubs and other pests living in the soil, and the firm sent a few pounds of the chemical for experimental purposes, parts of which were handed to Mr. Easterby and Mr. Jarvis. The first experiments made on the Isis were not at all successful, as reported by Mr. Harvey to Ms: Easterby, March 1914. A further supply of 10 lb ., free of charge, was received August 1914, with which Mr. Jarvis was able to experiment on a larger scale, and he obtained very promising results, as reported in Q.A. Journal, June 1915.

A liquid chlorobenzole, sold by the firm under the name of "Globol,"" which was claimed to be even more effective, was not received, probably on account of the war, but some supplies should now be obtained for experimental purposes.

No further supply of dichlorbenzole was available after 1914, and its use had to be abandoned, but was taken up again a year or so back, after we were able to secure larger amounts of dichlorbenzole from England.

The chemical is a most useful insecticide for the destruction of moths, silverfish, and cock-
roaches, and for weevil in grain, and does not affect the germination of the seeds. It is much safer to handle than bisulphide of carbon, and is much more effective than naphthaline, and has a rather agreeable odour.

## Grape Wine Musts.

Samples of wine musts fresh from the press were obtained by some of our departmental officers in various centres, in order to ascertain the amount of sugar originally present in such musts. The results of the analyses are given on Table III.

## Stock Foods.

On the whole the quality of stock foods has been greatly improved, largely due to the operation of the Stock Foods Act.

The analyses of calf foods given on Table IX. of Mr. Coleman's report show a great difference of composition, and with the exception of three samples cannot be considered ideal calf foods. Calf foods are used in connection with skim milk and should bring the ration up to the composition of whole milk, and for this purpose the food should contain a fair amount of fat. An ideal calf food, made by thoronghly crushing a mixture of two parts of oats, two parts of maize, and one part of linseed, contains on an average 14.5 per cent. crude protein, 10.9 per cent. crude fat, and 7.2 per cent. crude fibre. Only three of the calf foods contain a sufficient amount of fat; the remainder are far too low in this valuable constituent.

## Publications.

7 During the year a second revised cdition of my little book, "Elementary Lessons on the Chemistry of the Farm, Dairy, and Household,," has been published, and is available to the public on application to the Department of Agriculture and Stock, at a price much below cost.
J. C. BRÜNNICH.
TABLE I．－ANALYSES OF QUEENSLAND SOILS．

|  | Locality． | Description of soils． |  | total klemients in the soil，calculated on soil dried at $100^{\circ} \mathrm{c}$ ． |  |  |  |  |  |  |  | $100^{\circ} \mathrm{c}$. | Available Plant Food， Soluble in 1 per cent．Citric Acid． |  |  |  | Total Elements，Lb．per Acre， 12＂Deep． |  |  |  | Available Plant Food， soluble in 1 per cest． Citric scid Lb．per Acre， $12^{\prime \prime}$ Deep． |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\underset{\text { E }}{\text { E }}$ |  |  |  |  | 号 |  | $\begin{aligned} & \text { 品 } \\ & \text { 合 } \\ & \text { © } \end{aligned}$ |  | 음 道家 品 | $\begin{aligned} & \text { 品 } \\ & \hline \end{aligned}$ |  | $\begin{aligned} & \text { 咅 } \\ & \stackrel{\rightharpoonup}{\circ} \\ & \text { ß } \end{aligned}$ |  |  | 咅 |  |  | $\underset{\sharp}{\Xi}$ | $\begin{aligned} & \dot{\text { İ }} \\ & \text { تू } \\ & \text { \& } \end{aligned}$ |  |
|  | Maranoa－ <br> Mount Abundance，Roma | Brown clay ．． <br> Brown clay ．． | Sl．acid．． <br> Sl．acid．． | \％ |  |  |  | $\%$ |  |  |  |  | \％ | $\%$ | \％ | $\%$ |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1667 |  |  |  | ． 99 | $3 \cdot 60$ | ． 022 | ． 056 | $\cdot 15$ | ． 50 | ． 52 | ． 49 | 82.25 | ． 0088 | －2042 | ． 0766 | ． 0192 | 2，119 | 5，598 | 19，032 | 18，792 | 336 | 7，794 | 732 | 1.6 |
| 1668 | Ditto |  |  | －90 | 11.07 | ． 019 | － 074 | $\cdot 14$ | －59 | $\cdot 61$ | －35 | $80 \cdot 76$ | ． 0040 | － 2186 | ． 0835 | ． 0092 | 2，951 | 5，481 | 23，610 | 13，910 | 160 | 8，711 | 367 | $4 \cdot 8$ |
| 1669 | Ditto | Brown clay | Alkaline | $\cdot 37$ | 4.08 | ． 010 | － 062 | $\cdot 14$ | 1.46 | $\cdot 63$ | －42 | 82.42 | ． 0040 | －9200 | $\cdot 1352$ | ． 0172 | 2，327 | 5，128 | 54，820 | 15，775 | 150 | 34，705 | 647 |  |
| 1670 | Ditto | Grey cl．loam ． | Alkaline | －63 | $5 \cdot 69$ | － 009 | ． 057 | $\cdot 14$ | 1.48 | $1 \cdot 17$ | －48 | 74－52 | － 0035 | $\cdot 5100$ | ． 0736 | ． 0115 | 1，946 | 4，774 | 50，300 | 16，523 | 117 | 17，260 | 389 | ． |
| 1671 | Ditto | Grey cl．loam ．． | Alkaline | $\cdot 72$ | 8.09 | ． 005 | ． 084 | － 20 | 1－99 | 1.48 | $\cdot 79$ | $68 \cdot 60$ | ． 0315 | －6300 | ．0394 | － 0182 | 2，481 | 5，875 | 62，020 | 23，172 | 927 | 18，605 | 535 | ． |
| 1672 | Ditto | Brown cl．loam | Alkaline | $\cdot 47$ | $7 \cdot 56$ | － 005 | －083 | $\cdot 13$ | 1.72 | －94 | －83 | $68 \cdot 50$ | ． 0032 | －8600 | $\cdot 1032$ | －0200 | 2，584 | 4，080 | 53，712 | 25，840 | 99 | 26，862 | 622 |  |
| 1673 | Ditto | Brown cl．loam | Alkaline | ． 44 | $7 \cdot 15$ | ． 005 | － 083 | ． 09 | 1.80 | 1.31 | ． 71 | 70.00 | ． 0028 | ． 7800 | ． 0380 | ． 0138 | 2，525 | 2，987 | 54，760 | 21，570 | 86 | 23，560 | 418 | ． |
| 1674 | Ditto | Brown cl．loam | Alkaline | $\cdot 74$ | $9 \cdot 25$ | －004 | $\cdot 140$ | $\cdot 14$ | $3 \cdot 30$ | $1 \cdot 40$ | － 69 | 66．38 | ． 0031 | － 8100 | ． 0277 | ． 0158 | 4，243 | 4，243 | 98，570 | 20，560 | 91 | 24，150 | 473 |  |
| 1675 | Ditto | Brown cl．loam | Sl．acid． | －60 | 6.76 | －005 | ． 095 | $\cdot 11$ | $1 \cdot 17$ | $1 \cdot 04$ | $\cdot 54$ | $70 \cdot 84$ | ． 0052 | － 2874 | ． 0475 | －0095 | 2，840 | 3，598 | 34，925 | 15，993 | 157 | 8，486 | 284 | $4 \cdot 0$ |
| 1676 | Ditto | Grey cl．loam ．． | Alkaline | ． 92 | 5.78 | － 017 | $\cdot 057$ | $\cdot 10$ | 1.43 | 1.08 | $\cdot 95$ | 68.52 | －0042 | － 5036 | ． 0462 | －0083 | 1，093 | 3，591 | 51，350 | 31，600 | 140 | 16，733 | 276 |  |
| 1677 | Bindango．． | Brown cl．loam | Alkaline | $\cdot 74$ | 8.51 | ． 011 | $\cdot 114$ | － 09 | $2 \cdot 72$ | $1 \cdot 20$ | －96 | 64．54 | － 0047 | $1 \cdot 0360$ | －0927 | －0062 | 3，423 | 2，600 | 81，820 | 28，995 | 141 | 31，140 | 188 | ．． |
| 1678 | Ditto | Brown loam ．． | Alkaline | $\cdot 73$ | 7.05 | － 012 | － 087 | $\cdot 11$ | 1.71 | $\cdot 95$ | － 84 | $67 \cdot 00$ | ． 0053 | － 8460 | ． 0660 | －0082 | 2，864 | 3，536 | 56，580 | 27，580 | 173 | 27，925 | 272 | ． |
| 1679 | Ditto | Grey cl．loam ．． | Alkaline | ． 80 | $5 \cdot 96$ | － 009 | －074 | － 08 | 1－58 | $1 \cdot 17$ | $\cdot 74$ | 69.52 | －0046 | － 5563 | －0593 | －0072 | 2，512 | 2，837 | 56，740 | 35，136 | 154 | 18，810 | 244 | ． |
| 1680 | Ditto | Brown cl．loam | Neutral．． | 1.20 | 6．32 | － 007 | $\cdot 104$ | $\cdot 10$ | －93 | $\cdot 86$ | －59 | 70－13 | －0036 | $\cdot 2652$ | －0568 | －0082 | 3，545 | 3，545 | 31，835 | 20，260 | 123 | 9，060 | 279 | ． |
| 1681 | Ditto | Brown cl．soil ．． | Alkaline | 1.00 | $6 \cdot 23$ | －006 | － 078 | －09 | 1.54 | 1.33 | $\cdot 71$ | $70 \cdot 20$ | ． 0039 | － 6015 | －0192 | －0090 | 2，442 | 2，676 | 48，180． | 23，765 | 124 | 18，870 | 268 | ． |
| 1682 | Ditto | Brown cl．soil | Alkaline | $1 \cdot 13$ | $7 \cdot 41$ | － 007 | －092 | － 09 | 1.96 | $1 \cdot 17$ | － 84 | 67.28 | ． 0031 | －6633 | － 0645 | －0047 | 2，605 | 2，480 | 55，510 | 23，865 | 89 | 18，790 | 133 | － |
| 1683 | Ditto | Brown cl．soil ．． | Acid | 1.37 | $3 \cdot 59$ | － 011 | ． 081 | － 07 | $\cdot 42$ | $\cdot 55$ | $\cdot 49$ | 82－14 | －0026 | －1191 | －0512 | － 0100 | 3，012 | 2，704 | 15，835 | 18，150 | 96 | 4，464 | 374 | $10 \cdot 9$ |
| 1684 | Ditto | Brown cl．soil ．． | Neutral．． | $1 \cdot 49$ | $8 \cdot 17$ | －007 | $\cdot 123$ | － 06 | 1.06 | $\cdot 55$ | $\cdot 37$ | 74.97 | ． 0014 | －2807 | ． 0201 | ． 0079 | 3，787 | 1，925 | 32，735 | 11，553 | 42 | 8，623 | 243 | $2 \cdot 3$ |




TABLE I.-ANALYSES OF QUEENSLAND SOILS-continued.


TABLE I.-ANALYSES OF QUEENSLAND SOILS-continued.


TABLE I．－ANALYSES ${ }_{\mathrm{j}} \mathrm{OF}$ OU QUENSLAND SOILS－continued．

|  | Locality． |  | Description ofBoils． |  | Total mlegents in thk soil，calcolatrd on boil dhigo at $100^{\circ} \mathrm{C}$ ． |  |  |  |  |  |  |  |  |  |  |  |  | Total Elements，Lit．per Acre， |  |  |  | Available Plant Food， Soluble in 1 per cent． <br> Lb．per Acre， $12^{\prime \prime}$ Deep． |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  | ${ }_{\text {Sb．e．in } \mathrm{H}}^{\text {Sp．}}$ | Mydrochlo | oric Aci |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | $\begin{aligned} & \dot{g} \\ & \stackrel{y}{B} \end{aligned}$ |  |  | $\begin{aligned} & \text { 인 } \\ & \frac{\partial}{3} \end{aligned}$ | 鲞 |  | $\dot{\text { g }}$ |  |  |  |  | 逭 |  | $\begin{aligned} & \text { 亲 } \\ & \text { むे } \end{aligned}$ | 莿 |  | 首 |  |  | 宊 | 宮 |  |
| $\begin{aligned} & 1930 \\ & 1931 \end{aligned}$ | Wide Bay－continued． |  |  | $\begin{array}{\|ll} \hline \text { Br. cl. loam } & \text {.. } \\ \text { Br. cl. loam } & \text {.. } \end{array}$ | Sl．acid．． <br> Acid | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ | \％ |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Cooran <br> Dittc |  |  |  |  | $5 \cdot 68$ | 11.61 | ． 008 | $\cdot 490$ | $\cdot 15$ | － 28 | ． 57 | ． 94 | 64－34 | ． 0075 | －0978 | ． 0416 | ． 0341 | 11，840 | 3，571 | 6，868 | 22，800 | 181 | 2，346 | 824 | 101.6 |
|  |  |  | $3 \cdot 14$ |  |  | 10.01 | ．009 | $\cdot 370$ | $\cdot 13$ | $\cdot 31$ | ． 57 | ． 95 | 66.68 | ． 0011 | －1223 | ． 0362 | ． 0269 | 9，335 | 3，395 | 7，922 | 24，046 | 28 | 3，089 | 679 | $60 \cdot 9$ |
| 1752 | $\begin{aligned} & \text { Moreton - } \\ & \begin{array}{c} \text { Beerburrum } \\ \text { Settlement } \end{array} \text { Soldiers' } \end{aligned}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Red sandy clay | Acid | 1.19 | 4.68 | ． 001 | ． 053 | ． 01 | ． 07 | ． 06 | ． 01 | 83．50 | trace | ． 0296 | ． 0116 | ． 0029 | 1，629 | 307 | 2，151 | 307 | ．． | 910 | 89 | 43.0 |
|  |  |  | Subsoil ．． | Acid | $\cdot 56$ | $5 \cdot 48$ | ． 001 | ． 023 | ． 02 | ． 04 | ． 05 | ． 01 | $77 \cdot 41$ | trace | ． 0064 | ． 0097 | ． 0028 | 719 | 626 | 1，251 | 313 | ．． | 200 | 87 | 43.0 |
| 1753 | Ditto | $\cdots$ | Red sandy clay | Acid | 1.10 | － 80 | ． 001 | ． 063 | ． 02 | ． 04 | ． 06 | ． 02 | 83.42 | trace | ． 0274 | ． 0083 | ． 0065 | 2，039 |  | 1，295 | 647 | ．． | 887 | 210 | $32 \cdot 8$ |
|  | Ditto |  | Subsoil ．． | Acid | ． 73 | 4.98 | ． 001 | ． 035 | － 01 | －03 | ． 05 | ．02 | $80 \cdot 40$ | trace | ． 0064 | ． 0157 | ． 0030 | 1，104 | 317 | 947 | 631 |  | 202 | 95 | $42 \cdot 2$ |
| 1754 | Ditto |  | R．B．sandy clay | Acid | 1．10 | 4.92 | ． 001 | ． 069 | －01 | ． 05 | －06 | ． 01 | 83－13 | trace | ． 0323 | ． 0163 | ． 0042 | 2，186 | 630 | 1，584 | 317 |  | 1，024 | 133 | $32 \cdot 8$ |
| 1755 | Ditto | ．． | Brown sandy ．． | Acid | 1.31 | 4．12 | ． 001 | ． 063 | －01 | － 06 | ． 06 | ． 01 | 86.71 | trace | ． 0539 | －0095 | ． 0063 | 2，090 | 332 | 1，991 | 332 |  | 1，788 | 209 | 38.3 |
| 1756 | Ditto |  | Brown sandy ．． | Acid | －98 | $4 \cdot 32$ | ． 001 | ． 063 | ． 01 | －21 | ． 06 | ． 04 | 86.78 | trace | －1195 | －0129 | ． 0040 | 2，039 | 330 | 6，797 | 453 |  | 3，868 | 129 | 22.0 |
| 1757 | Ditto |  | Greyish sandy．． | Acid | ． 85 | 2.46 | ． 001 | －069 | － 01 | $\cdot 13$ | ．05 | ． 04 | 93－60 | trace | ． 0444 | ． 0126 | －0057 | 2，355 | 334 | 4，438 | 1，229 |  | 1，516 | 195 | 47.7 |
| 1758 | Ditto |  | Red．cl．loam ．． | Acid | 1.75 | 9．59 | ． 001 | － 131 | ． 03 | $\cdot 25$ | ． 03 | ． 02 | 68．50 | trace | －1160 | ． 0149 | －0074 | 3，706 | 849 | 7，072 | 566 |  | 3，282 | 209 | $54 \cdot 0$ |
| 1761 | Nambour |  | Lt．－B．sandy clay | Acid | 1.92 | 4.71 | ． 009 | － 161 | －05 | －15 | $\cdot 28$ | $\cdot 17$ | $82 \cdot 15$ | 0040 | ． 0281 | ． 0109 | ． 0073 | 5，210 | 1，659 | 4，977 | 5，641 | 129 | 909 | 236 | 98.3 |
| 1762 | Ditto |  | B．sandy peat ．． | st．acid．． | ． 13.44 | 21－50 | －059 | 1．020 | －09 | $\cdot 26$ | $\cdot 42$ | －23 | $50 \cdot 64$ | －0048 | ． 0526 | －0699 | ． 0232 | 13，980 | 1，180 | 3，540 | 3，204 | 66 | 720 | 317 | 256.0 |
| 1763 | Ditto |  | B．sandy peat ．． | ．St．acid． | 7.35 | 14．17 | ． 018 | －580 | $\cdot 12$ | $\cdot 32$ | ． 53 | －33 | 63．72 | －0038 | ． 0568 | ． 0761 | － 0108 | 10，593 | 2，149 | 5，802 | 6，017 | 69 | 1，038 | 198 | 203.0 |
| 1783 | Ditto |  | Red loam ．． | Acid | 3.05 | 11．33 | －037 | －367 | $\cdot 13$ | －48 | 1.39 | ． 04 | $55 \cdot 10$ | ． 0029 | －1192 | －0271 | －0029 | 10，380 | 3，678 | 13，580 | 1，131 | 82 | 3，372 | 82 | $80 \cdot 4$ |
| 1781 | Mount Mellum |  | Brown loam | Acid | 4．14 | 10.32 | 209 | －464 | $\cdot 10$ | $\cdot 75$ | ． 87 | ． 07 | 65.00 | ． 0102 | ． 2259 | ． 0424 | －0147 | 14，140 | 3，047 | 22，850 | 2，132 | 310 | 6，882 | 448 | $53 \cdot 1$ |



## 




TABLE I.-ANALYSES OF QUEENSLAND SOILS-continued.


TABLE I.-ANALYSES OF QUEENSLAND SOILS-continued.



TABLE II.
Analyses of Banana Soils.


[^0]table iII.-ANALYSES of queensland grape musts.

|  |  | Sasox 1921-1 | -1922. |  |  |  |  |  | SEAsox | 22-1923. |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Laboratory No. | ${ }_{938}$ | ${ }^{1226}$ | 1228 | 1242 | 1277 | 1278 | 1326 | 1345 | 1404 | 1321 | 1510 | 1543 | 1605 | 1676 | 1604 |
| Vineyard or Maker | Romav | villa. | Roessler. |  |  | omavila | Basselt |  |  | Roossler. |  | Toolbura | Serisier. |  | Hensechel. |
| District | m |  | Lyra. |  |  |  |  |  |  | Stanthorpe |  |  |  |  | Toowoombs |
| Soil | Sandy 1 | loam. | $\underbrace{\text { cel }}_{\substack{\text { Granitic } \\ \text { sandy. }}}$ |  |  |  | lom. |  |  | $\underbrace{\text { a }}_{\substack{\text { Granitic } \\ \text { sandy. }}}$ |  | Sandy |  |  | $\mathrm{V}^{\text {Red }}$ |
| Rainfall $\{$ Searase Seaso | Abnormal | ily wet. | Abnormally |  |  |  | $i_{\text {in }}$ in. |  |  | Dry |  | D |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Grape Variety. | Hermitage. | banao. | and Lenoirs. | ${ }_{\text {Musad }}^{\text {Reat. }}$ | Hermitage. | Cluster. | Solierino. | ${ }_{\text {klack }}^{\text {Musat. }}$ | Matar | ${ }_{\text {chack }}^{\text {claster. }}$ |  | ${ }_{\text {Shiraz a and }}^{\substack{\text { Mataro. }}}$ | Mataro. | Reisling. | Leno |
| Sample taken on | 6-2-22. | 27-2-22. | 28-2-22. | 23-1-23. | 29-1-23. | 29-1-23. | 6-2-23. | 8-2-23. | 15-2-23. | 6-2-23. | 26-2-23. | 3-3-23. | 7-3-23. | 14-3-23. | ${ }^{6-3-23 .}$ |
| Analysis- | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% | \% |
| specific gravity at $15.55^{\circ} \mathrm{C}$. . | ${ }^{1.085}$ | 1.106 | 1.068 | ${ }^{1.1525}$ | 1.1189 | ${ }^{1} \cdot 11109$ | 1.1130 | ${ }^{1} 1020$ | ${ }^{1} 1170$ | ${ }^{1} 11115$ | 1.1110 | 1.1073 | ${ }^{1.0940}$ | 1.110 | 1.0910 |
| Total acidity as tartaric acid | .59 | 42 | 1.17 | . 58 | 48 | -47 | . 51 | . 34 | . 56 | -48 | -49 | . 51 | . 59 | . 38 | . 78 |
| Volatile acidity as aectic acid | . 03 | ${ }^{02}$ | . 02 | . 012 | . 012 | -007 | . 017 | -014 | .007 | . 010 | . 014 | . 014 | ${ }^{-29}$ | .022 | . 01 |
| Altohol | 1.20 | Nil | ${ }^{66}$ | . 70 | 3.00 | < 01 | .75 | . 15 | -40 | <.01 | -50 | . 60 | 1.05 | ${ }_{60}$ | . 30 |
| Total solids or extract | 19.90 | 21.70 | 14:50 | 37.54 | 29.95 | 26.26 | 27.26 | 24.83 | 28.27 | 26.97 | 26.64 | 24.78 | 22.55 | 26:20 | 20.06 |
| Ash, total | . 50 | ${ }^{73}$ | . 30 | .58 | . 75 | . 54 | . 61 | . 52 | . 70 | . 58 | . 54 | 43 | 42 | . 56 | $\cdot 31$ |
| Alkalinity of ash, total .. ${ }^{\text {a }}$ ( | 42 | 57 | ${ }^{46}$ | 68.0 | 78.5 | ${ }^{61.8}$ | ${ }^{63.0}$ | ${ }^{61.5}$ | 85.5 | ${ }^{740}$ | 57.5 | 53.5 | 52.0 | 62.0 | 49.0 |
| Alkalinity of ash, water soluble $\}$ | 31 | 33.5 | 27.5 | $46 \cdot 5$ | $56 \cdot 5$ | 47.8 | 52.5 | 53.5 | 70.0 | 61.5 | 48.5 | 45.5 | ${ }^{44} 3$ | 55.5 . | 39.0 |
| Alkalinity of ash, insoluble | 11 | 23.5 | 18.5 | 21.5 | 22.0 | ${ }^{14.0}$ | 10.5 | 8.0 | 15.5 | 12.5 | ${ }^{9.0}$ | 8.0 | ${ }^{7} 7$ | 6.5 | 10.0 |
| grars $\{$ Cane sugar | Nil | Nil | Nil | Nil | Nill | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| Sugas \{ Grape sugar | 17.2 | 20.0 | 13:8 | 30.8 | 24.3 | 23.0 | 21.8 | 20.7 | 24*3 | 21.2 | $22 \cdot 9$ | ${ }^{23 \cdot 4}$ | 21.2 | 22.9 | 19.1 |
| Cream of tartar .. | .55 | .55 | . 52 | . 67 | . 60 | .59 | . 64 | ${ }^{43}$ | . 70 | ${ }^{61}$ | -62 | ${ }^{64}$ | 74 | 47 | 73 |
| Proteins | determined | ${ }_{\text {determined }}^{\text {Not }}$ | ${ }_{\text {detersmined }}^{\text {Not }}$ | -24 | -24 | . 39 | -46 | . 39 | . 39 | . 37 | . 33 | $\cdot 31$ | -23 | -31 | . 32 |

## REPORT OF SEEDS, FERTILISERS, AND STOCK FOODS INVESTIGATION BRANCH.

I have the honour to present my report on the work of the Seeds. Fertilisers, and Stock Foods Investigation Branch for the year ended 30th June, 1923.

In January last the Fertilisers Act was added to our activities ; my remarks on fertilisers therefore relate to the first six months of the present fertiliser year, which ends on the 31st December. It is also to be noted that the year under Stock Foods Act is from January to December, which makes it difficult to get the whole period in clear review. To some extent this will be got over by the publication in the February number of the Queensland Agricultural Journal of a joint article by the Agricultural Chemist and myself dealing with both fertilisers and stock foods.

## Seeds.

The samples of seeds examined can be divided into four groups-
(1) Official samples taken, for purposes of the Pure Seeds Acts, from vendors in different parts of the State, by officers of this branch

1,332
(2) Official samples taken at Brisbane by officers of this branch under the Quarantine and Commerce Acts
(3) Samples sent in by vendors .. .. 332
(4) Samples sent in by farmers or other buyers 156

2,451
In addition to the 488 samples from vendors, farmers, or others buyers, 97 were received either without the sender's name or address or too small for any determination to be made.

Articles on the Pure Seeds Acts have appeared from time to time in the Queensland Agricultural Journal, and reprints in leaflet form, giving full particulars as to sampling, weight required, invoices, \&c., have been freely issued to all correspondents. No charge is made to farmers sending in samples of the seeds that they have purchased for their own sowing. When the information is required for commercial purposes a nominal fee of 2 s .6 d . is made. In the case of Rhodes grass and some other seeds, the actual cost of a purity analysis and germination test is probably nearer 32 s .6 d . than 2 s .6 d ., the fee charged.

Information regarding samples received from farmers or vendors is sent in the form of a report or certificate which gives the percentages of purity and germination, also the percentage of the various foreign ingredients that the sample contains.
"Purity" means analytical purity, which is the percentage by weight of pure seed that the sample contains, and the term "Pure seeds".
means the seeds of which the sample purports to consist after the impurities or foreign ingredients, as defined below, have been eliminated; but in the case of those species, kinds, or strains of plants the seeds of which cannot be distinguished from one another by expert examination, the use of the term "Purity" does not imply that the seed is genuine or true to name.
"Germination" means the percentage, calculated by number, of pure seeds as defined above which germinate during a germination test.
"Foreign ingredients" or impurities include inert matter, seeds of weeds, or seeds of any plant other than the seed in question, or dead, diseased, insect-infested, non-germinable, or hard seeds.
"Inert matter" includes broken seeds less in size than one-half of a complete seed, or chaff, dust, stones, or any material other than seeds.
"Hard seeds" means any seeds whose seedcoats are so impervious to water as to delay germination.

Form of Certificate.
A certificate of analysis gives the following particulars:-


* The principal seeds are [the names of the weed-seeds, which the sample contains, also the approximate number in one pound].

Unfortunately the vast majority of farmers and merchants cannot identify even the onost common weed-seeds, some of which, such as Datura, are so poisonous that if the farmer recognised the plants on their first appearance he would postpone all other work until they were destroyed, or as an alternative cut the weeds down before they produced seed. Apart from the fact that weed-seeds easily shatter out before or during the harvesting of the crop, it is well to recollect that they do not germinate with the regularity of crop-seeds, and some may remain dormant in the ground for several years. Cases are on record of farmers sending lucerne and other seeds to merchants for cleaning, on the understanding that they should get back the cleanings for their own sowing. A large quantity of these cleanings would, even if fed to stock, undoubtedly pass undigested throngh the animals. and find suitable and well-manured
surroundings for producing a further growth of weeds which rob the soil of both moisture and plant food, and occupy space that should be producing a paying crop. For the information of both producers and merchants, Table I. has been compiled; in this table will be found a list of the weed-seeds, weeds, and poisonous plants found in commercial samples of seeds and stock foods during 1922-23. The scientific and common names appear in alphabetical order, followed by notes giving their deleterious qualities, if any, and the kinds of seeds or stock foods in which they have been found. In all cases where the weed or seed has been present in more than 20 per cent. of the samples examined it is classed as of frequent occurrence.

For the information of both farmers and merchants it is suggested that Table I. subsequently appear in the Queensland Agriculteral Journal, and that reprints in leaflet form be made available for free distribution.

Tables II. and III. give the analytical purity and germination of the principal seeds examined under the Pure Seeds Acts. On reference to the first item on Table II. it will be observed that 53 samples of Cape barley were examined; the samples in question had an average analytical purity of 98.5 per cent. and contained the following weed-seeds in their order of occurrence:Avena fatua, Bromus maximus, and Lolium. temulentum.

Table III. gives the germination of the same samples, 52 of which had an average germination of 95 per cent., and one a germination of 88 per cent. A key to the scientific names appearing on Table II. is given on Table I., from which it will be noted that Avena fatua is the Wild Oat, Bromus maximus Giant Brome Grass, wand Lolium temulentum Darnel or Drake, and under the Remarks column the latter appears as "Suspected poisonous."

Table IV. gives the germinating capacity and analytical purity of the principal seeds offered for sale in pictorial packets. With a few exceptions the whole of these seeds are imported. On reference to Table $V$. a comparison can be made of the respective germinations of the seeds freshly imported for sale to market gardeners and those put up for retail trade. Under the Pure Seeds Acts the vendor must mark all madeup packets with the year in which the seeds were grown. If the buyer obtains his supplies from retailers handling seeds from reputable firms and sees that those purchased are of recent growth he will have little cause for complaint.

The examination of the 187 samples mentioned on Table IV. resulted in the destruction, in the presence of an officer, of 1,711 pictorial and other made-up packets.

Table V. gives the germinating capacity and analytical purity of the principal seeds imported into Queensland at the port of Brisbane, also the different countries from which they were
imported. On reference to this table it will be noticed that several lots of beet, cabbage, and carrot were of poor germination; in such cases the goods are detained at port of entry. A considerable quantity of vegetable seeds is imported by parcels post; those arriving in commercial quantities from reputable seed-growers are up to the usual standards for the respective seeds. This does not hold good as regards various small lots purchased by private buyers, many of whom obtain supplies from sources other than the usual trade channels, with the result that their purchases frequently contain a large amount of weed-seeds, necessitating the cleaning of the goods before release.

All seeds from overseas should be rigidly examined at the port of entry; in particular, private parcels which are likely to contain cotton and introduce both the pink boll-worm and bollweevil. In my opinion the Quarantine and Commerce Act should if possible be tightened up to make such importations impossible.

## Oats.

Attention is again directed to the fact that farmers seldom ask for seed oats, but the purchase from the vendor offering the lowest priced samples. If the oats are sold as seed for sowing they must not contain a larger proportion or amount of foreign ingredients than is prescribed, and the vendor is required to give the purchaser an invoice to this effect. In other words, the vendor cannot truthfully give an invoice under the Pure Seeds Act unless he is aware of the purity and germination of the seeds passing at the sale. Should the buyer neglect to get an invoice and rely on his own judgment of the sample, he will in many instances purchase oats of very indifferent germination and containing a large amount of weed-seeds.

During the past season a number of farmers alleged that oats purchased by them had failed to germinate. Unfortunately most of the complainants did not send a sample of the seed or give the name and address of the vendor. In only three instances was sufficient information given to enable the matter to be investigated, and in each case it was found that the purchaser had not mentioned the word "seed" when buying. Their statements, however, that the oats would not grow is incorrect, the cause of failure being (1) lack of maturity, (2) insufficient rainfall to produce conditions suitable for germination.

Had the purchasers forwarded the samples to this branch before sowing they would have been informed that the oats in question were lacking in maturity and therefore unsuitable for sowing in their then condition. One of the complainants made some endeavours to test the oats and found that they failed to germinate. This did not prove that the oats could not grow, but it gave him sufficient information from which to conclude that the sample he had sown was unsuitable for the purpose.

All laboratory tests of oats are made at the optimum temperature, which is from 18 to 20 deg. C. This is considerably lower than that existing in Queensland during March. Apart from the question of temperature the condition of maturity is an important factor, and it is just possible that a sample which failed to germinate in soil would be found on proper examination not to be dead and non-germinable. The following is a typical instance of a sample which the buyer stated did not grow. At the temperature above referred to, 67 per cent. of the oats germinated in twelve days. The sample, after treatment to induce artificial maturity, germinated 84 per cent. in seven days, which germination would have been exceeded had the oats been stored in a dry place easily accessible to light and air. From repeated experiments it appears that some freshly harvested seeds, especially oats, Rhodes grass, paspalum, prairie grass, and millets are frequently of low germination. The enzyme appearing to be feeble or completely inactive, it, however, develops during dry storage and by exposure to light and air. The same samples kept in airtight containers take much longer to reach their maximum germinating power. It therefore follows that both merchants and farmers would be well advised to ascertain the purity and germination of all seeds that they buy for resale or purchase for their own sowing.

## Electrification of Seeds.

From time to time a series of paragraphs have appeared in the Press on the increased crops which it is alleged are produced by the use of so-called electrified seeds. Experiments conducted in other parts of the world are on the whole of a negative character, and in any instances where an increased crop has resulted it yet remains to be seen if the increase can be attributed to electricity or to other factors such as the soaking in a solution, drying at a suitable temperature, or treating by soaking in water and subsequent drying at a wide range of temperatures.

In the ordinary course of laboratory work, in the testing of seeds for germination, many methods that can be best described as "trigger pullers' ' are used.

From various reports on electrification it appears that several experimentalists have hit on some of the known trigger pullers that occasionally may be of use, but cannot always be relied on. The question to be solved is-Will the treatment of commercial seeds by electricity or other methods give an increased crop and pay for the cost of treatment? In order to ascertain if any increased production is possible under Queensland conditions, a series of preliminary experiments were made in April, and thirty-five samples of treated seeds handed to the Director of Agriculture on the 9th May for field tests. The treated samples representing wheat, barley,
oats, and tomato. If some of the methods of treatment are satisfactory the subsequent crop results should vary considerably, and any showing a marked increase in yield will serve as a basis for future experiments. In the meantime it is well to keep an open mind on the subject.

## Fertilisers.

Under the Fertilisers Acts, every person must obtain a license as a dealer before offering any fertiliser for sale. Up to date ninety-five dealers have obtained licenses for the year ending 31st December, 1923, which licenses may be renewed annually on payment of the prescribed fee of one guinea.

Every licensed dealer is required to send in each year a registration form, setting out the specified ingredients of each brand of fertiliser sold by him. To date 513 fertilisers have been registered.

Farmers and other buyers would do well to note that every licensed dealer must give the buyer an invoice certificate, and affix to every package a plainly printed label, each of which is required to set out the weight, name of fertiliser, also the chemical analysis stating the percentage of nitrogen, phosphoric acid, and potash, and the forms in which they respectively occur. In the case of bonedust, bonemeals, and meatworks fertiliser, other than dried blood, the percentage of fine and coarse material should be declared.

On all invoice certificates and labels the amounts of fertilising ingredients have to be stated in a uniform manner, as the old expres-sions-like bone phosphate, tricalcic phosphate, ammonia, ammonium sulphate, potassium sulphate, \&c.-are liable to mislead the farmer. The Act provides for the statement of the valuable fertilising ingredients in percentage amounts of nitrogen ( N ), potash $\left(\mathrm{K}_{2} \mathrm{O}\right)$, phosphoric acid ( $\mathrm{P}_{2} \mathrm{O}_{5}$ ).

In the case of agricultural lime the percentage of coarse material and fine material must be stated, together with the percentage of lime as lime carbonate $\left(\mathrm{CaCO}_{3}\right)$, and in the case of. gypsum the percentage of lime sulphate $\left(\mathrm{CaSO}_{4}\right)$. With burnt lime or quick lime the percentage of calcium oxide ( CaO ) must be declared.

As the printed label is an important matter to the farmer, specimens of labels for lime and a mixed fertiliser are given :-

## Agricultural Lime.

180 lb . net.

| Lime carbonate | .. | .. | .. 95 per cent. |
| :---: | :---: | :---: | :---: |
| Fine material | .. | $\ldots$ | 50 per cent. |
| Coarse material | .. | .. | 50 per cent. |

A. SELLER, Summertown.

## EASTERBY'S MIXTURE.

180 lb. net.

Nitrozen
7.7 per cent. as ammonium sulpha'e

Phosphoric acid $7 \cdot 0$ per cent. as water soluble phosphoric ac d.
Putash ...
$7 \cdot 7$ per cent. as potassium sulphate.

The monetary manurial value per ton has been fixed for some time under "The Profiteering Prevention Act of 1920." The unit values are the cost price of 1 per centum of the various fertilising constituents per ton, or the actual cost value of every 22.4 lb . of such constituent. The present unit values were fixed by prices notifications No. 386 and 396, which appeared in the Government Gazette of 7th 7th October, 1922, and 4th November, 1922.

For the information of both buyers and sellers, an article by the Agricultural Chemist and myself, giving the unit values and other information, was published in the March issue of the $Q . A$. Journal, and reprinted in leaflet form. A copy has since been sent to every licensed dealer and to such farmers and other buyers as have written for information regarding fertilisers.

As the calculation of the cost of fertilisers from unit values appears to be little understood by licensed dealers, and less by the general run of buyers, a leaflet has been prepared setting out the value per ton of fertilising constituents, from $\cdot 1$ per cent. to 20 per cent. at 1s. 3 d . to 25s. per unit.

My attention has recently been directed to quotations offering fertilisers at a less unit value than the maximum prescribed, also to several printed lists in which the price quoted per ton appears to be in excess of the maximum price fixed under the prices notifications of October and November, 1922. Consideration might therefore well be given to such amendment or alteration as may be necessary to bring the prices in line with present values.

The various lime deposits or works are being inspected, and a report will be prepared as soon as full particulars are available. In the meantime it is suggested that consideration be given to the exemption from labelling of lime earth or earthy lime forwarded from a lime deposit in full railway trucks direct to users, provided the invoice certificate setting out the net railway weight and chemical analysis be forwarded to the buyer by the dealer in accordance with section 6 of the Act.

For the purpose of ascertaining whether the provisions of the Act are being complied with, an officer of this branch has obtained samples from dealers in both Northern and Southern Queens-
land. The actual number of samples so obtained are as follows :-

| Samples of fertilisers | $\ldots$ | 91 |  |
| :--- | :--- | :--- | :--- |
| Samples of lime | . | .. | 51 | 142

In addition to the 142 samples above neferred to, seven samples were sent in by licensed dealers. During the same period several complaints regarding price were received from farmers or other buyers; none, however, sent any samples for analysis.

The Fertilisers Acts do not prescribe standards for fertilisers. Therefore the value of any particular brand or kind can only be calculated on the fertilising constituents guaranteed by the vendor to be present. In particular it is to be noted that, although meatworks and fertilisers of a like nature vary from time to time, they are still sold under the same brand or trade mark, and their actual value per ton may be up or down in accordance with the percentage of nitrogen, phosphoric acid, and potash that the goods contain.

During the next few inonths official samples of fertilisers will be taken from the different licensed dealers, for purposes of analysis by the Agricultural Chemist, the results will be published in the Queenstand Agricultural Journal.

## Stock Foods.

The samples examined under the Stock Foods Act can be divided into four groups :-
(1) Samples sent in by wholesale sellers under section 3 of the Act .. .. 161
(2) Official samples taken by officers of this branch from wholesale and retail sellers in different parts of the State 81
(3) Samples sent in by wholesale sellers for analysis
(4) Samples sent in by farmers and other buyers .. .. .. .. 28 $\overline{284}$
Under the Act, the label on all goods required to be labelled must among other things set out the number of net pounds in the package, and the invoice of any stock food must give the gross weight of such food. Both buyers and sellers would do well to note that the use of words indicating a measure do not comply with the Act. My attention has also been directed to the frequent misuse of "Ton," the buyer's idea being a ton of 20 cwt . each of 112 lb ., and the seller's a ton of $2,000 \mathrm{lb}$. Both the words "ton" and "bushel" are always open to misunderstanding. In other countries it has been found necessary to pass legislation making the price quoted refer to a net weight of 112 lb . This not only prevents the use of the short ton, but does away with the misleading "bushel," which may or may not be the Imperial bushel of 64 pints, containing a variable weight depending on the material. Besides the net weight contained in the package, the label under the Stock Foods

Act is required to state the chemical analysis in the following manner:-

> Minimum percentage of crude protein.
> Minimum percentage of crude fat.
> Maximum percentage of črude fibre.

Unfortunately buyers and sellers pay little or no attention to these figures, otherwise bran and pollard would be sold on their nutritive values, not at current market rates irrespective of quality. From Tables VI. and VII. it will be observed that the percentage of crude protein contained in bran and pollard may be as high as 21 to 20.6 per cent., yet samples have been sold at the same price per cwt. with analyses of 13.5 and 10.6 per cent. The so-called pollard, with a crude protein content of 10.6 per cent. only, had the appearance of inferior flour, yet both buyers and sellers appreciated the sample for its whitish colour, overlooking the important fact of true pollard being of better feed value than even good flour.

For the better understanding of the tables, it should be noted that crude protein includes all the nitrogenous compounds contained in the stock food-is essentially the flesh-builder and the most valuable and important of all the nutri-ents-without it no animal could live and thrive.

Crude fat or oil is the most valuable of the non-nitrogenous constituents, and is used by the animal to produce vital heat, which is the source of energy or power to do work. Crude fibre includes the woody parts or structural material of the plant. It is useful in giving bulk to a ration, but diminishes the digestibility, hence its lower nutritive value. It therefore follows that the amount of fibre should within reasonable limits be low, and the protein and fat high. As a rough-and-ready method of arriving at values in bran and pollard, the buyer has only to add the protein to the fat, and deduct the amount of fibre when in excess of the true average given in the summary tables.

Tables VI., VII., VIII., and IX. give the vendor's guarantee, and the subsequent analysis of the sample by the Agricultural Chemist. In the case of bran and pollard a summary of the chemical analysis is given. Time has not permitted of much microscopical work, but the wheat by-products examined have shown a trace of barley and oats, as well as chaff and other extraneous matter. Some of them also contained the weed-seeds enumerated in the respective tables, which give sufficient indications as to the valuable work that could be undertaken when the conveniences of a suitable laboratory and up-to-date appliances are available.

## Hay or Straw.

Several complaints have been received from produce merchants regarding hay and straw chaff. Producers should remember that all packages of straw chaff or mixed chaff must be distinctly stencilled or marked by the person in possession of the same, in letters not less than

2 inches in length. In the case of straw chaff, with the letters S.C.; in the case of mixed chaff, being a mixture of hay chaff and straw chaft in any proportion, with the letters M.S.

The amount of moisture that may be contained in any hay or straw should not exceed 12 per cent. Instances are on record of so-called lucerne hay with a moisture content of over 19 per cent., and farmers would do well to note that any substance, of whatever character, added for the purpose of fraudulently increasing the weight of a stock food is a contravention of the Act, and renders the person or persons responsible for such contravention liable to prosecution.

## Poisonous Seeds and Weeds in Chaff.

During the year attention has again been directed to the presence of Datura seeds in chaff. A typical instance of this deleterious matter necurred last April, when the Chief Inspector of Stock forwarded for examination several samples of chaff, which it was alleged had caused trouble among a number of horses owned by a large Brisbane contractor. On examination one of the samples was found to contain a trace of Datura stramonium (thorn apple), a highly poisonous plant. Official samples were therefore taken from a quantity of about 120 bags, which contained just over 1 per cent. by weight of this prohibited weed, the seeds of which are especially poisonous.

In another case the loss of a horse was reported by the owner, who brought a sample of chaff containing various impurities, in particular a Papaver capsule. On examination of the bulk to which this sample referred, it was found to contain a quantity of Paparer hybridium (rough poppy) seeds and empty capsules.

It is well to note that the chaff containing the poppy in question came from one of the Southern States, and is an unusual occurrence. Chaff of Queensland produce far too frequently contains seeds and parts of the Datura plant, which cannot get into the chaff or hay without the farmer's knowledge. It can be rightly urged that the produce merchant should know such poisonoas plants as thorn apple. Unfortunately merchants are not well up in these matters. No excuse, however, can be made for the producer, who can see the weeds among his crop; he may not know the name of the plant, or even bother to find out, but he does know it is not lucerne and therefore should not be in chaff supposed to be cut from the hay of a cultivated crop.

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. But it remains for the actual producer to take Shakespeare's advice and
"Go root away the noisome weeds that without profit suck the soil's fertility."

F'RED. F. COLEMAN
TABLE 1.
Weed Seeds, Weeds, and Poisonous Plants Found in Commercial Samples of Seeds and Stock Foods Examined during 1922 -1923.

TABLE I.-continued.
Weed Seeds, Weeds, and Poisonous Plants Found in Commercial Samples of Seeds and Stock Foods Examined during 1922-1923-continued

Weed Seeds, Weeds, and Poisonous Plants Found in Commercial Samples of Seeds and Stock Foods Examined during 1922-1923-continued.

TABLE I.-continued.
Weed Seed, Weeds, and Poisonous Plants Found in Commerclal Samples of Seeds and Stock Foods Examined during 1922-1923-continued.

TABLE I.-continued.
Weed Seeds, Weeds, and Poisonous Plants Found in Commerciat Samples of Seeds and Stock Foods Examined during 1922 -1923-continued.


TABLE I.-continued.


| Scientific and Common Names. |  |  |  | Remarks. | Of Frequent Occurrence in the Undermentioned Seeds. | Occasionally Found in the Undermentioned Seeds. | Of Frequent Occurrence in the Undermentioned Stock Foods. | Occasionally Found in the Undermentioned Stock Foods. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Small-flowere 1 Mallow .. .. See Malva parviflora .. .. |  |  |  | Seeds may cause mechanical injury <br> Seeds may cause machanical injury |  |  |  |  |
| Soft Brome Grass <br> Sow Thistle | $\cdots$ | $\ldots$ | See Bromus mollis See Sonchus oleraceus |  |  |  |  |  |
| Spear Grass .. | $\cdots$ | $\ldots$ | See Aristida spp. .. .. |  |  |  |  |  |
| Spear Grass |  |  | See Stipa spp. .. .. .. |  |  |  |  |  |
| Spear Thistle <br> Spiny Emex <br> Stagger Weed <br> Star Burr <br> Star Grass <br> Star Thistle <br> Stinking Goosefoot <br> Stinking Rodger <br> Stone Seed <br> Summer Grass | . | .. | See Cnicus lanceolatus <br> See Emex australis <br> See Stachys arvensis <br> -See Acanthospermum hispidum <br> See Chloris divaricata <br> See Centaurea spp. <br> See Chenopodium ambrosioides <br> See Tagetes glandulifera <br> See Lithospermum arvense <br> See Panicum sanguinale |  |  |  |  |  |
|  | $\because$ | ... |  | Suspected poisonous |  |  |  |  |
|  |  | . |  |  |  |  |  |  |
|  | . | . |  |  |  |  |  |  |
|  | $\because$ | :. |  | Imparts a bad flavour to butter |  |  |  |  |
|  | $\cdots$ | $\cdots$ |  | Imparts a bad flavour to butter |  |  |  |  |
|  | $\cdots$ |  |  |  |  |  |  |  |
| Tagetes glandulifera <br> Tetragonia expansa <br> Tragus racemosus <br> Tribulus terrestris <br> Tricholena Teneriffe <br> Triumfetta rhomboidea <br> Tassel Grass <br> Thorn Apple <br> Thistle | $\cdots$ | . | Stinking Rodger <br> New Zealand Spinach <br> Small Burr Grass <br> Bull's Head <br> Red Natal Grass <br> Chinese Burr <br> See Chloris distichophylla <br> See Datura spp. <br> See Carthamus, Centaurea, Cnicus, <br> Silybum, and Sonchus spp. <br> See Malvastrum tricuspidatum | Imparts a bad flavour to butter |  |  | .. | Chaff |
|  | $\cdots$ |  |  |  | .. | Cowpeas, White Panicum |  | chaff |
|  | $\because$ |  |  | . |  | Barley, Japanese Millet |  | Chaff |
|  | .. |  |  | - | Rhodes Grass | Paspalum | .. | Chaff |
|  |  |  |  | . |  |  |  |  |
|  |  |  |  | Poisonous |  |  |  |  |
|  |  |  |  | - |  |  |  |  |
| Three-pointed False Mallow |  |  |  |  | , |  |  |  |
| Urtica spp. .. | .. | . | Nettles |  |  |  |  | Chaff |
| $V$ erbena bonariensis | . | .. | Purpletop |  | Couch Grass, White Panicum, Paspalum, | Lucerne, Foxtail Millet (Setaria), Sudan | .. | Chaff |
| Verbena officinalis Vicia sp. | $\ldots$ | .. | Common Vervain Wild Tares |  | Rhodes Grass <br> Oate | Grass <br> Barley, Lucerne .. |  |  |
| $\underset{\text { Variegated Thistle }}{ }$ | $\cdots$ | $\ldots$ | See Silybum Marianum - |  |  |  |  |  |
| Virgin Mary's Thistle | $\cdots$ | $\cdots$ | See Silybum Marianum ${ }^{\text {S }}$-. |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Wasteplaces Cress | . | . | See Lepidium ruderale .. .. | Imparts a bad flavour to butter |  |  |  |  |
| Water couch ${ }^{\text {Wild Carrot }}$. | $\ldots$ | .. | See Paspalum distichum ... | Imparts a bad flavour to butter |  |  |  |  |
| Wild Celery Wild Cotton | $\cdots$ | . | See Apium sp. ${ }_{\text {See Gomphocarpus physocarpus }}{ }^{\text {S }}$ | Imparts a bad flavour to butter |  |  |  |  |
| Wild Oats $\quad$ O. | $\cdots$ | . | See Avena fatua . ${ }^{\text {S }}$. ${ }^{\text {S }}$.. |  |  |  |  |  |
| Wild Radish .. | $\because$ | $\because$ | See Raphanus Raphanistrum .. | Imparts a bad flavour to butter |  |  |  |  |
| Wild Tares $\quad$. | $\ldots$ | 亿 | See Vicia sp. |  |  |  |  |  |
| Wire Grass Wireweed |  | $\because$ | See Eleusine indica See Polygonum aviculare $\quad .$. |  |  |  |  |  |
| Xanthium spinosum Xanthium stumarium | $\cdots$ | $\cdots$ | Bathurst Burr  <br> Noogoora Burr .. ... .. | $\because$ | Japanese Millet, Sudan Grass .. | Lucerne, Foxtail Millet (Setaria) | $\cdots$ | Mixed Bird Seed, Chaff Chaff |
| Yellow-weed .. |  |  | See Galinsoga parviflora. . |  |  |  |  |  |


TABLE III.

TABLE IV.
Germinating Capacity and Analytical Purity of the Princtpal Seeds Offered for Sale in Pictorial Packets during 1922 - 1923.


|  |  |
| :---: | :---: |
|  |  <br>  |
|  | ๑๐: : : : : : ¢ ¢ ¢ : : : : : : : : : : : |
| 'sodurs jo daqunn | : : : : : : - : |
|  |  |
| 'sәdurs јо дәqumn | $\rightarrow$ : : : : $\quad$ ¢ : : : : : : : : : |
|  |  |
| 'soldurs jo daquin N |  |
|  |  |
| 'sodurs <br> јо $\quad$ дәquin |  |
|  |  |
| 'soddurss јо . $12 q u \mathrm{~m}_{\mathrm{N}}$ |  |
|  |  <br>  |
| 'soddurs <br> до $\operatorname{raquan}_{\mathrm{N}}$ |  |
|  |  <br>  |
| 'soŋdurs <br> jo dequn $_{\mathrm{N}}$ |  |
|  |  |
|  |  |

'Sasodund oniamar qoa ariaodmi sang

| Kind of Seed. | Imported From |  | Number of Sacks Imported. |  |
| :---: | :---: | :---: | :---: | :---: |
| Linseed | New Zealand, India | .. .. | 5107 |  |
| Hemp | Japan | .. . | 137 |  |
| Rape .. .. | Japan, New Zealand | .. . | 30 |  |
| Millet, White French. . | Japan | .. .. | 84 |  |
| Millet, Red French .. | Japan | .. .. | 28 |  |
| Miscellaneous . . . | U.S.A., South Africa, Holland | .. .. | 5 |  |

TABLE VI.-STOCK FOODS, 1922-1923.
Bran, a By-product of Milling Wheat.


SUmmary of Analyses.
7

|  |  |  |  | Moisture. | Crude <br> Protein. | Crude Fat. | Crude Fibre. | Crude Ash. |
| :--- | :--- | :--- | :--- | :--- | :---: | :---: | :---: | :---: | :---: |

## MICROSCOPICAL FINDINGS.

Forty-nine samples of bran were examined; with few exceptions they contained a trace of bari y and oats. None were entirely free from bits of chaff or other extraneous matter. The principal weed seeds found were :-

Avena fatua, Wild Oats.
Brassica sinapistrum, Charlock.
Centaurea melitensis, Star Thistle. Maltese Cockspur.
Centaurea calcitrapa, True Star Thistle.
Festuca myurus, Rat's-tail Fescue.
Lepidium ruderale, Wasteplaces Cress.
Lithospermum arvense, Corn Gromwell, Stone Seed.
Lolium temulentum, Darnel, Drake.
Phalaris minor, Small Canary Grass.

Polygonum aviculare, Wireweed.
Polygonum convolvulus, Black Bindweed
Polygonum Persicaria, Ladies' Thumb.
Rumex acetosella, Sheep's Sorrel.
Rumex Brownii, Native Dock.
Rumex crispus, Curled Dock.
Sisymbrium orientale, Oriental Rocket.
Sonchus oleraceus, Sow Thistle.

TABLE VII.-STOCK FOODS, 1922-1923.
Pollard, a By-product of Milling Wheat.


Summary of Analyses.


## MICROSCOPICAL FINDINGS.

Fifty-one samples of pollard were examined; with few exceptions they contained a trace of extraneous matter as well as barley and oats. The principal weed seeds found were:-

Avena fatua, Wild Oats.
Sisymbrium orientale, Oriental Rocket.
Chenopodium album, Goosefoot, Fat Hen, Lamb's Quarters.

TABLE VIII.-STOCK FOODS, 1922-1923.

| Kind of Stock Food. | Manufactured in- | Vendor's Guarantee. |  |  | Found on |  | SIS BY CHEMIST | Agrioultural |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Minimum Crude Protein. | $\begin{gathered} \text { Minimum } \\ \text { Crude } \\ \text { Fat. } \end{gathered}$ | $\begin{gathered} \text { Maximum } \\ \text { Crude } \\ \text { Fibre. } \end{gathered}$ | Mo'sture. | Crude Protein. | Crude Fat. | Crude Fibre. | $\begin{aligned} & \text { Crude } \\ & \text { Ash. } \end{aligned}$ |
|  |  | \% | \% | \% | \% | \% | \% | \% | \% |
| Dried Dito | Queensland | 73 |  |  | 11.9 | $76 \cdot 7$ |  |  |  |
| Ditto | Queensland | 75.0 | $1 \cdot 5$ |  | 12.8 | $76 \cdot 7$ | $\cdot 2$ |  | 6. 5 |
| Bone Meals | Queensland | 20.0 | $3 \cdot 0$ |  | 19.3 | $72 \cdot 2$ 21.0 | $1 \cdot 6$ | . | $63 \cdot 9$. |
| Ditto | New South Wales | $25 \cdot 0$ | . 5 |  | $6 \cdot 4$ | $25 \cdot 6$ | . 4 |  | $65 \cdot 8$ |
| Ditto | New South Wales | $25 \cdot 0$ | . 5 | $\ldots$ | $6 \cdot 1$ | $26 \cdot 6$ | . 7 |  | $62 \cdot 9$ |
| Ditto | Queensland .. | 21.25 |  | . | $5 \cdot 6$ | 22.7 | $4 \cdot 2$ |  | $57 \cdot 7$ |
| Witto | Queensland | $20 \cdot 0$ | $3 \cdot 0$ |  | 5.81 | 20.75 | $4 \cdot 0$ |  | $63 \cdot 84$ |
| Wheat Meal | Queensland | $14 \cdot 3$ | 1.4 | $4 \cdot 2$ | $6 \cdot 8$ | 14.6 | 1.6 | $4 \cdot 0$ | $2 \cdot 3$ |
| Ditto | Queensland | $14 \cdot 3$ | 1.4 | $4 \cdot 2$ | 10.3 | 12.4 | 1.9 | $3 \cdot 7$ | 1.4 |
| Ditto | Queensland . | $14 \cdot 4$ | 1.95 | $3 \cdot 25$ | $9 \cdot 9$ | $14 \cdot 4$ | 1.9 | $3 \cdot 6$ | 1.9 |
| Barley Meal | Queensland | 12.5 | $2 \cdot 4$ | 8.35 | 8.8 | $11 \cdot 1$ | 1.0 | $7 \cdot 7$ | $4 \cdot 8$ |
|  | Queensland | 12.5 | $2 \cdot 4$ | $8 \cdot 35$ | $10 \cdot 1$ | $10 \cdot 3$ | $1 \cdot 4$ | $7 \cdot 9$ | $2 \cdot 4$ |
| Rice Meal Crushed Linseed | Queensland | $12 \cdot 0$ | $16 \cdot 0$ | 10.0 | $7 \cdot 5$ | $12 \cdot 8$ | 12.7 | $4 \cdot 6$ | $8 \cdot 0$ |
| Crushed Linseed. . | Queensland | $19 \cdot 0$ | $36 \cdot 0$ | 11.5 | $5 \cdot 8$ | $20 \cdot 6$ | $34 \cdot 2$ | $10 \cdot 6$ | $3 \cdot 0$ |
| Linseed Oil Meal. | Queensland .. | $19 \cdot 0$ | $32 \cdot 0$ | 15.0 | $5 \cdot 7$ | 18.7 | 39.6 | $12 \cdot 4$ | $3 \cdot 4$ |
| Ditto . | New South Wales | 26.0 | 6.0 9.0 | 11.0 13.0 | 8.81 | 31.08 | 9.02 | 11.93 | $4 \cdot 58$ |
| Ditto | New South Wales | 27.0 | $9 \cdot 0$ | $13 \cdot 0$ | $8 \cdot 68$ | 28.37 | $10 \cdot 12$ | 13.56 | 6.06 |
| - Ditto | New South Wales | $27 \cdot 0$ | $9 \cdot 0$ | $13 \cdot 0$ | 8.4 | 28.4 | $10 \cdot 6$ | 13.4 | $5 \cdot 8$ |
| Copra Cake | New South Wales | $27 \cdot 0$ | $9 \cdot 0$ | $13 \cdot 0$ | 8.8 | 27.5 | $9 \cdot 1$ | $13 \cdot 1$ | $6 \cdot 9$ |
| Copra Cake | New South Wales | 18.0 | $5 \cdot 6$ | $10 \cdot 0$ | $10 \cdot 8$ | $17 \cdot 9$ | $9 \cdot 5$ | 9.8 | $5 \cdot 5$ |
| Ditto | Queensland . . | 17.5 | $9 \cdot 5$ | 10.5 | $9 \cdot 35$ | 18.12 | $10 \cdot 1$ | 11.9 | $5 \cdot 6$ |
| Ditto | Java | $19 \cdot 0$ | 8. 5 | 11.5 | $10 \cdot 2$ | 19.4 | $8 \cdot 6$ | 11.0 | $8 \cdot 8$ |
| Ditto | Java | . | - | . | $11 \cdot 2$ | $17 \cdot 8$ | 18.4 | $10 \cdot 0$ | $6 \cdot 6$ |

TABLE IX.-STOCK FOODS, 1922-1923.

| Kind of Stock Food. | Manufactured in- | Manuactured from- | Vexdor's Gidiantre. |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | $\begin{gathered} \text { Minimum } \\ \text { Mrodem } \\ \text { Protef. } \end{gathered}$ | $\begin{gathered} \text { Minimum } \\ \text { Crude } \\ \text { Fat. } \end{gathered}$ | $\begin{gathered} \text { Maximum } \\ \text { Cribue } \\ \text { Fibre. } \end{gathered}$ | Salt. | Moisture. | ${ }_{\substack{\text { crude } \\ \text { Protein. }}}^{\text {cher }}$ | Crude Fat. | ${ }_{\text {Crude }}^{\substack{\text { Crube }}}$ | Crude Ash. | Salt. |
| Calf Meals | Queensland | Wheat, Maize and Linseed Meals, Dried Milk and Salt | 14.5 | 10.0 | $\underset{6 \cdot 39}{\%}$ | \% | $\%$ | $20 \cdot 5$ | 15.5 | \% $\%$ | \% $\%$ | \% 97 |
| Ditto |  |  | 12.5 | 10.0 | 7.5 |  | 8.2 | 13.1 | 10.3 | 4.2 | 4.8 | . |
| Ditto | Queensland | Meals and Condiments Wheat By-products, Dried Milk and | 17.5 | 4.0 | 2.5 |  | 9.5 | 23.0 | 4.6 | 4.5 | 5.0 | .. |
| Ditto | Queensland | Rice, Wheat, Maize, Linseed, Oat and Barley MealsWheat and Maize By-products, Linseed Meals, Whiting, Salt, Cinnamon and Ainseed | 11.0 | 9.0 | 3.0 | . | 7.1 | $12 \cdot 6$ | 10.9 | 5.0 | 3.5 |  |
| Ditto | Queensland |  | 12.0 | 4.0 | 5.0 |  | 9.71 | 13.9 | 5.2 | 3.7 | 3.0 |  |
|  |  |  | 24.0 | 5.7 | 3.0 |  | 10.93 | 18.8 | 4.9 | 3.3 | 3.94 |  |
| Ditto | Queensland | Wheat By-products, Dried Milk, Linseed Meal and Whiting Linseed Meal, Oil, eal and Whiting Salt, Lime, CharcoalWheat By-products, Dried Milk, Linseed | 17.0 | 9.0 | 7.0 | .. | 9.46 | 17.7 | 6.8 | $5 \cdot 1$ | 3.54 |  |
| Ditto | New South Wales Queensland |  | 17. |  |  |  |  |  |  |  | 5.8 |  |
| Ditto |  |  | 24.0 | 4.0 | 2.9 |  | 6.2 | 25.0 | 4.4 | 2.9 | 5.8 |  |
| $\begin{aligned} & \text { Miscellaneous- } \\ & \text { Poultry Meals } \end{aligned}$ | New South Wales | Meat .. .. | 43.1 | 17.5 | 5.2 |  | 4.5 | 43.9 | 16.4 |  | 27.2 |  |
| Ditto | Queensland | Wheat By-products, Meat, Maize and Linseed Meals, Salt, Sulphur | 16.0 | 3.0 | 5.0 |  | 8.6 | 16.9 | 4.8 | 6.9 | 7.4 |  |
| Ditto |  |  | $32 \cdot 6$ | 10.1 | 5.0 | 1.2 | 6.4 | 34.1 | 9.3 | 6.7 | 6.4 | -4 |
| Ditto | Queens'and | inseed, Meat Salt, Sulphur <br> Linseed, Meat and Bone Meals, Blood, | 35.0 | 7.5 | 8.0 | 5.0 | 7.9 | 36.1 | $11 \cdot 3$ | $4 \cdot 5$ | 22.8 | 4.9 |
| Ditto | New South Wales <br> New South Wales | Linsead, Meat, $\begin{aligned} & \text { Salt, Sulphr, Charcoal } \\ & \text { Wheat and Maize By Products, Rice Meal, } \\ & \text { Linseed Meal, Meat, Charcoal, Salt, }\end{aligned}$ LinseedSulphur | 16.0 | 4.0 | 9.0 | 1.0 | 10.5 | 16.7 | 5.8 | 7.9 | 8.1 | 1.8 |
| Ditto |  |  | 15.0 | 5.0 | 4.0 | 1.5 | 9.84 | 15.7 | 4.9 | 4.4 | 6.76 | . 58 |
| Ditto |  | Wheat By-products, Maize Meal, Meat, Salt, Sulphur | 15.0 | 4.5 | 8.0 | 1.0 | 12.0 | 16.6 | 5.2 | 7.5 | 7.9 | 1.6 |
|  | New South Wales | Wheat and Maize By-products, Oat, Linseed, Meat and Bone Meals, Dried Milk, Sulphur, Salt |  |  |  |  |  | 25.5 | $4 \cdot 3$ | 5.5 | 11.5 |  |
| Ditto | Queensland .. | Wheat and Maize By-products, Linseed, Meat and Bone Meals, Blood <br> Wheat and Maize By-products, Oat | 25.5 | ${ }^{3.8}$ | ${ }^{6.2}$ |  | 8.2 | 25.5 | ${ }_{4}^{4.3}$ | ${ }_{5}^{5 \cdot 5}$ | 4.9 |  |
| Ditto | New South Wales |  | 15.0 | 4.5 | 8.0 |  | 9.5 | 16.0 | 4.6 | ${ }_{5} \cdot 3$ | 4.9 |  |
| Ditto | New South Wales | Wheat and Maize By-products, Oat, Linseed, Meat and Bone Meals, Dried Milk, Sulphur <br> Wheat and Maize By-products, Rice, Linseed and Meat Meals, Charcoal, Sulphur <br> Meat, Blood and Bone Meals | 16.0 | 4.0 | 9.0 |  | 3 | 15.6 | 6.1 | 8.0 | 6.2 |  |
| Ditto | New South Wales |  | 45.88 | 14.35 | 2.64 |  | $5 \cdot 6$ | 45.6 | 9.2 |  | 31.8 |  |

## REPORT OF THE DIRECTOR OF FRUIT CULTURE.

The year ending the 30th of June, 1923, was, taken as a whole, a bad one for fruitgrowers, as all districts suffered more or less from erratic weather conditions and a very uneven and badly distributed rainfall. Many coastal districts suffered severely from drought, and even those areas where the rainfall was fair suffered from the irregular spring rainfall, lack of thunderstorms, and excessive summer heat; so that the yield of such fruits as bananas and citrus was materially decreased.

The Granite Belt area also suffered severely, not so much from drought as from very severe hailstorms and very heavy rain during December. Fortunately warm weather supervened, and as a result, although much of the fruit was disfigured, yet it matured well, and in the case of grapes it is doubtful if better fruit has ever been produced in this district. Crops or̈ vegetables, such as tomatoes, helped to make good the loss on the fruit crop, and in order to dispose of the tomato crop to the best advantage it was pooled.

In the coast districts, pineapples were hard to dispose of during the main ripening periods, as unfortunately the oversea market for the canned product was very unsatisfactory, the demand for the fruit being small and prices such that we could not manufacture and dispose of the fimished article at a price that would pay the cost of production and transport.

Our market for our surplus pines has therefore been confined to the Commonwealth and New Zealand; and even here, owing to the glut of Southern-grown canned fruits, the demand has been poor and prices far from satisfactory, so much so that the price offered by our canners for the fresh fruit has been so low that it does not leave a living wage for the producer, who cannot grow the fruit for the price it realises in times of glut. During off seasons, for this fruit the prices both in the local and Southern markets have been fairly satisfactory, and in a few instances highly so, as some very good returns were obtained during early summer.

The question of finding a more satisfactory outlet for our pineapples has received a very great deal of attention by individual growers, the Southern Queensland Fruitgrowers' Society, and the State Fruit Advisory Board, but unfortimately, on account of the low prices ruling for the canned product, without much benefit to the producers so far. Organised effort should, however, enable us to overcome the difficulty, as Queensland is the only State in the Commonwealth that grows pines commercially, and, given an efficient system of distribution combined with a judicious advertising campaign to familiarise consumers with the value of pineapples as an article of food, there is every reason to expect a greatly increased consumption in Australia both of the fresh and canned fruit.

This is a matter that must be dealt with by the executive of the fruitgrowers of Queensland, whatever form that body may eventually take, but, should it be "the committee of direction", recommended by the comprehensive scheme promulgated by the Council of Agriculture and endorsed by the special conference of fruitgrowers which met in Brisbane on the last day of May and the first day of June, then that body
when constituted must tackle this matter in earnest, if the pineapple industry of this State is to yield a fair return to those who are engaged in it.

The banana crop suffered severely in several districts owing to insufficient rainfall, and the gross yield was mueh less than that of the previous year in consequence. Bunchy top and beetle also reduced the yield to a certain extent, but the main cause of the falling-off was the unfavourable season, due to an insufficient and badly distributed rainfall in the banana-growing districts during spring and summer. The decrease in production will soon be made good should favourable weather conditions prevail during the coming season, as a number of new plantations have been planted, the returns from which should more than balance the loss arising from disease or old plantations going out of cultivation. Prices for good-quality fruit marketed in good order have been generally satisfactory, taking the year as a whole; but the average returns per acre have in many instances been little more than sufficient to meet the cost of production, and growers have not made the fortunes our Southern consumers have been given to believe, and were it not for the protective duty imposed by the Federal Government many of our growers would have been unable to carry on.

During the year the fruit committee of the Council of Agriculture recommended the fixing of certain standards of quality for pineapples and bananas, and standards were accordingly proclaimed by regulation under the Fruit Cases Acts, and are now in force. This is a step in the right direction, as it is essential that the buyers of our fruit shall know what they are purchasing and that they can depend on obtaining fruit of the quality indicated by the grade standard placed on the case in which it is contained.

So far the proclamation has not been strictly enforced, as it is felt that it is desirable to give growers time to obtain the necessary stencils, as well as to get into the way of properly grading their fruit in accordance with the standards that have been fixed; in other words, to first educate growers so that they will realise the value of grading and honest packing rather than to antagonise them by taking drastic action, as it is the aim of the Fruit Branch to assist and not unnecessarily harass the grower. Reasonable time will therefore be given to enable growers to become conversant with the new conditions, and, if after that the regulations are not complied with, further action will be necessary, as it is essential that the grading and packing of our fruit can be absolutely depended upon.

Up to the present no standards have been fixed for citrus a.ad other fruits, though the way for the fixing of such standards is bring prepared by the packing experts of the Department giving instruction to the children attending public schools in fruit-growing districts in the grading and packing of different kinds of fruit. Already excellent results have been obtained as the out ome of the instruction given in the Granit Belt during the seasons of 1921-2 and 1922-5, and there has been a great improvement during the nast season in the manner in which the crop has been got up for market.

The coast districts have not been neglected, and already a number of packing classes have been started in the citrus-growing districts, and it is intended to give instruction in the packing of every kind of fruit grown. The principle of teaching the children of fruitgrowers in fruitgrowing districts is a thoroughly sound one, as the youngsters have nothing to unlearn, and as they are all taught the same method it will not be long before there is a uniformity of pack that can be dopended upon, and purchasers will know exactly what they are buying.

The question of utilising our surplus fruit has received a considerable amount of attention, but unfortunately the market for canned fruit, jams, \&c., has not been at all satisfactory, owing to the large stocks carried over from the previous year, as a rasult of the collapse of the oversea market. Little progress has been made in the utilisation of waste fruit products, mainly for the reason that there was more first-class fruit available than could be utilised profitably, and there was, therofore, little chance of using waste fruit. This is a matter, however, that must not be lost sight of, as there is always a quantity of waste in inferior fruit that should be capable of being turned to some account rather than permitting it to rot or. even worse, become a breeding-ground for fruit pests.

Dehydration has made a little progress, as plants have been erected both at Nambour and at Glen Aplin, in which various fruits and vegetables have been successfully dried. So far the output has been small and the work is still more or less in the experimental stage, especially in the case of tropical fruits, such as pineapples and bananas, as these dehydrated fruits are practically unknown in the Commonwealth, and will require careful and judicious advertising before they can hope to compete successfully with the dried fruits of the Southern States, which are in everyday use and well known to everyone.

The difficulty of finding a market for fruit is, unfortunately, a general one, as it is not confined to Queensland or even to Australasia, as, on account of the failure of the European market to absorb its surplus pack. California is carrying over an enormous quantity of secondclass canned goods, for which no market can be found, except at a very low price. As a result. the Californian pack of 1923 will be materially decreased, and little, if any, secondclass canned fruit will be put up. This may tend to relieve the situation somewhat, and possibly enable the carry-over of the last Australian pack to be disposed of at a more satisfactory price than it is now estimated to fetch. Infortunately, the canned fruit pools financed by the Federal Government have been a huge failurs, for not only has the cost of processing been out of all proportion to the value of the processed product, but a very large amount of the pack has been of decidedly inferior quality, as it consisted of palpably immature fruit put up in very light syrun: with the result that the product cannot possibly do anything else but create an unfavourable impression in any market to which it is sent.

These remarks fortunately do not apply to Queensland, as this State did not participate in the 1923 pool. the summer crop of pineapples being packed almost exclusively for the Australian market. Despite the low prices ruling
for canned fruit, it is also satisfactory to note that inquiries have been made for a quantity of first-class quality canned Queensland pines for the London market, and shipments will go forward early in the coming financial year. Our best fruit, properly prepared and packed, is being recognised on account of its excellent quality, and there is a possibility of our extending this market, provided we maintain a high standard, as there is no chance of our obtaining a remunerative return for anything else.

Such a product can be produced here provided we go the right way about it, and the right way is to follow the experience of the Hawiian packers, and only handle pines of a size for export that will properly fill the can, and use all others for the fresh fruit or the local canned trade. I have recommended this previously, and should a committee of direction be appointed for the marketing of our fruit, I ask them to see that our canners be given the first call on our pineapple crop, so that they can secure fruit that will enable them to fill the cans properly with the least possible waste. By doing this they will be giving our canners a chance and, at the same time, cheapen the cost of producing the canned article.

Another very important point to be considered by the "committee of direction" is the desirability of creating an increased demand in Australia for our canned pineapples, as there is plenty of room for improvement in this respect. Our present consumption of canned pineapples is between one-third and one-half of a $2-\mathrm{lb}$. can per head of our population per annum, and no one can claim that this is an excessive amount, or that a much larger quantity could not be consumed were its distribution extended and facilitated and its sale encouraged by judicious advertising.

If this is done the glut of canned fruits will be overcome, and increase in consumption will be beneficial to the community as a whole, for we do not as a nation eat anything like as much fruit as we should. The reason for this is not due to a lack of consumers, but rather to the unfortunate fact that the cost of the fruit to the consumer is so great in the majority of cases that he cannot afford to purchase either for himself or his family anything like the quantity they could and would consume were it possible for them to obtain it at a price more nearly approaching that realised by the grower, instead of having to pay the price demanded by the retailer. I have no hesitation in saying that the price of fruit to the consumer is far too high, and that were it reduced materially the consumption would increase proportionately ; and it is on these lines that the committee of direction will need to work. Popularise the consumption of fruit, and at the same time cheapen its cost to the consumer, and the question of finding a market for our surplus will soon be answered.

During the year under review there has been a very great increase in the activities of the Fruit Branch, due in no small measure to the recommendations of the fruit committee of the Council of Agriculture, who, recognising that the staff, owing to the great increase in the fruitgrowing industry and the large number of new men engaged therein, was much undermanned, and therefore quite unable to keep pace with the demand made upon it in the matter of practical instruction in the field, recommended the
appointment of a chief instructor in fruit cul ture, a packing instructor, as well as more assistant instructors in fruit culture and inspectors. These recommendations were endorsed by the Council of Agriculture and approved by the Government, and Mr. J. M. Ward was appointed Chief Instructor in Fruit Culture.

Mr. J. M. Ward, who was in charge of the Fruit Branch of the Tasmanian Department of Agriculture, took up his duties at the commencement of the Stanthorpe fruit season, since when he has been busily engaged in giving practical instruction in the field, giving illustrated lectures on fruitgrowing, and supervising and controlling the work of the assiștant fruit instructors.

The position of packing instructor was also given to a Tasmanian, Mr. Rowlands, who oceupied a similar position in that State. Mr. Rowlands had previously been employed by this State, as he gave a number of packing demonstrations in the Stanthorpe district during the summer of 1922 , having been lent by the Tasmanian Government to the Queensland Department of Agriculture for this purpose. These demonstrations were so much appreciated by the Stanthorpe growers that they determined to try to get Mr. Rowlands permanently appointed. In this they were successful, and he took up his duties in this district early in the year, where he continued the work of instruction initiated by him the previous year, and remained in the district until the close of the fruit season. Mr. Rowlands has not confined his attention solely to giving instruction in the packing of fruit, but has dealt with the grading and packing of tomatoes as well.

Advantage was taken by the Stanthorpe firuitgrowers of Mr. Rowlands presence in the district to obtain and forward a collection of Stanthorpe-grown apples to the Royal Show in Sydney, to compete for the best exhibit of apples to be shown in trophy form. Mr. Rowlands accompanied the exhibit and staged it, with the result that it obtained the second prize; a remarkably good result for Stanthorpe's first attempt to compete at the Sydney Show, and proving that, as far as quality is concerned, Stanthorpe can hold its own in the matter of apple production with the apple-growing districts of New South Wales.

When the Stanthorpe fruit season ended Mr. Rowlands started on the citrus fruits of the coast districts, and he has already established a number of packing classes amongst the school children of the Palmwoods, Montville, Buderim Mountain, Nambour, and Woombye districts.

Mr. Ward has been kept busy since his arrival in this State, as not only has he already visited a number of fruit-growing districts in order to make himself acquainted with local conditions, but he has taken over the control of the Stanthorpe fruit district, not only with respect to privately-owned orchards but also those of the various soldiers' settlements in the district, thus bringing the whole of the fruit instructional work under one control. This is as it should be, as the dual control by this Department and the officers of the Land Settlement Committee was unsatisfactory.

Special attentior. has been devoted to this district; an additional assistant instructor and
an inspector have been appointed, and an endeavour has been made to bring growers into line and see that they carry out the provisions of the Diseases in Plants Act, especially with respect to such serious pests as fruit fly and codlin moth, which can only be successfully fought by concerted action. The results obtained to date are promising, as growers are certainly giving more attention to the matter of pest destruction than they were, and realise that the success of their industry depends very largely on their keeping fruit pests of all sorts in check, and that the grower who does not do so not only loses his own crop but is a serious menace to his fellow growers. He must be compelled either to keep his orehard free from pests, to dispose of it to someone who will do so, or, failing either, to destroy the trees, as no one can be permitted to keep an orehard that is a breeding-ground of pests, and from which the whole neighbourhood is constantly being restocked.

In addition to purely instructional work and the destruction of pests, manurial, cultural, and other work of an experimental nature is being carried out, as well as the testing of various sprays and spraying materials, in order to determine their value for destroying insects and fungus diseases.

A number of experiments have also been carried out in the coast districts with more or less success, the most important of which was for the purpose of determining the possibility of successfully combating the various gumming diseases of citrus trees, especially that known as collar rot or mal-di-goma, and other diseased conditions of the trees known as die-back, twig blight, exanthema, \&c.

Many of our older citrus orchards show signs of one or more of these diseases, and as a result large numbers of trees are in a more or less unhealthy condition and incapable of producing sound, clean fruit of good size, appearance, and quality. Two orchards, one near Maryborough and one near Howard, in which the trees were in a very bad stage, were selected. The trees experimented upon were treated as follows:In the first place the soil was removed from around the base of the tree, the roots bared, and those that were dead excised. All grom spots were cut right away till healthy wood and bark were met with, and when this was done the whole of the exposed roots, and the collar and trunk of the tree as far as the gumming extended, were painted with Bordeaux paste and allowed to remain exposed to the sun and air.

The result of this treatment was very satisfactory, as it proved conclusively that gumming diseases of the roots, collar, and trunk of citrus trees can be cured, provided they have not been allowed to go too far, by excising the dead and diseased portions and treating the portions that are allowed to remain with Bordeaux paste: The exposure of the treated parts to the air has had the effect of inducing a new growth of healthy bark, so that even in cases where the tree or roots were nearly ringbarked a good recovery has been made.

In addition to treating the roots, the tops of the trees, which consisted largely of dead twigs, were severely dealt with, in some cases by removing the whole of the top of the tree and in others by cutting hard back and leaving nothing but sound, healthy wood. The wood so left was
sprayed with Bordeaux mixture, with the result that the young growth when it made its appearance was healthy and free from fungus pests.

One mistake was made in both experiments, and that was, as both the trunks and main branches of the trees treated were more or less infested with seale insects of various kinds, it would have been better had they been cyanided before they were sprayed with the Bordeaux mixture, as thereby the scale insects which are immune to the action of this spray would have been destroyed, and would not have attacked the young growth as soon as it made its appearance. With this exception, which can easily be obviated in future, the experiments were a success, as they proved that, as long as a citrus tree has not gone too far, it can be saved and made to produce a healthy new growth capable of bearing good fruit, by treating the roots and top as described.

In case the soil in which the trees are growing has become depleted of its available plantfoods by cropping, it is advisable to combine the remedial treatment described above with a generous application of a complete fertiliser in which the various piant-foods are in a readily available form, such as in a mixture of superphosplate, sulphate of potash, and sulphate of ammonia. This world tend to stimulate the tree and encourage the production of a strong new growth.

Experiments have also been undertaken to determine the value of paper mulch for pineapples. It is too soon to make any definite pronouncement, but as far as can be judged at present, this method of growing pineapples gives promise of being a success. The use of paper mulch is extending rapidly in Hawaii, where the expense incurred is more than compensated for by the saving in cultivation that results from the absence of weeds, as well as by the more even growth of the plants and the more even size of the fruit they produce. The present experiments are being conducted on a small scale only, but will be extended to a larger area in order to prove whether the use of paper mulch on such an area will be a commercial success.

The New South Wales and Queensland vegetable pathologists have continued their investigations into the aftiction known as "Bunchy-top" in bananas, in which they were assisted by an officer of the Fruit Branch, but unfortunately with apparently little, if any, result, as we know little more about the trouble now than we did when it first made its appearance. Bunchy-top has been in Queensland since 1915, if not longer, as I saw it shortly after my return from Tasmania in that year, in plantations in the Upper Currumbin Valley, near the border gate on the main road from Brisbane to Murwillumbah. Since then it has spread more or less over the Currumbin and Tallebudgera Valleys, to which, with possibly one or two exceptions, its ravages are confined in this State. It has spread slowly but surely, as with the exceptions as stated above, oit has not travelled more than fifteen miles from the areas in which I first sāw it in 1915.

Careful research work is absolutely necessary, as scientifically practically nothing is known about the trouble. It is not even known what it is-insect, fungus, or bacterial-and until this is determined it is very hard to
suggest a remedy. It is possible the trouble may be due to physiological conditions; if so, a thorough study of plant hygiene as applicable to the banana is likely to have beneficial results.

With respect to the other serious banana trouble, "beetlo borer," these insects are undoubtedly becoming more numerous and more widely distributed; there are very few districts now that are free from this pest. The distribution of infested suckers is undoubtedly the cause of its spread, and, despite the precautions taken, infested suckers are still being distributed, as many growers fail to recognise the seriousness of the pest, and do not exercise the care they should in thoroughly examining the suckers before planting them. The presence of the beotle, except possibly in the egg stage, is easily detected by any careful person, and there is no excuse for ignorance respecting the identity of the insect in all its stages, as a full description has been published and distributed widely in departmental publications; and exhibits of the insect itself in all stages and of the damage it causes have been shown by Mr. Froggatt in the form of an exhibit staged by him in the Department's Court at the Royal National Exhibition on several occasions. If growers will only exercise reasonable care this pest can be prevented from doing serious damage, but if it is allowed to spread unchecked, it increases so rapidly that the infested plantation soon becomes unprofitable.

A further affection of the banana-viz., that known as "rust"-is causing trouble in the Yeppoon and Pialba districts. So far remedial measures have not been very satisfactory, and it is therefore intended to initiate a series of experiments in order to determine the best and cheapest way of combating this trouble, which is the result of an injury to the fruit when first formed, and is produced by one or more species of small sucking insects. These insects suck the skin of the young fruit and cause it to assume a rusty colour when mature, so that its appearance detracts from its selling value. The quality of the fruit is not affected to any extent, and it is perfectly wholosome to eat - in fact, as in the case of a Maori orange, the skin of the fruit only is affected, and the edible portion is not injured in any way.

As the banana industry is of such importance to this State it was decided to establish a nursery in which to propagate banana plants free from disease, as owing to the presence of beetle borer, root diseases, nematodes, bunchytop, and other troubles in the State it is a difficult matter to obtain banana suckers or plants that are not affected with one or other of these diseases. A plot of land has therefore been selected on Bribie Island, and some 12 acres have been cleared, fenced, and partially planted during the year. The land is practically pure sand and is very low in plant-food; at the same time it is adapted for nursery purposes in that plants propagated in it develop a very good root system, so that when they are transplanted into good land they should make a rapid growth. The soil in its natural state is not rich enough to produce a heavy growth, but with the addition of the necessary plant-foods and humus it will, once it has become thoroughly sweetened, be a good medium in which to propagate, not only bananas, but also many other tropical and subtropical plants.

A number of permanent improvements have already been effected, and these include the erection of a cottage, stabling, large bush-house, and propagating shed, as well as providing an excellent supply of water, which is laid on under pressure to the cottage, stable, and bush-house, so that an ample supply of very pure water is available for all purposes.

Many thousands of young bananas raised from single eyes are being grown, and when large enough will be available for distribution and planting on clean areas, preferably on new scrub land, so that a stock of clean suckers will eventually be available in different parts of the State. Every care has been taken to see that the eyes from which the plants have been grown were free from disease, and as a further precaution the corms from which the eyes were obtained were first treated with corrosive sublimate, and the oyes when cut were treated with formaline.

In addition to propagating bananas, a start has been made in the growing of other fruits, such as avocadoes, pecan nuts, mangoes, litchi, Queensland nuts, citrus of sorts, \&c. Improved -varieties of avocadoes and pecans have been imported from America, and a large number of seedling stocks on which to work these imported varieties are being grown. A number of seedling mango stocks have also been propagated and will be worked with selected varieties during the coming season. A number of thin-skinned Queensland nuts have also been obtained, and an attempt will be made to improve this very excellent and yet neglected native fruit.

The nursery is under the charge of Mr. James Mitchell, Assistant Instructor in Fruit Culture, who has had a life-long experience in nursery work, and is a competent plant propagator. Mr. Mitchell has a staff of four employees, two of whom are learners that are qualifying for positions on the fruit staff when they have gained the requisite knowledge and experience.

With respect to other fruit pests, the entomologists specially appointed to investigate fruit fly have been busily engaged throughout the year, and the results of their investigations have confirmed the advice given by this Department for many years-viz, that the destruction of the fly early in the season and the careful gathering and destruction of every tly-infested fruit is still the best means of dealing with this pest. At the same time, I am still of opinion that the use of lures that will attract the female fly before she has laid her eggs in the fruit offers a simple method of control that will materially tend to decrease the loss caused by this serious pest. I have tested several lures during the year, some of which have been a decided success, as they have attracted females of the true Queensland fly in all stages-viz., when newly hatched and when distended with eggs. The difficulty so far appears to be not so much the determination of the active principle that attracts the flies, but its fixation in the lure so that the lure is always of a standard quality, the attractiveness of which can be depended upon.

Scale insects attacking citrus trees have been very prevalent in many orchards, and I feel certain that these pests will not be effectively dealt with till our growers again resort to the use of cyamide; no matter how often or how carefully spraying is carried out, it does not compare at all favourably with fumigation. A wellknown grower who has made a success of citrus
culture told me that as long as he cyanided his trees he made money, but when he was no longer able to obtain the requisite materials for doing so his trees went back and were no longer profitable. This grower is again procuring a cyaniding outfit, and has no doubt of being able to keep his orchard clean by its use.

During the year several prosecutions took place for offences under the Diseases in Plants Act and the Fruit Cases Acts, and convictions were obtained. In no case are these Acts enforeed without due warning having been first given, as it is not the wish of the Department to harass growers, but at the same time those growers who deliberately ignore the Acts or the regulations thereunder, whether it be with respect to the treatment of diseases or the improper marking or topping of their cases, must be made to understand that they cannot do so with immunity.

In addition to administering these State Acts, the Fruit Branch administers the Fedèral Quarantine Act as far as this Act relates to plants, as well as the Customs and Commerce Acts as far as they relate to plants and seeds and the manufactured products thereof. The administration of the Quarantine Act as far as it relates to plants carries with it a very great responsibility, as the keeping of this State free from imported pests falls on the shoulders of those officers of the Fruit Branch who are appointed for this purpose - a responsibility for which they receive no monetary consideration. The importance of the work cannot well be over-estimated, as I have no hesitation in saying that were it not for the care that has been exercised in the inspection and treatment of imported cotton-seed, there is every probability that serious cotton pests would have been introduced into this State. As it was, large quantities of imported cotton-seed were seized and burnt, and any seed that was permitted entry was carefully examined by the Government Entomologist and Pathologist, the officer in charge of the Seed Branch, and the writer, and then subjected to a rigid fumigation either by hydrocyanic acid gas or bisulphide of carbon, or both, and only then released to be grown in strict quarantine.

With respect to the Commerce Act there has been a considerable falling-off in the quantity of goods examined, due mainly to the collapse of the canned fruit trade. Despite this, the Fruit Branch has been in close touch with the Customs authorities on many occasions, and the work entailed thereby has, if anything, increased.

The work of the Fruit Branch has been carried out without any serious hitch, and I have received the support and assistance of the various members of the staff, whether stationed at headquarters or elsewhere; and I trust that, with the increased staff and the utilisation of the services of the instructional officers to the best advantage by the Chief Instructor in Fruit Culture, the coming year will see an even greater advance in the organisation of the fruitgrowing industry of this State.

I beg to attach hereto a statement showing the imports and exports of fruits and vegetables into and from the State during the year, which has been prepared by the senior inspector, by which it will be noted that there has been a large increase in the imports of both fruit and vegetables as compared with those of the
preceding years，three lines－viz．，fruit，potatoes， and onions－showing an increase of 196，760 cases， 81,632 bags，and 19,194 bags respectively．

As regards exports，bananas，citrus，and pineapples all show a decrease，that of bananas being no less than 196,760 cases，citrus 9,040 cases，and pineapples 1,879 cases，whereas toma－ toes and cucumbers show an increase of 51,661 caves and vegetables 28,107 packages．

These figures are interesting，as they show that，despite the increased imports of vegetables other than onions and potatoes，the increase in
the export of similar lines more than compensates for the increase in imports，Queensland having exported considerably more vegetables，other than onions and potatoes，than were imported． Bananas show a heavy falling－off，due，as pre－ viously stated，mainly to unfavourable weather conditions．Citrus fruits also show a decided drop．Pineapples on the other hand show little change，as the decrease amounted to only 1,879 cases，or .84 per cent．，as compared with that of the previous year．

ALBERT H．BENSON．

Inspection of Fruit and Vegetables brought into Queensland for Year ended 30 th June， 1923.

|  | Fruit． | Potatoes． | Onions． | Turnips． | Vegetables． | Plants． | Peanuts． | Seeds， | Garlic． |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Brisbane | 445，875 | 306，620 | 58，721 | 12，747 | 312 |  |  |  |  |
| Wallangarra | 218，372 | 65，356 |  |  | 2，450 | 463 | ．． | 1，006 |  |
| Mackay | 3，617 | 4，433 | 1，547 | 122 | 2，402 |  | ． | ．． |  |
| Rockhampton | 2，883 | 31，441 |  | ． | 12，995 | 43 |  | $\cdots$ |  |
| Bowen | 3，183 | 4，985 | 989 |  |  | 3 |  | ． |  |
| Townsville | 52，802 | 54，095 | 11，688 | 1，392 | 2，798 | 18 | 132 | $\cdots$ | 5 |
| Cairns | 18，952 | 29，959 | 6，483 | 341 | 439 | 16 | 141 | $\ldots$ |  |
| Innisfail | 400 | 977 | 245 |  | 6 |  |  |  |  |
| Totals | 746，088 | 467，866 | 79，673 | 14，602 | 21，409 | 543 | 273 | 1，006 | 5 |


| 1－80 |  | 范 | $\stackrel{\text { di }}{\stackrel{y}{\mid}}$ |  |  |  | gig |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Brisbane ．． | 3，987 | 1，763 | 82，569 | 29，480 | 14，779 | 3，399 | 611 | 161 | 95 | 9，823 | 365 | 3，199 | 618 | 86，016 |
| Wallangarra | 516，892 | 10，537 | 140，472 | 33，092 | 64，092 | ． | $\cdots$ | ． | ． | ．． | ． | ． | 25，640 | ．． |
| Mackay ． |  | ．． | ． | ．． | ． | ． | ． | $\ldots$ | ． | ． | ． | ． | ． | ．． |
| Rockhampton | 1，119 | ．． | ． 100 | 1，116 | ．． | ． | ．． | ． | ． | ．． | ．． | ．． | 320 | ．． |
| Townsville ．． | ．． | ．． | $\cdots$ | 3，610 | 1，544 | ． | ． | ． | ．． | ．． | ．． | ． | 68 |  |
| Cairns | ． | 7，257 | 5，435 | ． | ．． | ．． | ．． | ． | ．． | ． | ．． | ．． | ． | ．． |
| Innisfail | ． | ．． | ．． | $\cdots$ | ． | ． | ． | ． | ．． | $\cdots$ | ．． | ． | ． |  |
| Bowen | 9 | 10，087 | 1，314 | 152，985 | 1，092 | ．． | ．． | 7，236 | ．． | 9，385 | ．． | ．． | 610 |  |
| Totals | 522，007 | 29，644 | 229，890 | 220，283 | 81，507 | 3，399 | 611 | 7，397 | 95 | 19，208 | 365 | 3，199 | 27，256 | 86，016 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| － |  | 曾 B |  | $\dot{\#}$ |  |  | 筇 | $\frac{\dot{y}}{\frac{y}{\tilde{j}}}$ | 咅 品 㗊 |  | $e_{0}$ | 砣 | $\begin{aligned} & \text { 㡙 } \\ & \text { 荌 } \end{aligned}$ | ［8゙ |
| Brisbane | ．．．． | 679 | 1，475 | 4，011 | 18 | ． | ． | $\cdots$ | ． | ． | ．． | 165 |  |  |
| Wallangarra ． | ．．． | ．． | ．． | ．． | 1，402 | ．． | ．． | 12 | ． | $\ldots$ | 8，906 |  | ． | ．． |
| Mackay | ．．． | ． | ． | ． | ．． | ．． | ．． | ．． | ． | ． | ． | ．． | ．． | ．． |
| Rockhampton |  | ． | ．． | ．． | ．． | ．． | ． | ． | ．． | $\cdots$ | ．． |  | ．． | ．． |
| Townsville ． | ．．．． | ． | $\cdots$ | ．． | ． | ． | $\cdots$ |  | $\cdots$ |  | ．． | ．． | ．． | ． |
| Cairns | ．．． | ．． | ．． | ．． | ． | 287 | 568 |  | ． |  | ．． | ．． | $\ldots$ | ．． |
| Innisfail | ．$\quad$. | ． | ． | $\cdots$ | ． | ． |  |  | $\cdots$ | $\cdots$ |  | $\cdots$ | $\cdots$ | ． |
| Bowen | $\cdots$ |  |  | 8 | 1，497 | ． |  |  | 310 | 7 |  |  | 535 | 13 |
| Totals | ．． | 679 | 1，475 | 4，019 | 2，917 | 287 | 568 | 12 | 310 | 7 | 8，906 | 165 | 535 | 13 |

ANTON PERSON， Senior Inspector，Diseases in Plants， Brisbane．

## REPORT OF THE DIRECTOR OF AGRICULTURE.

Effect of the Indifferent Season.- A retrospective view of the yields obtained during the past year-1st July to 30th June-from the principal classes of crops grown, indicate that the season generally, both prior to and after 1st January, left much to be desired. As a matter of fact it was, from the standpoint of average yield, one of the State's "low" years. Certain districts were more fortunately situated and better favoured in the matter of rain, and correspondingly improved yields were obtained. Spring rains, however, which were of vital import to the main wheat crop, proved erratic and favoured the southern end of the Darling Downs more so than anywhere else in the wheat belt. The capriciousness thus shown was evidenced even in a more marked degree during the summer, as February established the menviable reputation of being the driest month for a period of nearly half a eentury.

The Effcct of the Dry Spell on Maize and Cotton.-Any crop (other things being favourable) which stood up as the cotton crop did, to a check of this character, and revived when rain fell soon after, in March and April, is worthy of more attention than the average farmer usually bestows upon it. This natural ability possessed by the cotton plant, not only to live but to produce a crop, was in marked contrast this season to maize, which, in Southern and Central Queensland, suffered generally during the abnormally dry spell owing to the inability of the plant to meet the excessive evaporation from its leaf surfaces. Evidence of this character obviously indicates that cotton is a more dependable crop than maize in districts of medium rainfall, and emphasises also the necessity, from an economic standpoint, of encouraging a system of mixed farming in such districts, so that bulky crops like maize, if they fail for grain, can be profitably turned to account as food for dairy stock.

The Extraordinary Dovclopment of the Cotton Industry.-As far as the cotton industry is concerned, the past year has been one of the most important in the history of the State, as it marks an era of development unique in its wellordered progress towards a definite goal. The British Cotton Delegation, which toured the Central and Southern districts last October, was the means of giving very wide publicity to Queensland as the premier cotton State.

In the first place, growers were assured of a certain market for their seed cotton under the Govermment guarantee; and secondly, under the agreement between the Government and the British-Australian Cotton Association, ample facilities were provided, at the several modern ginning factories erected for this purpose by the company in question, to treat all the cotton that could be grown during the season. Concurrently with this very necessary development, the same company has been busily engaged in expanding its business by the construction of a large cottonseed oil extraction plant in Brisbane, capable of treating 80 tons of seed per day.

Good reasons exist for an optimistic view of the whole situation connected with cotton, as the expenditure of at least a quarter of a million sterling in the developmental works already
referred to has placed the industry in the best possible position to carry on ; and it is a coincidence worthy of note to record the fact that the value of the year's output of cotton is estimated to reach and possibly to exceed the sum named. This Department's action in securing the services of two cotton advisers, Messrs. W. G. Wells and G. Evans, from the U.S.A. and India, respectively, proved most opportune, as many matters vital to the existence of the industry required their attention.

## Land Settlement Schemes.

A feature of the year's work has been the co-ordinated effort in committee of this Department with the Lands Department in connection with settlement schemes. A good deal of the time of different officers has also been taken up on oceasion in making inspections of land and reporting on its quality and capabilities, and as a result it is satisfactory to note that the informa. tion furnished has proved of value.

## Prickly-pear Commission.

Officers of my staff have also supplied special reports asked for by the Commission.

## Agricultural Council.

Activities in connection with the council, and standing committees attached thereto, have absorbed an appreciable amount of time during the year. Probably the most important recommendations made through this office were those relating to an amalgamation of existing Acts governing advances to settlers and the liberalisation of advances to persons engaged in primary production.

## Exhibitions.

Empire. The work of collecting nonperishable material was proceeded with during the year, with the result that some fairly satisfactory samples of cereals and grain have been placed in store.

Royal National.-The Department made a comprehensive display last August, which served the twofold purpose of advertising the activities of the various branches of the Department and showing also the great variety of products that can be grown in Queensland.

## Matze.

In North Queensland the season nroved generally satisfactory, and good vields of grain are expected on the Atherton Tableland, both from "forest" and "scrub" lands. Interest has been revived in a storage and drying scheme to supersede the existing system of holding grain over in galvanised iron tanks, a method which involves a good deal of labour.

Assistant Agricultural Instructor Wise, who is stationed on the tableland, was provided with a "Brown Duvel Moisture T'ester," and has been actively engaged in collecting data respecting the moisture content of grain samples taken under varying conditions from field, barn, bag, and tank.

In Central and Southern Queensland, the main crop of maize was more or less a failure. Certain districts were favoured with good rains and correspondingly good yields were forthcoming; outside the coastal belt, however, the weather conditions were generally unsuitable for the production of grain. Rains were too light to reach to any appreciable depth in the soil, and when hot weather set in in February (the driest February for the last fifty years) the crops wilted beyond recovery as a grain proposition and were generally useful for milch cows. Under the circumstances fairly high prices have ruled, with the result that speculators secured large parcels of South African maize. Importations of this character place the Queensland maizegrowers, and the Northern ones in particular, at a very great disadvantage.

Improvement in Type and Yield of Maize.Technical work and the practical application of same towards the improvement of this important cereal have been continued throughout the year by Mr. C. J. McKeon, Assistant Agricultural Instructor. The indifferent season interfered with the programme laid down and curtailed to some extent certain extension work, but it is gratifying to note, from reports furnished in connection with plant selection, that a gradual improvement has manifested itself and a greater uniformity in desirable field characteristies has been attained.

Field-work was arranged in the Kilcoy, Boonah, Beaudesert, Kancanga, Iminil, and Yandina districts. Thirty separate plots were established, totalling upwards of 120 acres. Certain crops situated in drought-affected areas either failed or only produced light yields. Where the season was more of a satisfactory nature corresspondingly improved returns were fortheoming: --Funk's 90 -day yielded 30 bushels per acre at Beaudesert. Early varieties (4 months):F'unk's and Reid's Yellow Dent each yielded 40 bushels per acre at Beaudesert and Boonah respectively, but the former-mentioned variety gave a 50 -bushel-per-acre return at Inbil, where the season was a reasonably good one Improved Yellow Dent (a $\overline{5}$-months corn) also proved its capacity to produce heavy crops in the Imbil district, three separate areas being harvested for yields of 68,75 , and 90 bushels per acre respectively. Star Leaming ( 4 -months' corn) gave the high yield of 80 bushels per acre at Kandanga.

The system of carrying out "Ear to row", tests, to segregate high-producing strains typical of each individual variety, was continued. The above figures are eloquent of the value of this class of work from the standpoint of production. Every effort is being made to bring these proved varieties into general cultivation.

## Wheat.

Last season the Darling Downs, which is the principal wheat-producing area, experienced an indifferent season. Striking examples were to be seen in practically every distrist illustrating the benefits derivable from early and systematic preparation of the land for cropping purposes. One disability which many growers had to face was the late germination of self-sown wheat and wild oats, the eradication of which delayed wheat-planting sufficiently in some instances to have an effect of retarding the normal period of development and yield of the wheat crops.

The Allora district appeared to be better off for rain than any other locality, and yields were correspondingly higher. Here the rainfall for six months, June to November, was $13 \frac{1}{3}$ inches as against the much lower registrations elsewhere on the Downs. The Inglewood rainfall was less by several inches than that of Allora, and the Maranoa record was even lower than Inglewood's. Speaking generally, the wheatgrowers had an unprotitable year, those on the heavy soils of the Maranoa particularly so; evidence of the droughty conditions may be gauged from the fact that for a twenty week period ending 31st May, 1922, less than 1 inch of rain was recorded. Good germinating rain fell in June, but for the next fourteen weeks the registration amounted only to 58 points. Good rains, however, fell in October, too late, infortunately, for the wheat crops in that particular district, which usually ripen at this time.

Improvement in Existing Varieties.-"The Seed Wheat Improvement Scheme," instituted by the Department with the co-operation of the Wheat Board, was continued. In the face of a late planting and the irregular season, the results were consistently good, as will be noted from the undermentioned summary :-

| Quantity. | Variety. | Average Yield per Acre. |
| :---: | :---: | :---: |
| Acres. 48 | Roma Red (2) | Bushels. |
| 36 | Cedric $\quad$. | 2712 ${ }^{2}$ |
| 163 | War Chief | $25^{+6}$ |
| 73 | Roma Red (5) | 22220 |
| 134 | Novo |  |
| 69 | Roma Red (7) |  |
| Total 523 |  | 2238 |

The highest yield recorded was 40 bushels per acre, Roma Red (2) in the Allora district.

It may be explained, briefly, that a classification of wheats was made for different districts and soils found therein, with a view to standardising types of grain. The above-mentioned tests represent extension work of the Field Branch with varieties raised at the Roma State Farm. With surplus supplies of pure seeds made avail. able by growers to the Wheat Board under agreement, the latter body would be placed in the position of calling up the less dependable varieties in cultivation, for gristing purposes, and substituting clean, graded seed of a standard type.

## Demonstration Plots.

The policy of establishing plots of this description in advance of settlement assumed definite shape. In the Upper Burnett, a central camp was established near Monto, on Mulgeldie Station, about 70 miles from rail-head, and placed in charge of Mr. Field Assistant I. W. Ball. Four small areas of land were selected within a radius of $2 \frac{1}{2}$ miles of the camp, typical of different classes of country-a scrub-covered area of 40 acres close to the township site; an alluvial area of 20 acres, ringbarked (gum country) on Three Moon Creek; and two other 10 -acre blocks, one on Hurdle Gully (cultivable land) and the latter on second-class grazing country which it was considered might be used for hardy crops.

A climatological station was established so that data would be available. A number of
interesting trials were carried out with different crops, and included a special series of plantspacing tests with Durango cotton. Results from the 40 -acre area of scrub land (brigalow principally, with a little softwood) proved most satisfactory. The area was enclosed with a wallaby-proof fence after felling and subsequent burning off, and an excellent stand of Rhodes grass obtained, fit for stocking within twelve months of the time the serub was felled.

Land-seakers, unfamiliar with the district, who visit the Upper Burnett when the time comes or the inspection, will be able to form a fairly accurate idea of its capabilities. This scrub block should prove particularly valuable as an object lesson; devalopment costs are available and can be applied to an area of possibly 100,000 acres of somewhat similar land in the Upper Burnett. It is purposed later on to realise on the improvements effected by the Department, when the portions on which the plots exist have been selected; and to concentrate then on a permanent experiment plot site several miles further on.

Another site for a demonstration area was chosen in the Callide Valley. Initial work was commenced in order that land may be prenared for the approaching season's cotton crop, the intention being to undertake crop-spacing and fertiliser tests, and "place selection" of strains of cotton suitable for the extensive tracts of alluvial country about to be thrown open for selaction in this valley.

General Experiment Crop and Crop Demonstrution Work.-This class of work is closely allied with the activities and duties of agricultural instructors. A number of plots were established during the year. In the Central District (Boyne Valley) the results of the fertiliser tests with wheat, rye, oats, and skinless barley (totalling 56 plots) were marred to some extent by the irregular season. Oats failed. Wheat as a fodder crop showed to conspicuous advantage, the yields in the generality of cases being fully a ton higher per acre than the other crops, the highest yield being 5.14 tons per acre. ( 3 ewt. meatworks manure per acre). Blood manure ( 2 cwt. per acre) gave the best average return, followed successively by meatworks manure (3 cwt. per acre) and a combined fertiliser, basic super ( 2 cwt .), potash ( 1 cwt .), and nitrogen (blood, 1 cwt.).

Two other winter fodder crop trials at Rosedale and Mount Larcom furnished better returns. Ten plots comprising two varieties each of oats and barley, four of wheat, and two of wheat and field peas (combination crop) yielded, the oats excepted, from 7.2 to 9.2 tons and from 5.8 tons to 8.7 tons per acre respectively. Ruakura rustresisting oats showed superiority over Algerian nats, yielding 7.4 and 6.0 tons at Rosedale and Mount Larcom, respectively, whilst the Algerian failed at the former place and only returned 3 tons per acre at the latter.

A number of varieties of root crops, onions, and sorghums were tested in several districts.

Attention was given during the year to the continuation work connected with the classification and propagation of sweet potatoes. About forty new varieties have been added to the collection. Farmers and gardeners are keonly interested in what is being done.

In Southern Queensland the major portion of the actual crop improvement work was taken up with maize and wheat, to which attention is drawn elsewhere in this report. Field tests, however, were undertaken and completed for the season at Beaudesert, and a new series initiated at Stanthorpe. In the Beaudesert trials ten varieties of wheat were chosen for the purpose of determining their value both as green fodder and hay, careful records being taken of the results. These latter may be considered very satisfactory ; the lowest yield ranged from approximately 5 tons and the highest 7 tons 2 cwt. per acre. The results of the trial have enabled a selection to be made of the most suitable varieties to grow for green fodder purposes in a district where wheat is not commonly raised for this purpose.

The Stanthorpe trials embraced fertiliser tests and fodder tests with wheat, barley, rye, and oats (different varietios) in conjunction with field peas and vetches. Other trials are being made with canary seed, dwarf essex rape, sugar beet, mangolds, and purple-top swedes. Prospects for the season appear to be fairly satisfactory, and the majority of the crops made an excellent start.

In the North, attention has been given to variety trials with tomatoes, both with and without fertilisers, and special treatment for the prevention of tomato wilt has received consideration.

Tests were also carried out with cotton, maize, potatoes, broom millet, fodders, and peanuts, fertilisers being used with peanuts and potatoes.

## Fodder Conservation.

In many districts, particularly in Coastal and Southern Queensland, the maize crops failed to set a crop of grain, although the plants made fairly good growth. Instructional work in fodder consorvation was carried out by officers of the Department, who were assiduous in giving advice and in their efforts to effect the conservation of as much fodder as possible. It was found, however, in the generality of cases, that an acute shortage of grass compelled the dairy farmers to make use immediately of what green fodder they had. Under the circumstances, the amount conserved this year, as ensilage, will be small. The time has surely arrived for the display of more foresight on the part of the Queensland stock-owner. Reserve supplies of fodder on individual farms are imperative, and, unless provider! for more systematically, grave monetary and stock losses must result.

I have, \&c.-
H. C. QUODLING.

## REPORT OF THE DIRECTOR OF DAIRYING AND COLD STORAGE

I have the honour to submit herewith a report upon the dairying industry for the year 1922-3.

Generally the season was not conducive to high production of dairy products; the volume of the rainfall in the most favoured dairy districts was below average, and in many localities droughty weather conditions prevailed practically throughout the year. Milk production and succulent pastures and fodders for dairy stock are so closely allied that it is natural for adverse weather conditions to be reflected in the quantity of the milk yield, which may usually be taken as an index to the state of prosperity of the industry as a whole.

Applying this rule, we find that the milk production for the year 1921 is recorded as being $151,000,000$ gallons, and that for the past year is given as $134,000,000$ gallons, a decrease of $17,000,000$ gallons of milk within the latter year. The milk raised was utilised for domestic purposes or used in connection with the manufacture of butter, cheese, or condensed milk. By far the greater proportion of the total of milk produced was used for the purpose of manufacture into butter, and under this heading there was absorbed about 77 per cent. of the total quantity of the milk raised upon the dairy farms; consequently the manufacture of butter is to be regarded as the most important and principal branch of dairy activity in this State - a position which has been maintained for many years past.

The particulars supplied hereunder show the disposition of the milk under the various headings, together with the quantities of milk used for similar purposes during the former year. .
$\begin{array}{lllr}\text { Milk } \\ \text { Year. }\end{array}$ used for Domestic $\left.\begin{array}{r}\text { Purposes. } \\ \text { Quantity } \\ \text { (gallons). }\end{array}\right\}$
$\begin{array}{rllrr}\begin{array}{c}\text { Milk }\end{array} \\ \text { Year. }\end{array}$ used by Cheese $\left.\begin{array}{r}\text { Factories. } \\ \text { Quantity } \\ \text { (gallons). }\end{array}\right)$

Milk used at Condensed Milk Factories.

| Year. |  |  | Quantity <br> (gallons). |  |
| :---: | :---: | :---: | :---: | :---: |
| 1921 | $\ldots$ | $\cdots$ | $\ldots$ | $3,985,979$ |
| 1922 | $\ldots$ | $\cdots$ | $\cdots$ | $2,700,788$ |
|  | Decrease | $\ldots$ | $1,285,191$ |  |

Milk Separated for Butter-making Purposes.

| Year. | Quantity (gallons). |
| :---: | :---: |
| 1921 | 117,411,706 |
| 1922 | 104,949,114 |

In a comparative sense the people of Queensland are not heavy consumers of fresh milk, but on the other hand a considerable quantity of condensed or dried milk is taken into consumption. An increase in the consumption of fresh milk by approximately half-a-million gallons within the year may possibly be taken as an indication of a growing taste being cultivated for the commodity in a fresh form. Neither the producers nor vendors of milk have attempted an effective canvass or campaign with the specific objective of increasing the sale of milk to householders, caterers, \&c.; and this may, in a measure, account for the lower figures of consumption that prevail here as compared with those of other countries where milk is more freely partaken of.

From a health point of view, there is no satisfactory substitute for milk to be suggested, and, all things considered, milk ranks amongst the cheapest of foodstuffs offering at present.

It is interesting to note that the consumption of butter and cheese has attained a high level, and in proportion to their number, the inhabitants of Queensland consume more than ordinary quantities of butter and cheese, and the assumption is that the more general use of milk within the household could be brought into practice. To this end, fuller publicity, on the part of those engaged in the marketing of milk, of the many advantages which the use of milk has to commend it would, no doubt, be helpful. The industry in other countries has gained materially as a result of action taken on the lines indicated.

At the termination of the year there were 21,931 dairying establishments in existence, an increase of 236 in number over the figure $(21,695)$ recorded for the former year. Included in the category of dairying establishments are 48 butter factories, as against 47 for the former year ; 79 cheese factories, which number is 4 less than were in operation for the former year; and 3 condensed-milk factories, a comparative increase of one factory over the former year. The balance of the number, viz., 21,802 , required to make up the total complement given as dairy establishments, comprised principally dairy premises utilised by dairy farmers in connection with the industry on their farms.

Irrespective of the adverse nature of the season, an additional number of landholders elected to engage in dairy farming, and the number so doing would have been appreciably higher if the weather conditions had been more encouraging and offered greater promise of success. At present there are rather more than 500,000 cows utilised in the dairy herds. The industry has been developed and advanced to a stage which makes it reasonably safe to predict that under normal seasonal conditions Queensland will rank foremost amongst the States of the Commonwealth in the amounts of butter and cheese that will be available for exportation overseas from year to year. In the year 1921 this State attained the distinction of being the principal individual contributor of the Federation in the quantities of both butter and cheese consigned to overseas markets. The subsequent dry season robbed her of pride of place in respect to the volume of butter exported, but the premier position in regard to cheese exportation has been retained contimuously for many years past.

Little more than a quarter of a century ago the production of butter was about equal to the local requirements, and the marked expansion of the industry that has taken place within a comparatively short space of time betokens the future possibilities of dairying in this State. To date only a proportionately small percentage of the land which is suitable for dairy purposes has been brought into requisition. In the immediate future it is likely that a comparatively large acreage of land will be made available for closer settlement in the Burnett district and elsewhere, and the probability is that dairying will be the principal industry engaged upon in these areas, and the importance of the industry as a whole will be added to accordingly.

## Butter.

Referring more specifically to the production and manufacture of butter, it is found that the quantity of butter manufactured during the calendar year 1922 is returned as being $53 \frac{3}{4}$ million lb., a decrease of 7 million lb. as compared with the production of butter for the former year. The butter was disposed of through the avanues of the local, overseas, and interstate markets. A general uplift in the standard of quality was effected within the year, and a considerable increase was made in the percentage of higher grades of butter manufactured, as compared with other years.

The consignments of butter from individual factories were, upon arrival in Brisbane, carefully examined by officers of the Dairy Branch, and defects in the quality of the butters were noted by them. In turn the factory responsible for the manufacture of butter in which faults were detected was advised accordingly; and in instances where it was considered necessary an officer was despatched to the factory for the purpose of conveying instruction with a view of obviating the defects in the product.

The application of the principle of neutralisation and pasteurisation of cream preparatory to churning into butter has been practised more generally by butter manufacturers. The results have been satisfactory, and have led to improvement in the keeping properties of the butter produced from the treated cream. The pasteurisation of cream has proved of special benefit to those factories which engage in the export trade in butter with oversea countries, for to reach these distant markets the butter mast necessarily be retained for a considerable time in cold chambers under refrigeration prior to arrival at its ultimate destination. In this way the butter is allowed ample opportunity for deterioration in quality to take place, and this undesirable change in quality is not to be arrested or prevented to any full degree unless the process of pasteurisation of the cream is carried out efficiently, and strict attention is given to every detail connected with the process of manufacture.

In the butters coming forward for inspection from time to time, there has been detected greater freedom from alkaline or cooked flavours and in this there is provided the best of evidence that the processes of neutralisation and pasteurisation of the cream are being carried out with greater skill and care at the factories than was the case formerly. The causes to which these
particular defects are attributable have been fully explained to manufacturers, together with the means whereby the presence of these faults in butter are to be obviated.

After passing through a period of almost absolute freedom from wood-taint in butter, a complaint has been made to the effect that woodtaint flavour was discernible in some of the butter supplied to a Southern State this season. The butter absorbs the characteristic flavour known as "wood-taint" from the timber used in the making of the butter-box into which the butter later is packed. As a general rule, not more than an appreciably small percentage of the total butter in a consignment is affected by woodtaint, but under certain conditions of the market the presence of wood-taint, even if the fault is restricted to a small proportion of the butter output of a single factory, may prove disastrous; and because of this happening, it is necessary that the wood-taint flavour must be overcome without delay.

The investigations made into the underlying cause of the trouble go to show that the use of unseasoned timber, or the utilisation of topsections of tree trunks, or logs affected with what is known to sawmillers as "black heart," is to be discountenanced for box-making purposes.

It was also discovered that in practice it frequently occurs that the taint is limited to one of the sides or to a single piece of the timber used in the making of the bitter-box; and the damage to the quality of the butter, although restricted to that portion of it which was brought in contact with the tainted timber, was sufficient to disqualify the butter from being awarded a high-grade classification.

The difficulty is, too, that the person making up the boxes is unable by casual observation to discriminate -readily between the timber which is free from taint and that which is affected with it ; consequently there is a possibility that in the making up of a box a piece of timber may be utilised that is unsuited for that purpose.

The species of pine from which box timber is procured are those known as white pine (Araucaria Cunninghamii) and the bunya pine (Araucaria Bidwilli), the former being most generally employed. A number of analyses of the timber from which the boxes are made has been carried out from time to time by the Agricultural Chemist (Mr. J. C. Brünnich), and the results go to show that generally the timber is comparatively free from resinous matter liable to exert tainting influences upon butter packed in hoxes made from it; consequently the cause of wood-taint becomes restricted to variance in the stage or nature of the growth of the trees, or the methods adopted in the seasoning of the timber prior to its use for box-making purposes.

The concerted efforts of those controlling sawmills or butter factories should be centred upon the eradication of wood-taint; and, as the interests of both parties are liable to suffer by a continuance of the fault, it is not anticipated that there will be any difficulty in gaining their co-operation in the direction of keeping our butters free from the defect.

It is particularly in connection with the interstate trade in butter that wood-taint has been brought into evidence; and it is somewhat remarkable that the presence of wood-taint
flavour has not been commented upon in butters disposed of in the oversea markets, as it is through the latter channels that most of our butters are sold.

Although investigation of the manner in which wood-taint may be conveyed to butter, and the means whereby it may be prevented, is now in training, the earlier investigations which were carried out in connection with this matter go to show that the paraffining of the timber of the box that comes into close contact with the butter is the most effectual means of obviating the wood-taint flavour being imparted to the butter.

The signal success achieved by Queensland exhibitors in the classes for butter at the Islington Dairy Show held within the year, clearly demonstrates that in the matter of quality the best of our butters do not suffer by comparison with the finest butters produced in other parts of the British Empire. The competition in butter was open to factories within the Empire, and butters from Canada, New Zealand, South Africa, Victoria, New South Wales, South Australia, and Queensland were exhibited.

The competition was under two headings, and awards were given for both salted and unsalted butters. The prizes ranged from first to third in each class, and the butters contributed by the factories operating in this State were awarded four of the six prizes which were on offer. It is the first occasion in the history of the Islington Dairy Show that the honours have so fully been secured by the exhibitors from an individual State, and the manufacturers here are to be congratulated accordingly. The maximum points were allocated by the judges of the butters to an exhibit manufactured and submitted by a Queensland company. It may reasonably be expected that the competing butters would be thoroughly examined and subjected to the closest scrutiny by the judge, and perusal of his remarks does not disclose that wood-taint was detected by him in any of the butters of Queensland origin.

A feature of the trade in dairy produce was the unsettled condition of the markets which prevailed from time to time throughout the year. The oversea quotations were comparatively satisfactory to producers until New Year was reached, but immediately the New Year opened the overseas market for dairy produce suddenly collapsed, and, with production at a fairly high level in Australia, the market here quickly declined in sympathy, and locally dairy produce was reduced appreciably in value. A strenuous effort was made to stabilise the market throughout Anstralia, and a degree of suceess was attained in that direction. The task was one bristling with difficulties, many of which required the earnest co-operation of the producers in the respective States before a satisfactory solution could be hoped for, and as concerted action extending over such a large territory and diversity of interests was not to be readily achieved, it was consequently found that the scheme for stabilisation did not in practice aceomplish all that the designers of the scheme had expected from it.

It was not that the scheme was too idealistic that a greater measure of success was not attained, but rather beeause the organisation was not rendered perfect in all respects. On the
whole the producers benefited considerably as a result of the scheme, and the advantages would have been more decisively in the producer's favour had it not happened that New Zealand, at the end of the export season, had on hand abnormally heavy stocks of butter. Owing to the collapse of the London market another outlet was songht for the surplus, and the opportunity was taken by the sellers of butter in the Dominion to unload a considerable amount on the Australian market where values were more attractive. Naturally the intake of this butter influenced the market here, and led to a reduction in values locally. The existing reciprocal tariff arrangements operated very distinctly against the interests of producers here throughout the whole of the transaction.

## Cheese.

The production of cheese was reduced in volume as a result of the adverse weather conditions which prevailed during the year. The quantity of cheese manufactured within the year was slightly in excess of $10,500,000 \mathrm{lb}$., this amount being approximately $4,500,000 \mathrm{lb}$. less than that manufactured during the preceding twelve months.

A general improvement in the standard of quality has been effected, and closer attention has been given to the preparation and packing of cheese for export. Factories have contributed a relatively larger proportion of large cheeses ( 80 lb .), which is the size most suited to fill the requirements of the export trade, and have adopted a crate of uniform design which materially adds to the appearance of the consignments of the cheese when presented for exportation from time to time. It is the custom to pack two cheeses in a crate.

Despite the unsatisfactory nature of the season and the consequent shrinkage in the volume of cheese manufactured within the year, this State has been able to maintain the distinction of being the principal contributor of cheese to the overseas market from Australian sources.

There has been some extension of the number of factories which have adopted the practice of pasteurisation of the milk utilised for cheesemaking purposes, and without doubt the pasteurisation of the milk has proved efficacious in bringing about an improvement in the standard of quality in the cheese output of the factories which have adopted that method of treatment of the milk.

A considerable amount of interest is being taken in the pasteurisation of milk at cheese factories, and the results are being closely watched by those controlling companies wherein cheese is manuifactured without the subjection of the milk to pasteurisation; and should it so happen that the pasteurisation of milk is found to be economically advantageous, there is little doubt that the utilisation of pasteurers would become more general throughout the cheese factories. It is somewhat remarkable that, although the cheeses made from pasteurised milk are of comparatively superior quallity, there appears to be no monetary advantage gained on this score from sales effected in the oversea markets, and in some instances the realisations of cheese made from unpasteurised milk have been higher than those returned for the pasteurised product. Needless to add, the cost of manufacture of cheese is increased by the adoption of
pasteurisation, and unless dairy companies are assured of reasonable prospects of being recouped for the cost involved in the installation and operation of the pasteurising plant, it is unlikely that the additional outlay of capital will be undertaken.

It has always been contended that quality counts, especially when applied to any foodstuff, and the assumption is, that in the immediate future, first-quality cheese made from pasteurised milk will command a higher price in the market than will be obtained by the sale of rolatively lower grades of cheese made from milk in the ordinary manner. The difference shown in the prices realised by the sale of cheeses manufactured under the respective methods is being made by dairy companies the crucial point upon which the adoption or otherwise of the pasteurisation of milk for cheose-making purposes is to be decided.

Of recent years, factory managers, in order to obtain a first-class classification for their make of cheese, have been encouraged or practically compelled to manufacture cheese with a very firm body. A degree of firmness in the body of the cheese verging upon hardness, has been insisted upon. The popular taste in Great Britain is for cheese of rather soft body and even texture, and the tendency has been for oversea consumers to cultivate a preference for cheeses that are softer and softer in body each year.

In the supply of dairy produce to a conservative market, such as that of Great Britain undoubtedly is, it is a fallacy to do otherwise than to supply a commodity which is in conformity with the consumer's ideals. It is natural that a purchaser of cheese will be prepared to pay a relativoly higher figure for the article which meets with his ideas of perfection, than he will pay for cheese which does not appeal to

A certain degree of firmness of body in cheese is necessary in order to give the cheese the requisite stability to withstand the stress of transit to market, but beyond that degree of firmness we should not go until such time as there are indications that the consumer has altered his taste in this particular respect.

## General.

Throughout the year there has been a healthy demand from factories for the services of instructors, for the purpose of assisting manufacturers in overcoming difficulties that from time to time occur from unapparent causes in the manufacture of dairy produce. The evidence is that manufacturers are now more alive to the wisdom of promptly advising officers of the Dairy Branch of the difficulties experienced in factories, so that the troubles might be investigated, and the necessary remedial measures applied without delay, rather than to allow of a tolerance of the troubles in the hope that they would disappear or become modified in intensity by the lapse of time.

In connection with the investigation and solution of some of the more obscure matters with which manufacturers were confronted, the aid of both the Agricultural Chemist (Mr. J. C. Brünnich) and the Government Bacteriologist (Mr. J. C. Pound) was availed of.

The Cold Store at Hamilton, which is being erected by the Government, is nearing completion. In its finished condition the Cold Store will rank amongst the largest and most replete premises of the kind situated in the Southern Hemisphere. The Cold Store has been designed principally for the purpose of holding under refrigeration the perishable products from the dairy factories, orchards, or farms, such as butter, cheese, fruit, or eggs.

The temperature in one series of insulated chambers will be controlled by cold air circulation method, and in the remaining rooms the required temperature will be maintained by means of direct ammonia-expansion coils. The capacity of the stores will be equal to containing the produce coming forward for cold storage in a bountiful season.

Within the year a considerable number of cows which are entered in the herd-books pertaining to the various distinctive breeds of dairy stock were tested for butter-fat production. Some animals put up splendid records in face of the adverse weather conditions that maintained practically throughout the year. This State can now claim having animals with official records of production practically on all-fours with the highest listed in any country. The stud masters and owners are to be congratulated upon the enthusiasm and skill they have displayed in connection with the feeding and caring for the animals submitted for testing.

With a view of obtaining practically worldwide uniformity in the method of estimating production records of animals submitted to an official test, all production records compiled by this office will in future be expressed in the terms of butter-fat, and not commercial butter as formerly was the case.

Increased interest has been taken by dairy farmers in the submission to testing of the ordinary dairy cows owned by them. Given a more favourable season an exceptionally large number of dairy cows would have been placed under test. Beneficial results, both to dairymen individually and the industry generally, must accrue from the systematic testing of the herds, and the wider the field of operations of the herd-tester the greater the benefits which will be derived from the work. Herd-testing has, as one of its objectives, the building up of a dairy herd for Queensland.

More than 560,000 dairy cows are utilised in the dairy industry at present; consequently the task is one of magnitude, and one which will be accomplished at a slower rate than would be necessary for adoption by the individual dairy farmer, who possibly would not be concerned in the uplift in production of more than the cows comprised in a single herd, say, 100 in number.

The testing of dairy herds by departmental officers has been in operation for some years, and it is very evident that the testing of the herds is bearing fruit. A comparison of the milk yield per capita of dairy cows for the years 1912-13 and 1922-3 shows that an increase in milk yield equivalent to $7 \frac{1}{2}$ per cent. has taken place in favour of the latter year, and no doubt herdtesting was the principal factor contributing to this pleasing result. Certainly advantage in seasonal conditions was not responsible for the
higher yield of milk in the year 1922-3. In reality the rainfall for the year 1912-13 was greater than that of 1922-3.

The significance of a $7 \frac{1}{2}$ per cent. increase in the milk yield may be illustrated in following manner:-The aggregate monetary value of the industry is approximately $£ 5,000,000$ per annum, and $7 \frac{1}{2}$ per cent. upon that amount equals $£ 375,000^{2}$ for the twelve months. Assuming that herd-testing is responsible for not more than half the increase which has taken place in the average milk yield, we find that even then there is an amount of $£ 187,500$ remaining to the credit of herd-testing.

Appended are particulars taken from the reports of the official Herd Tester (Mr. L. Andersen), wherein general reference is made to the matter of herd-testing, and there are given in summarised form the test results:-
"Generally speaking, the season just ended has been one of the worst experienced in Queensland for many years, and the dairy farmers in nearly every district suffered more or less, even the North Coast, which is generally favoured with a good rainfall, has suffered very severe losses.
"These losses are, in many instances, due to overstocking, which in turn is the result of the very high prices for stock that prevailed a couple of years ago; when the prices of meat dropped, the small farmers were left with too many stock and the holdings have not had an opportunity to recover since.
"During the early part of the year a few centres were visited on the Darling Downs, the principal of which were Burton, Koondai-i, Sunnyvale, and later in the year Kingsthorpe, but as the season gradually grew worse operations completely ceased in this part of the State, with the result that 61 herds only were submitted and 1,380 cows tested.
"In West Moreton a few enthusiastic dairymen kept the testing going fairly regularly, at Rosewood, Lanefield, and Haigslea, the total being 92 herds and 2,107 cows. Early in the new year the conditions were somewhat relieved by storms and light general rain in the coastal district, with the result that a good many inquiries came in from the districts along the North Coast Line and Burnett districts. Taking the North Coast districts from Brisbane to Mount Larcom, 150 herds were submitted, comprising 3,919 cows, while in the Burnett 73 herds were submitted and 1,726 cows tested. The grand total for the season, 376 herds with a total of 9,132 cows, is a record number, and, when due allowance is made for the season, seems to indicate that the dairy farmers of Queensland are at last waking up to the fact that progress can only be attained by testing, culling, and breeding from pure-bred sires.
"The general average production of milk and commercial butter is the lowest recorded for many years, being 13.5 lb . milk and .66 lb . commercial butter daily. The average content of butter-fat of 4.2 per cent. is slightly higher than that of former years.
"The highest average production for a herd was recorded as 1.40 lb . commercial butter per diem. This splendid yield was obtained from a mixed herd, comprising chiefly grade animals and including also six Illawarra Milking Shorthorn heifers.
"The above returns were taken during the last few days before the breaking of the drought early in June.
"The owner of this herd is the proud possessor of a silo, and in addition to ensilage he was also feeding lucerne hay, supplemented by bran and pollard.
"Strange to say, at the same centre and at the same date was also recorded the lowest daily avorage for a herd, viz. : 17 lb . commercial butter, and this, I think, shows a wonderful object lesson in good and indifferent feeding.
"Unfortunately the silos are still very few in this State, but it is to be hoped that the farmers will realise that, at least to a great extent, the silo will help to solye their troubles. In comparing the best herd with the poorest, some interesting figures are obtained. Assuming that the drought conditions extended over a period of three months and that each herd contained 50 cows, the well-fed herd would produce for that period approximately $6,300 \mathrm{lb}$. of butter, against a return of 765 lb . from the poorer herd. Taken at 1s. 6 d . per 1 b . the returns for the period would show respectively $£ 47210$ s. and $£ 577 \mathrm{~s} .6 \mathrm{~d}$.
"Great improvements are noted during the last couple of years in the direction of breeding from pure-bred sires from high producing stock, and the indications are that a few years hence the scrub bull will be a thing of the past.
"During the year a change was made in taking the samples of milk on the farms. Hitherto the sampling was extended over a period of seven days; this has now been altered to four days, a change much appreciated by the dairymen.
"A fair amount of time has been given during the year to instructing farmers in the practice of milk and cream testing, and this has in all instances been much appreciated.
"A large number of skim-milk samples has also been treated, showing in some cases big losses in the process of skimming.
"Appended will be found particulars of testing which has been carried out during the year."

Herd-Testing, 1922-3.
Summary of Ycar's Operations.
Number of herds tested.
376
Number of cows tested
. 9,132
Daily yield of milk in tested herds-


Lowest $\ldots .$.
Butter-fat content of herd milk-

| Mean | .. | .. | . | . | .. | $4.2 \%$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Highest | .. | .. | .. | . | .. | $6.0 \%$ |

$\begin{array}{lllllll}\text { Highest } & . & . . & . & . . & . . & 6.0 \% \\ \text { Lowest } . . & . . & . . & . . & . . & . . & 3.2 \%\end{array}$
Daily amount of commercial butter produced in herd-

| Mean $\ldots$ | .. | .. | .. | . | .. | .66 lb. |
| :--- | :--- | :--- | :--- | :--- | :--- | ---: |
| Highest | .. | . | $\ldots$ | . | .. | 140 lb. |
| Lowest .. | .. | . | .. | . | .. | .17 lb. |

Amount of milk yielded by individual cow daily-

## Highest

44.0 lb.

Amount of commercial butter yielded by individual cow daily-
Highest

2.08 lb .

Butter-fat content secorded-

## Highest

.04 lb .

Lowest
$9.4 \%$


It is not to be claimed that a comprehensive scheme of fodder conservation has been brought into practice, and unless this is accomplished the dairy industry must remain at the mercy of the seasons. During every drought there is emphasized the need that exists for the conservation of ample supplies of fodder, to maintain the dairy herds and keep the industry on an even keel.

A prolonged dry spell affects the dairy farmer proportionately to its duration. Firstly it causes diminution in the monetary returns from the sale of milk or cream, the second stage being the loss of dairy stock, finally culminating in privation or ruination to the dairy farmer. A reduction in the monetary value of the industry of from $£ 1,000,000$ to $£ 2,000,000$ is not unknown, exclusive of the value of the dairy stock which dies of starvation.

Many of our dairy farmers hold the opinion that it is an expensive undertaking to grow and conserve fodder and eventually feed it to dairy stock. To a degree their opinion is not unfounded, but obviously it is a doubly costly practice to allow the ravages of a drought to play havoc unmolested amongst our dairy herds. The advances by loan under the Co-eperative Agricultural Production and Advances to Farmers Act have been increased with a view of encouraging individual dairy farmers to
engage more seriously in fodder conservation upon the farms.

Droughts invade our country at certain intervals, but they do not occur with the same regularity and persistency as bleak winters and heavy snowfalls do in other parts of the world where dairying is engaged in on an extensive scale. Both housing and hand-feeding of dairy stock are necessary in the colder countries in order to win through. There the battle has to be fought each year, and the fight extends over six or more months in some countries. Our task is to combat the influence of drought recurring at intervals of probably irom three or possibly seven years, and in doing so the silo or hayshed, filled with fodder, will be found amongst the most effective weapons, and they are armaments which, under normal seasons, most dairy farmers are in a position to provide, if they so willed.

The alternative to the storage of adequate supplies of fodder on the farm is to make fodder conservation a national matter.

Throughout the year I have enjoyed the full co-operation and support of the officers attached to this branch, and I desire to record my appreciation of same.
E. GRAHAM,

Director of Dairying and Cold Storage.

## REPORT OF THE CHIEF INSPECTOR OF STOCK.

## Stock Statistics.

The following figures supplied by the Government Statistician show a decrease on those for the previous year in the number of horses, cattle, and sheep, but an increase in the number of pigs is noted :-

| Year. |  | Horses. | Cattle. | Sheep. | Pigs. |
| :--- | :--- | :---: | :---: | :---: | :---: |
| $19 n$ | $\ldots$ | 747,543 | $7,047,370$ | $18,402,399$ | 145,083 |
| 1922 | $\ldots$ | 714,055 | $6,955,463$ | $17,641,071$ | 160,617 |

During the period under review drought conditions have prevailed over the greater portion of the State, the rainfall having been most sparsely distributed, and very patchy in character. The usual summer rainfall was not recorded in the Gulf country, which it is understood is unprecedented. At the latter end of 1922 the pastoral industry was feeling the effects of the drought very seriously, as in many districts no rain fell for the preceding ten months. The general depression in the cattle industry has continued, and cattle have realised very much less per head than was the case two or three years ago and generally are now almost unsaleable. This depression is largely due to the lack of oversea markets and the difficulty in the introduction of fat stock into the Southern States. The State and Federal authorities are now endeavouring to improve the industry by establishing oversea markets, and by generally improving the handling and carriage of meat.

An Australian Meat Council was formed nearly twelve months ago. Delegates were sent to the East, and their reports show the possibility of fresh markets being opened up. This, in conjunction with a reported shortage of beef and an increased demand in the Southern States, may possibly help the cattle-owners in this State.

Owing to the cattle-tick pest the Southern States impose such stringent regulations on the introduction of our live stock that stock-owners are unable to take advantage of the much better Southern markets. It is considered that the three months' period of detention now enforced on our cattle on the Darling Downs or Western country could be considerably reduced even without detriment to the pastoral industry in the Southern States. It is contended that Queensland stock should be allowed introduction into New South Wales after the necessary dippings, in approved medicaments, under supervision, have been carried out in this State. The contention is supported by the fact that cattle from the tick-infested areas of New South Wales are permitted to be travelled to their clean country after dipping and found clean.

The sheep industry has maintained its prosperity, and high prices have been realised for wool and other sheep products. Owing to drought conditions, owners were forced to remove large numbers of sheep from Central Queensland to agistment country north of the Great Northern Railway. The lambing has been extremely irregular, corresponding to the patchy
nature of the rainfall. In the Peak Downs and Springsure districts, and in areas west of Roma where rain fell, the lambing was normal, but in many districts there will be practically no increase. The blowfly pest has not been responsible for any serious losses, owing to the unfavourable season.

During the year personal visits were made to the Southern, Central, and Northern portions of the State. Numerous stock-owners were met and stock matters discussed, more particularly those dealing with the dipping of stock travelling south of the Northern Railway, and restrictions applicable to movements of fat stock to the various meatworks.

The Stock Experiment Stations at Yeerongpilly and Townsville have been actively engaged. At the former station 330 specimens were submittea for bacteriological and other examination, 69 stud cattle were made immune against tick fever, 8,910 doses of natural pleuropneumonia virus and 1,690 doses of the double blackleg vaccing were distributed in various centres. At the same station the agglutination blood-test was used on 78 suspected cases of contagious abortion, when positive reactions were obtained in 21 cases. Experiments conducted under the auspices of the Federal Institute of Science and Industry in connection with tick dip investigations, and extending over several months, were also carried out.

Work at the Townsville Experiment Station comprised the immunisation against tick fever of 34 head of cattle. Investigations were also conducted into an outbreak of so-called "impaction paralysis of cattle," which was fully reported in the May edition of the Agricultural Journal. Analyses of dipping fluids and concentrates were made, and viscera and stomach contents examined. Attention is directed to the great enthusiasm displayed by the Inspector of Slaughter-houses, Townsville (Mr. J. A. Rheuben), who in the execution of his duties has, on at least two occasions, discovered parasites that hitherto were unrecorded in Australia.

The Instructor in Sheep and Wool, in connection with the departmental wool scheme, reports that a larger number of farmers annually are forwarding their clips to the Department, for classification and sale. These small clips are received from all parts of the State. Some owners of wool have been forced to drop out of the scheme owing to the large increase in the number of their flocks, which exceeds the limit provided. Three hundred and sixty-nine bales were sold, comprising about eighty-one thousand pounds of wool. For merinos top price realised $27 \frac{1}{2} \mathrm{~d}$., the lowest price being 5 d . for locks. The average price was $20 \frac{1}{2} \mathrm{~d}$. per lb. A new woolroom has been provided, which will be of considerable advantage from an economic aspect in handling the wool. The instructor and his assistant visited various centres and gave instructions to farmers on sheep matters in general.

The work carried out under "The Slaughtering Act of $1898^{\prime \prime}$ shows an annual increase, as will be seen by the figures supplied in the report.

Brands Act.
Details of Registrations, Transfers, \&c., Year 1922-3.


The depression in the cattle industry is reflected in the registration of cattle brands and earmarks, which show a decrease compared with last year's figures. Further improvement is anticipated in connection with the latter registrations, while the wool and sheep values are maintained.

In many districts, practically all the singlecut earmarks and the best of the double ones have been allotted, and to meet the increasing demand for new earmarks it will be necessary to subdivide the districts, so far as the registrations of sheep earmarks and brands are concerned. This will release marks for a second registration in another part of the district, without detriment to the interests of the original registration.

The Toowoomba and Warwick districts have already been subdivided for this purpose, with satisfactory results.

Prosecutions.

|  |  | Number of <br> Prosecutions. | Number of <br> Convictions. |  |
| :--- | :---: | :---: | :---: | :---: |
| Diseases in Stock Act | . | 51 | $\ldots$ | 51 |
| Slaughtering | Act | $\ldots$ | 30 | $\ldots$ |
| Brands Act | $\ldots$ | $\ldots$ | 13 | $\ldots$ |

## Analytical Examinations.

Twenty-eight samples of viscera and contents were submitted to the Agricultural Chemist for analysis, and in fourteen cases poison was detected. In North Queensland four samples were examined, of which one contained poison.

## Horses Exported.

Two thousand two hundred and ninetyeight horses were exported overseas, of which seven hundred and sixty-five were mares.

## Examination of Stallions.

Examinations were held at the following places:-Nambour, Gatton, Rosewood, Brisbane, Sandgate, Laidley, Warwick, Goombungee, Murgon, Kingaroy, Toowoomba, Boonah, Mackay, Toogoolawah, Caboolture, Townsville, Crow's Nest, Beenleigh, Gympie, Clifton, Helidon, Ipswich, and Bundaberg.

Seventy-two stallions were examined, of which number nine, or 12.5 per cent., were rejected.

Tabulated results of the examination are as follow :-


DIPS.
The total number of dips registered in the State is 4,240 , as compared with 4,163 last year.

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


## Dipping Fluids.

Six hundred and forty-eight samples of dipping fluids and twenty-five dip concentrates were analysed. Of these 375 dipping fluids and 23 concentrates were dealt with in Southern and Central Queensland, and 273 dipping fluids and 2 concentrates in North Queensland.

## Tick Board.

Owing to the prevailing drought and the poor condition of stock it was found impracticable to provide for regular musters and dippings in the cleansing areas. Straying stock on the various roads and reserves have been a grave menace to the tick-free areas, but the danger has been minimised owing to the fact that ticks have not been as numerous as they would have been under normal weather conditions. Although the regulations provide for at least two dippings and cleanliness of stock for clean areas, it has been found necessary in two cases to dip stock five consecutive times with an interval of seven days between each dipping before the cattle were clean. This is apparently due to the presence of accumulated dust in the base of the hair preventing the liquid gaining access to the skin.

## Helidon Cleansing Area.

In consideration of the season the year's work has been very satisfactory. The previous year's figures in respect of inspections and dippings were slightly greater, except in the case of infested holdings, which show a slight decrease. Three infestations occurred in the Withcott area due to straying stock, but no further ticks were found after the first outbreak. The infested properties are quarantined until such time as thorough inspection can be made after
rain has fallen. The officer in charge of this area states that large numbers of stock have strayed on to the various roads and reserves. These stock were in such poor condition that they could not be mustered, and the majority have since died, but the opinion has been expressed that they have done no damage to the cleansing area.

| Holdings inspected | $\ldots$ | $\ldots$ | 4,158 |
| :--- | :--- | :--- | ---: |
| Stock inspected | $\ldots$ | $\ldots$ | 160,704 |
| Stock dipped ... | $\ldots$ | $\ldots$ | 33,367 |
| Infested holdings | .. | $\ldots$ | 288 |

## South Burnett Cleansing Area

Owing to the severity of the drought, extension of this area to include the parishes of Durong and Boondooma was not practicable. Stock in many cases had to be removed within the area for feed and water without enforcing the usual restrictions, but it is not anticipated that adverse consequences will ensue. A few holdings adjoining the tick-infested boundary were reported to be slightly tick-infested, but cannot be dealt with until the stock have regained their normal condition.

| Holdings inspected | . | .. | 534 |
| :--- | :--- | :--- | ---: |
| Stock inspected | . | .. | 48,268 |
| Stock dipped .. | . | .. | 39,383 |
| Infested holdings | . | . | 73 |

## Miles-Chinchilla Area.

With the exception of four sporadic outbreaks caused by the passage of travelling stock, this area has been free from tick-infestation. A close supervision of stock entering the area has been exercised by departmental officers, particularly on the Great Dividing Range, which forms the northern boundary. If this boundary is thoroughly supervised, and stock-owners cooperate in this supervision, there is little likelihood of any serious reinfestments.

| Holdings inspected | .. | .. | 249 |
| :--- | :--- | :--- | ---: |
| Stock inspected | . | $\ldots$ | 19,939 |
| Infested holdings | .. | .. | 4 |

## Diseases in Stock.

The Veterinary Staff made 370 visits to various centres in Southern and Central Queensland. (Appendix B deals with the work in North Queensland.) Pleuro-pneumonia contagiosa was the principal infectious disease which affected stock in this State during the year, but the number of outbreaks reported were only thirty as compared with seventy during the previous year.

Investigations made revealed the fact that in many cases the diseases were non-infectious.

The following diseases were recorded, viz.: -Tuberculosis, actinomycosis, abortion, influenza, anæmia, dropsy, debility, fungoid poisoning, phosphorus poisoning, arsenical poisoning, lantana and other vegetable poisoning, hoven, impaction, lymphangitis, malignant growths, meningitis, melanosis, neuritis, osteo-malacia, paraphymosis, pleurisy, pneumonia in calves, sterility, scour in calves, tick fever, traumatic pericarditis, urticaria, verminous bronchitis.

## Pleuro-Pneumonia Contagiosa.

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. | Mar. | April. | May. | June. |  |
| Maryborough | 1 | . |  |  |  |  |  |  |  | 1 | 1 |  | 3 |
| Brisbane | . | . | 2 | . | . | 1 | 1 | . | 1 | $\cdots$ | $\ldots$ |  | 5 |
| Warwick | . | $\ldots$ | 1 | $\ldots$ | $\ldots$ | . | . | $\cdots$ | . | . | $\cdots$ | $\cdots$ | 1 |
| Gladstone | . | . | 1 |  | . | . | . | . | $\ldots$ | $\therefore$ | . |  | 1 |
| Clermont | . | . | . | 1 | . | . | $\ldots$ | . | . | . | . | 1 | 2 |
| Toowoomba | . | . | . | 1 | , | . | $\cdots$ | . | . | . |  | . . | 1 |
| Normanton | . | . . | . | i | 1 | . | , | . | . | . | . | . | 1 |
| Springsure . | . | . . | . | 1 | . . | . . | 1 | . | . | . |  | . | 2 |
| Rockhampton . . | . | . | . | 1 | . | $\ldots$ | 1 | \% | $\cdots$ | . | 1 | $\cdots$ | 3 |
| Townsville | $\cdots$ | . . | . | . . | $\ldots$ | $\ldots$ | 1 | 1 |  | . | . | $\cdots$ | 2 |
| Winton | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | $\cdots$ | . | . | 1 | $\cdots$ | $\cdots$ | . | 1 |
| Barcaldine | $\cdots$ | $\cdots$ | $\cdots$ |  | $\cdots$ |  | . | $\cdots$ | 1 |  |  |  | 1 |
| Bowen |  | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\ldots$ | $\ldots$ | $\cdots$ |  | 4 | i |  | 5 |
| Cloncurry | $\ldots$ | $\ldots$ | . | $\ldots$ | . | . | $\ldots$ | . | . | . . |  | 1 | 1 |
|  |  |  | 4 | 4 | 1 | 1 | 4 | 1 | 4 | 5 | 3 | 2 | . |
|  | Total number of outbreaks in Queensland |  |  |  |  |  | .. | . | . |  |  | . | 30 |

## Tuberculosis.

During the year under review the tuberculin test was applied to 634 animals, as compared with 381 in 1922 and 280 in 1921. The number of positive reactions was 23 , whilst 8 were doubtful, and will be retested.

Of the animals tested 188 were owned by Government departments, 372 privately owned, and 74 were subjected to the test prior to exportation.

Special veterinary attention has been given to the dairy cows in the Brisbane, Maryborough, and Bundaberg districts.

Eighty-nine dairies were visited, two thousand seven hundred and ninety-one cows examined, and twenty-one cows condemned as being diseased.

When cows were destroyed, a post-mortem examination was held in each case, confirming the diagnosis.

It is gratifying to note that the tuberculin test is becoming more popular. Stock-owners must realise sooner or later that it is expensive
and unprofitable to retain diseased animals in their herds.

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

Number of Stock Sold.
Average Prices Realised.

|  |  |  |  | £ | s. | $d$. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| Bullocks | $\ldots$ | $\ldots$ | $\ldots$ | 6 | 0 | 0 |
| Cows | . | $\ldots$ | $\ldots$ | 0 | 0 | 0 |
| Calves | $\ldots$ | $\ldots$ | $\ldots$ | 0 | 16 | 0 |
| Sheep | $\ldots$ | $\ldots$ | $\ldots$ | 0 | 17 | 0 |
| Lambs | $\ldots$ | $\ldots$ | $\ldots$ | 0 | 17 | 6 |

Quarantine Act.
One stallion passed through the quarantine period at Colmslie.

The number of hides and skins imported by tanners were-

| Goat-skins |  |  |  | 680 |
| :--- | :--- | :--- | :--- | ---: |
| Ox-hides | . | $\ldots$ | . | 1,302 |
| Calf-skins | . | $\ddots$ | . | 28,675 |

Upon arrival they were disinfected under supervision, and the necessary precautions taken in accordance with the Quarantine Regulations.

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

| District, | Entered District. |  |  | Removed from District. |  |  | Movements in Distriot. |  |  | STOCK DIPPED. |  | Stock Sprayed |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Horses. | Cattle. | Sheep. | Horses | Cattle. | Sheep. | Horses. | Cattle. | She p. | Hors.s. | Cattle. | Horses | Cattle. |
| Barcaldine | 3,323 | 42,069 | 217,420 | 4,138 | 55,258 | 915,381 | 3,169 | 10,927 | 528,139 |  | 24,062 | 540 |  |
| Brishen | 3,062 | 13,926 | 1,382 | 4,219 | 20,055 | 2 | 10,352 | 57,521 | 1,382 |  | 2,096 |  |  |
| Cairns | 4,125 | 121,080 | 298,343 | 3,881 | 33,525 | 65,255 | 8,082 | 135,900 | 86,997 | 928 | 72,502 | 768 | 290 |
| Charleville | 719 | 11,874 | 5,646 | 714 5 | 5,772 | 248 | 3,411 | 15,654 | 2,443 | 1,171 | 17,541 |  | 29 |
| Clermont | 1,420 | 24,008 | 241,142 | 5,378 | 51,232 | 390,951 | 7,198 | 29,814 | 371,720 |  |  |  |  |
| loncurry | -703 | 6,726 | 70,538 | 3,171 | 51,928 | 57,963 | 4,035 | 21,017 | 55,457 | 4 | 2,880 | 48 |  |
| Cunnamulla | 2,207 | 74,882 | 123,164 | 4,401 | 110,532 | 115,220 | 7,332 | 70,861 | 423,113 | 1,348 | 97,232 | . | 1,656 |
| Gladstone | 1,297 | 9,898 | 68,925 | 2,783 | 31,278 | 128,685 | 4,747 | 31,824 | 278,137 |  |  |  |  |
| Helidon | 607 | 18,926 | 373 | 1,279 | 22,820 | 25 | 399 | 14,720 |  | 2 | 18 | 1,247 |  |
| Hughendor | 553 | 3,040 | 1,191 | 1319 | 8,625 | 285 | 1,448 | 45,396 | 93 | 354 | 41,384 | 164 | 218 |
| Longreach |  |  |  |  |  | 381,558 | 4,289 | 19,210 | 321,763 | 485 | 12,417 | 521 | 103 |
| Maryborough | 2,369 3,298 | 33,678 18,006 | 311,909 31,649 | 7,758 4,824 | 2,151 63,070 | 1,232,367 | 11,535 | 29,636 | 1,503,073 | 84 2,023 | 7,140 50,138 | 2,613 | 489 |
| Normanton | 3,298 277 | 18,006 5,815 | 31,649 20 | 4,824 1,524 | 63,070 30,172 | 1,598 | 5,044 1,837 | 96,529 3,898 | 1,113 | 2,023 | 50,138 | 390 | 161 |
| Rockhampton | 1,308 | 12,047 | 70,869 | 3,966 | 42,531 | 44,286 | 10,216 | 92,251 | 13,712 | 69 | 1,169 | 95 | 2 |
|  | 3,063 | 15524 | 94,878 | 5,296 | 71,770 | 330,084 | 9,854 | 94,036 | 459,810 | 589 | 16,697 | 130 |  |
| Springsur | 940 | 13,598 | 33,726 | 1,463 | 35,590 | 21,075 | 8,640 | 146,656 | 1,401 | 333 | 43,526 | 16 | 105 |
| Tallebudg | 771 | 6,575 | 97,542 | 5,689 | 33,727 | 128,677 | 5,581 | 21,182 | 87,665 | 4,095 | 14,017 | 268 |  |
| Poowoomba | 18 | 1,786 | 1,022 | 554 14,696 | 3,585 109,005 | 516.641 ${ }^{2}$ | - 380 | 15,765 |  | 1 5 | 1,735 | 87 | 3 |
| Townsville | 6,677 1,360 | 38,501 69,178 | 328,860 136,489 | 14,696 3,364 | 109,005 9,387 | 516,641 28,050 | 22,443 $-7,897$ | 268,363 43,832 | 520,023 1,044 | 1,897 59 | 84,641 | 794 | 756 |
| $W_{\text {arw }}$ | 1,910 | 32,158 | 165,510 | 3,569 | 48,628 | 260,530 | 1,557 | 14,349 | 181,632 | 59 | 31,679 | 94 183 | 3 |
| -k | 2,533 | 21,060 | 317,980 | 3,026 | 38,702 | 290,655 | 10,464 | 99,768 | 688,294 | . | . . | . . |  |

## "The Slaughtering Act of 1898."

The inspection duties carried out under this Act are steadily increasing. The figures for the year under review show a decided increase in the number of animals slaughtered generally for human consumption. In the metropolitan area alone there are no less than forty-one licensed slaughter-yards, at which, according to figures supplied to the Government Statistician for the year ended the 31st December, 1922, approximately 59,377 cattle, 25,248 calves, 320,860 sheep, and 15,273 pigs were treated.

As previously reported, it is impossible to make a thorough inspection where the number of slaughter-yards is so large where supervision must be exercised, and until abattoirs are established the inspection must be more or less fragmentary.

The following are the comparative figures, compiled from the returns of the permanent officers of the Department:-

|  |  |  | 1921. | 1922. |
| :--- | :--- | :--- | ---: | ---: |
| Bullocks |  | $\ldots$ | 79,268 | 106,589 |
| Cows | $\ldots$ | $\ldots$ | 24,848 | 33,750 |
| Calves | $\ldots$ | $\ldots$ | 27,018 | 40,419 |
| Sheep | $\ldots$ | $\ldots$ | 465,731 | 461,459 |
| Pigs | $\ldots$ | . | 21,977 | 42,549 |

In addition, returns received from police officers of stock slaughtered for human consumption in 188 centres show the following comparative totals :-

|  |  |  | $1921-2$. | $1922-3$. |
| :--- | :--- | :--- | ---: | ---: |
| Bullocks.. | $\ldots$ | 60,542 | 63,135 |  |
| Cows | $\ldots$ | $\ldots$ | 28,648 | 31,358 |
| Calves | $\ldots$ | $\ldots$ | 6,651 | 5,079 |
| Sheep | $\ldots$ | $\ldots$ | 110,799 | 91,577 |
| Pigs | . | . | 11,082 | 15,360 |

In addition to the police supervision in country districts, the senior slaughtering inspector visited the following centres:-Dalby,

Charleville, Roma, Toowoomba, Millmerran, Kooroongarra, Cecil Plains, Oakey, Cotton Vale, Thulimba, Stanthorpe, Gatton, Ipswich, Kalbar, Boonah, Toogoolawah, Linville, Rosewood, Lowood, Yarraman, Esk, Dayboro', Palmwoods, Nambour Boowoogum, Kilkivan, Goomeri, Degilbo, Bundaberg, Gladstone, Rockhampton, Mackay, Finch Hatton, Proserpine, Bowen, Townsville, Ingham, Alpha, Emerald, Southport, Coolangatta. He reports a marked improvement in the general condition of butchers' premises in these districts, although in some instances a very unsatisfactory state of affairs prevailed as a result of the non-observation of sanitary conditions, which rendered necessary the service of an order on the licensee.

During the year seventy new slaughterhouses have been erected in various parts of the State; one was remodelled, and two are now under construction; and in conjunction with these slaughter-houses sixty-seven new shops have been established. A total outlay of $£ 20,000$ was involved by two individual owners in the erection of three shops and the installation of a refrigerating plant, \&c.

It is noted that in the transport of meat, the motor is rapidly superseding the horse-drawn vehicle.

A central depôt for the inspection of carcasses of pork and veal has been established at this department. Since its inception in December, 3,912 carcasses of pork and 7,177 carcasses of veal were submitted for inspection.

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, Charleville, Gladstone, Bowen, Cloncurry, Clermont, Barcaldine, Springsure, Cunnamulla, Dalby, Normanton, and Roma:-


| Description of Stock. | Number of Stock Slaughtered. | Careasses and Portions | Condemned. | Disease. |  | Per- centage. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cows-continued: |  | 15 forequarters | . | Pleuris/ |  | -02 2 |
|  |  | 1 forequarter | .. .. | Abscesses |  | . 001 |
|  |  | 1 indquarter | .. - | Abscesses | .. .. | . 001 |
|  |  | 11 heads | . | Abscesses | .. .. | -032 |
|  |  | 36 carcasses | .. . | Emaciation | .. .. | -106 |
|  |  | 3 carcasses | .. . | Redwater | .. .. | -009 |
|  |  | 2 carcasses | .. $\quad$. | Jaundice | .. .. | -006 |
|  |  | 1 carcass | .. .. | Malignant growth | .. .. | . 003 |
|  |  | 1 carcass | .. .. | Gangrene . . | .. . | -003 |
|  |  | 1 carcass | .. .. | Septicæmia .. | .. .. | -003 |
|  |  | 3 forequarters | .. .. | Septic wounds | .. .. | -004 |
| C. Ives | 40,419 | 1,093 carcasses | .. . | Immature | .. . . | $2 \cdot 704$ |
|  |  | 25 carcasses | .. .. | Putrefaction | .. .. | $\cdot 111$ |
|  |  | 3 carcasses | .. . | Bruised | .. .. | -007 |
|  |  | 2 carcasses | .. . | Tuberculosis | .. . | . 005 |
|  |  | 1 carcass | .. . | Jaundice | . . . | . 0025 |
|  |  | 1 carcass | .. .. | Redwater | .. . . | . 0025 |
| Pig ; | 250,77, | 1,429 carcasses | .. .. | Tuberculosis | .. .. | -570 |
|  |  | 12,239 head; | .. .. | Tuberculosis | .. .. | $4 \cdot 880$ |
|  |  | 4 carcasses | .. . | Abscesses | .. $\quad$. | . 001 |
|  |  | 169 heads | . | Abscesses | . | - 067 |
|  |  | 2 carcasses | . | Pleurisy | .. .. | . 0008 |
|  |  | 4 forequarters | .. . | Pleurisy | .. .. | . 0008 |
|  |  | 34 carcasses | .. .. | Putrefaction | .. .. | - 013 |
|  |  | 18 carcasses | . | Emaciation | .. .. | . 007 |
|  |  | 3 carcasses | . | Septicæmia | $\cdots$ | . 001 |
|  |  | 2 carcasses | .. | Peritonitis .. | $\ldots$ | -0008 |
|  |  | 2 carcasses <br> 1 carcass | $\cdots \quad .$. | Jaundice | . . | . 00008 |
|  |  |  |  | Proumonia . | $\ldots$ |  |
| Sheep | 461,459 | 67 carcasses | .. .. | Emaciation |  | . 014 |
|  |  | 10 carcasses | . | Bruised | .. .. | . 002 |
|  |  | 3 carcasses | .. .. | Jaundice | .. .. | . 0006 |
|  |  | 3 carcassoz | . | Redwater .. | .. .. | . 0006 |
|  |  | 3 carcasses | . | Abscesses ... | .. . | -0006 |
|  |  | 2 carcasses | . | Lantana poisoning | .. .. | . 0004 |
|  |  | 1 carcass | . | Fatigue fever .. | .. .. | -0002 |

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


ARTHUR H. CORY, M.R.C.V.S.,
Chief Inspector of Stock.

## REPORT OF THE GOVERNMENT BACTERIOLOGIST.

## Fees and Moneys Received

The following is the total amount of money received for work performed, bacteriological examination of samples of water, milk, and various morbid specimens, and the supply of blackleg vaccine, pleuro virus, and other laboratory products:-


Table of Specimens Sebmitted for Bacteriological and Other Examination.
Samples of water from butter and cheese factories 23
Pickling brine
Milk for tuberculosis
Milk for contagious mammitis ( 42 positive, 14 negative)
Milk for contagious abortion (1 positive, 4 negative)
Blood for contagious abortion ( 20 positive, $\ddot{5} \dot{8}$ negative)
Milk for bacteriological examination
Cream for bacteriological examination
Pus for tubercle, actinomycosis, and septic organisms

5

Blood films for tick-fever organisms
Pleuro virus for contaminating organisms
Pathological specimens and malignant growths

Immunisation of Stud Cattle for Tick Fever.
During the past year a total of 69 stud cattle were received to be immunised against tick fever. These animals comprised different breeds of bulls, cows, and heifers as follows.-

| Shorthorn | . | $\ldots$ | $\ldots$ | 13 |
| :--- | :---: | :---: | ---: | ---: |
| Devon ... | $\ldots$ | $\ldots$ | $\ldots$ | 1 |
| Hereford | . | $\ldots$ | $\ldots$ | 28 |
| Aberdeen | Angus | $\ldots$ | $\ldots$ | 3 |
| Milking Shorthorn | $\ldots$ | $\ldots$ | 18 |  |
| Ayrshire | $\ldots$ | $\ldots$ | $\ldots$ | 2 |
| Jersey ... | $\ldots$ | $\ldots$ | $\ldots$ | 1 |
| Friesian | .. | . | . | 1 |

These animals all reacted satisfactorily to the inoculation of recovered blood, and there were no deaths.

Some of the animals were so susceptitle that they reacted to a single inoculation, while others showed such a marked resistanee that they had to be inoculated a second time, and in several cases a third time, before they responded. This clearly explains that the so-called mild and strong blood theory is a misnomer, for blood drawn at one time from a single animal (bleeder), when injected, in some animals produced a very severe reaction with high temperature and hæmaglobinuria, while in others a very slight or no reaction whatever was produced.

Pleuro-pneumonia and the Supply of Natural Virus.
This disease has apparently not been very prevalent during the past year, and in consequence the demand for pleuro virus was not very
great. However, preserved natural virus was supplied for the inoculation of 8,910 head of cattle distributed in the following districts:Mitchēll, Morven, Charleville, Chinchilla, Augathella, Taroom, Warra, Fernvale, Kilkivan, Duaringa, Eidsvold, Helidon, Laidley, Toowoomba, Macalister, Longreach, Miriam Vale, Boonah, Murgon, Esk, Greenmount, Woodhill, Cooyar, Kilcoy, and Bowen.

All virus supplied is from natural cases of pleuro-pneumonia, and before distribution must have passed a microscopical examination to ensure its freedom from tubercle bacilli, septic bacteria, or any contaminating micro-organisms.

Notwithstanding that the pleuro virus supplied is free from septic bacteria, complaints are occasionally received that some of the animals inoculated suffer from bad tails. This is due to the fact that in these cases no precautions are taken to cleanse and disinfect the skin of that part of the tail operated on. The most satisfactory method of preparing the skin is to remove the hair with a pair of scissors, wash with warm soap and water, disinfect with 1-160 hycol, and finally, after an interval of about two minutes, remove the hycol solution by rinsing with water that has been previously boiled.

Very little extra time is involved in this work, particularly as the animals are operated on in a crush which holds ten or more animals, therefore, after the tail of the last animal in the crush is disinfected, the tail of the first animal is ready to be rinsed with water and inoculated. If these precautions are adopted, together with the use of sterile setons supplied by this laboratory, no "bad tails" should follow.

## Supply of Blackleg Vaccine.

During the year 1,690 double doses of blackleg vaccine were supplied to stock-owners, distributed principally in the following districts :Beaudesert, Gleneagle, Coomera, Eudlo, Laidley, Kingaroy, Eumundi, Beerwah, Brooloo. Murgon, Boorooren, Yeulba, Bell, Mooloolah, Morayfield, Kumbia, Harrisville, Gatton, Crawford, Miriam Vale, Ipswich, and Gympie.

The vaccine prepared at this laboratory is of a uniform quality, and its reliability is proved by the fact that experimental animals, treated according to directions with a sample of each specially prepared vaccine, withstand the severe test of being subsequently inoculated with virulent blackleg bacilli and spores, while the inoculation of the same germs into control or unprotected animals causes their death in from three to five days.

## Contagious Mammitis in Cattle

This serious disease is continually being brought under notice through outbreaks occurring on dairy farms and the number of specimens of suspected milk being submitted for examination. The spread of this disease is attributed partly to the carelessness of the dairy farmer, who is not alive to its seriousness, or to the hygienic methods of controlling it.

The disease is a catarrhal affection, and limited in most cases to the delicate mucous membrane lining the milk-ducts of the mammary gland, and as a rule there is very little heat or
swelling, moreover the affected parts are not particularly painful.

The disease is caused by a tiny chain-forming micro-organism or streptococcus which attacks the mucous membrane, and, through the generation of its poisonous products or toxins, causes a rapid destruction of tissue-cells and leucocytes or white blood-cells which are attracted to the spot. These dead cells produce that peculiar feature of the disease, a yellowish purulent discharge or pus, which can be withdrawn from the affected quarter.

A specially stained specimen of the deposit examined under the microscope reveals masses of pus-cells with the characteristic streptococei.

In the acute form, the first symptoms of the trouble are a diminution of the milk-yield, a definite acidity of the milk, and a tendency for it to become rapidly coagulated. Gradually the milk assumes a dirty brownish colour and becomes more curdly, the amount of secretion from the affected quarter diminishing owing to the thickening of the ducts, which finally become impervious, and the whole quarter is rendered useless. It will be observed in some cases that the symptoms are so very slight that the milk does not appear to be curdled, and, on settling, the deposit is so small as to be overlooked.

In all cases where slight infection is suspected, a sample of cream as well as the firstdrawn milk should be submitted for bacteriological examination.

Undoubtedly the transmission of the infection from cow to cow is through the agency of the milker's hands or the cups of the milking machine. This appliance, which was designed to enable the farmer to produce cleaner milk than by any other method, must be kept scrupulously clean, and be sterilised after each milking, and this advice is also applicable to the hands of the milker; moreover, all cows that are considered in any way suspicious should be milked last.

Once the disease has occurred in a herd, the owner should personally examine minutely every cow's udder before milking, and carefully note the character of the first small quantity of milk drawn. This precaution is especially necessary where a milking machine is in use, and any cow showing the slightest suspicion of disease should be held over to the last for milking, and on no account should the machine be used on her.

Treatment.-The injection of 6 oz . of a warm solution of 4 per cent. pure boracic acid through the teat into the udder immediately after milking is usually recommended for treatment. The solution should be injected at about blood heat, and allowed to remain in the udder for about ten minutes, during which time a gentle but thorough massage of the quarter is conducted, following which the fluid is withdrawn. This treatment should be applied twice daily for from three to five days, and then diseontinued.

This method is only satisfactory in the very early stages of the disease, as during the fery few days the streptococci are located practically solely on the surface of the mucous membrane, and have not penetrated far into the finer tubes which ramify throughout the delicate substance of the mammary gland. Gradually, however,
the germs penetrate deeper into the tissues and become englobed by cells and push further and further into the narrowing tubules. In this way it becomes impossible for any disinfectant fluid injected into the udder to reach the invading germs. Moreover, it will be remembered that the tissues of the udder are so extremely delicate that a poison sufficiently powerful to immediately destroy the streptococei is also liable to injure the tissue-cells.

The Use of Vaccine.-Both preventive and curative treatment has been carried out successfully by means of specially prepared vaccine. During the past year samples of milk were received from fifty-six cases of suspected contagious mammitis, and in forty-two cases the streptocoeci were detected by microscopical examination. Further, in each case the microorganism was isolated, grown artificially in sterile broth, and an autogenous vaccine prepared and supplied to the respective applicants.

The vaccine is prepared by sterilising at a very low temperature ( 60 deg. C.) a flask containing an active young broth-culture of streptococci. An estimate is made of the bacterial count of the contents, which are then diluted so that each cubic centimeter contains $360,000,000$ cocci, and 0.5 per cent. trikresol added as a preservative. The standard dose each is 2 c.c. of the diluted vaccine, which is injected into the loose cellular tissue behind the shoulder, and repeated until some improvement is noticeable. Generally two or three injections are sufficient. In cases of emergency a stock vaccine is supplied, but the results are not always satisfactory, the greatest success being obtained by the injection of an autogenous vaccine, i.e., one specially prepared from the organism causing the outbreak.

Practically every stock-owner who has had experience with vaccine prepared at this laboratory speaks of its efficiency most eulogistically.

## Notes on Contagious Abortion.

It is most important, when an animal aborts, to determine if possible whether the abortion is infectious. Authorities agree that there are no symptoms by which this fact can be determined with accuracy, although the history of the case may be helpful in making a diagnosis. By means of an agglutination blocd-test, the nature of the abortion or the presence of infection in the herd may be determined with a reasonable amount of accuracy.

During the past year, seventy-eight specimens of blood and five of milk taken from suspected cases of contagious abortion were received for the agglutination test. Positive reactions were obtained in twenty cases of blood and one of milk.

It is to be hoped that, as the reliability of the test becomes more generally known, breeders of stud and more particularly dairy stock will avail themselves of the opportunity of forwarding specimens for diagnosis, special attention being given to freshly purchased animals they intend to introduce inso their herds.

## Exhibits at the Royal National Show.

In the Departmental Court a special exhibit was arranged illustrating some of the many
activities of the Stock Experiment Station. This was made up as follows:-

1. A collection of plate and tube cultures with charts, tables, and diagrams descriptive of the many advantages accruing from the use of scrupulously clean methods as compared with slovenly ways on a dairy farm, also the value of condensed or boiled water used in the washing of butter and dairying utensils, and the increased keeping qualities and value of butter made from pasteurised cream.
2. Maps, diagrams, and tables illustrating the method of tick eradication in U.S.A., and pointing out that originally in 1906 the area under quarantine restriction in consequence of the presence on cattle of the Texas fever tick was 728,365 square miles, which included fifteen States, covering the whole southern part of America from the Atlantic to the Pacific Coast.

So successful has the work been that up to the present time considerably over 500,000 square miles or more than 70 per cent. of the original quarantined area of country has been freed from ticks and released from quarantine restrictions.
3. A collection of laboratory products, viz.-Protective vaccine for blackleg and curative vaccine for contagious mammitis and other diseases of bacterial origin, pleuro virus and sterile setons, lactic cultures, \&c.
4. A collection of specially preserved and mounted specimens illustrative of the various manifestations of animal diseases, including tuberculosis of the various organs, glands, and tissue of cattle, pigs, horses, fowls, and turkeys; actinomycosis, showing affection of the jaw, tongue, flank, scrotum, \&c.; pleuro-pneumonia, blackleg, swine fever, epithelioma, carcinoma, papilloma, \&c.; also a collection of internal and external parasites.
In view of their educational character these exhibits attracted considerable attention, while members of the staff in charge of the exhibit were busily engaged each day answering questions of interested visitors.

## Tick Dip Investigation.

During the past year considerable time was devoted to the following investigations conducted under the auspices of the Federal Institute of Science and Industry :-

1. To determine the action of standard arsenical dipping fluid on ticks during the moulting stages.
2. To dotermine by observation the protective action of arsenical dipping fluid against reinfestation of larval ticks applied to cattle after spraying.
3. To determine the effect of rain on efficacy of treatment with medicament.
The details of these experiments, with the conclusions arrived at, will shortly be published in a bulletin by this institute.

Summarised, these investigations have not demonstrated that improvement has been made on the American method of tick eradication,
which insists that, within the area operated on, dipping of all cattle in a standard arsenical solution must be carried out every fourteen days, and be continued without a break until the larval ticks on the ground (which have not succeeded in getting on the cattle) die of starvation.

It has been shown that, after a single dipping, the larval ticks that may subsequently become attached within two days are invariably destroyed, while, of the larval ticks that may become attached three days after dipping, only a very few survive. Some of these die without ovipositing, others oviposit, but the eggs are infertile, while only a small percentage lay eggs which hatch, and the progeny (larval ticks) exhibit a noticeable inactivity.

With fortnightly dipping, the ticks on the treated cattle at the second and all subsequent dippings cannot be more than twelve days old, and therefore, before the second moulting stage, at which period some ticks appear to resist the action of the medicament. There are three reasons why fortnightly dippings have proved successful-

1. Ticks are more readily killed during the earlier stages of their parasitic existence.
2. It can be arranged that dipping day never falls on Saturday, Sunday, or market days, and whatever day is selected will be easy to remember.
3. In the event of wet weather several days remain in which the cattle can be dipped before the ticks drop off.
The New South Wales Agricultural Gazette for April, 1923, contains a report by Lionel Cohen, F.C.S., Chemist to the Tick Board of Control, on "Experiments with Arsenical Dipping Fluids."

These experiments deal with the effects of dipping fluids used in various strengths of 4 lb . to 8 lb . of arsenious oxide per 400 gallons of water, some animals being dipped while others were sprayed. The cattle (ordinary dairy cows) were naturally infested, and daily observation made for six days, presumably when they came in to be milked morning and evening.

In the conclusions drawn from the results of the experiments, it states: "The departmental dipping formula contains more arsenic than is required to produce the best results"; and further, "Cattle leaving quarantine might advantageously receive two dippings with a four-day interval in a 5 lb . solution, instead of with a five to ten day interval in an 8 lb . solution."

With a view of confirming the correctness or otherwise of this statement, the following experiment was carried out at Yeerongpilly.

Two naturally tick (moderately) infested cows were procured from a neighbouring farm and sprayed twice with an emulsified solution containing 5 lb . of arsenious oxide per 400 gallons, with four days' interval between each treatment. The animals were kept in stalls under observation for thirty days. Surviving ticks were removed for seventeen days after the second spraying. Of 48 engorged ticks removed, 18 died without ovipositing, 30 oviposited, 13 of which laid eggs which hatched.

This experiment proves that, hád these two cows gone into clean country immediately after the second treatment, they could have introduced sufficient active ticks to set up a centre of infestation.

> C. J. POUND,

Government Bacteriologist.

# REPORT OF THE DIRECTOR, STOCK EXPERIMENT STATION, TOWNSVILLE. 

During the past year visits have been paid into nearly every stock district in connection with outbreaks of contagious diseases amongst stock. It cannot be said that outbreaks of contagious and infectious diseases have been more numerous during the past year, although pleuropneumonia contagiosa of cattle has been found just recently in the coastal districts.

Dry conditions prevail everywhere at present, and have been with us for the last twelve months. Recent visits in country districts have indicated that cattle everywhere are in poor condition.

## Stock Experiment Station.

The equipment and furniture of the experiment station has been added to during the last twelve months, and the facilities for working are greatly improved as compared with past years. The station can now undertake the examination of simple bacteriological and pathological material, and sufficient equipment is also available for ordinary chemical analyses.

It was understood that the analytical work of the station was to be enlarged and to cover soil analyses, analyses of fertilisers, foodstuffs,
\&c., but none of this work has yet devolved on the institution.

## Immunisation of Cattle Against Tick Fever.

During the past year there has been a marked falling-off in the number of cattle received at the station for immunisation against tick fever. Only 34 head were received as against 79 for the previous year, and 191 again for the year previous to that. The mortality for the year has been very high, 7 head of cattle dying. These included 5 which died of poverty. No deaths were due to redwater. All those cattle which died of poverty were the property of the one owner, and were brought from the South at the end of the dry period of last year. They withstood the redwater inoculation, and it was only some time afterwards that deaths commenced to take place. It was the poorest of the cattle that died, and nearly all had young calves.

Otherwise there was one death (a bull) from traumatic pericarditis, a piece of nail having passed through the reticulum and diaphragm into the thoracic cavity; and one death from fatty degeneration of the heartmuscle.

| Animal. |  |  |  | Date of Death. |  |  |  | Post-mortem. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 319 | . | . | . | 12th October, 1922 |  |  |  | Poverty |  |
| 324 | .. | . | . . | 13th October, 1922 | $\ldots$ | $\ldots$ | $\cdots$ | Poverty |  |
| 326 | . | . | . | 7th October, 1922. | $\ldots$ | $\ldots$ | $\cdots$ | Poverty |  |
| 330 | . | . | . | 26th November, 1922 | - | . | . | Poverty |  |
| ${ }_{331}^{335}{ }_{\text {A }}$ | . | . | . | 6th November, 1922 | . |  | . | Traumatic pericarditis |  |
| ${ }_{344}^{335}$ | $\ldots$ | $\cdots$ | . | 22nd November, 1922 |  |  |  | Poverty |  |
| 344 | . | . | . | 20th May, 1923 | . |  | . | Fatty degeneration of heart | - |

During ine last three years, a total of 328 head of cattle have passed through the Experiment Station. The deaths from redwater reach a total of 6 , while deaths from other causes total 13.

In routine inoculation of cattle, interesting points are sometimes brought during the course of a reaction. It is known that all animals do not react exactly alike, either in the type of temperature curve produced, the blood changes which follow, or the time of appearance and disappearance of the casual organisms in the blood.

The reaction largely depends on the susceptibility of the animal concerned. Nevertheless, where animals have been inoculated in numbers, it is found that variations occur in the type of reaction produced, such variations depending upon other factors than the particular susceptibilities of the animals concerned.

The work carried out by the Chemist will be found in the appendix attached. It will be found that there has been a considerable fallingoff in the number of dip samples sent in for analysis.

## Types of Redwater Reactions.

In vaccinating animals against any contagious or infectious disease, the resultant
reactions depend on three factors-the susceptibilities of the animals, the dosage, and the strength of the vaccine. In vaccination against tick fever in cattle, what is really a natural culture of the specific organism is used. Blood containing the organism is withdrawn from an immune animal, a little sodium citrate added to prevent coagulation, and this citrated blood constitutes the vaccine. Within limits, the size of the dose used seems to have no effect on the subsequent reaction, and if a group of animals are inoculated together, with doses of blood, say, varying from 5 to 50 c.c., it is usually found that the resultant reactions are more or less alike.

The strength of the vaccine is an unknown factor. It is usually found that the reaction produced by one immune animal's blood is much the same as that produced by the blood of another immune animal, though it cannot be denied that a survey of the records of a large number of animals inoculated frequently reveals the fact that most of the deaths will be found to follow the use of blood from one or two particular animals.

It is possible, of course, that, by a coincidence, the blood of one or two particular immune animals has been used on the most susceptible animals, but this factor tends to be ruled out when a large number are considered.

Apart from the above variations, all of which might be net with in routine inoculation, there is another varation which sometimes occurs. This is best illustrated by the following two series of inoculations, both samples of blood used being from the same animal (Bleeder B), though drawn at periods of nearly two years apart:-

First Series.

| Animal Number. | Result, | Remarks. |
| :---: | :---: | :---: |
| $\begin{aligned} & 47 \\ & 48 \\ & 49 \\ & 50 \\ & 51 \end{aligned}$ | Number of Days between Inoculation and Appearance of Organisms in Blood, $\begin{aligned} & 8 \\ & 8 \\ & 8 \\ & 9 \\ & 9 \end{aligned}$ | Typical reactions in all cases. |

Second Series.
Date Inoculated, 18-4-23.

| $\underset{\text { No. }}{\text { Animal }}$ | Result. | Remarks. |
| :---: | :---: | :---: |
| $\begin{aligned} & 338 \\ & 339 \end{aligned}$ | Organisms absent ditto | ) Reinoculated 9-5-23 $\int$ with blood of D. |
| 340 | ditto | \} Reinoculated 9-5-23 |
| 341 | ditto | with blood of G. |
| 342 |  |  |
| 343 | 33 rd day after inoculation, organisms absent | Reinoculated 9-5-23, 10 c.c. blood from H. |
| 344 | Organisms absent . . |  |

The firsi five bulls inoculated in 1921 all passed through typical redwater reactions, the temperature rising anywhere between the 6th and 10 th days, the organisms appearing about the same time and remaining in the blood a few days, then the temperature subsiding and the organisms disappearing also.

The second series of animals show quite a marked difference. There was a rise in temperature in all cases about the usual time, and the organisms failed to appear in the blood and had made no appearance 21 days after inoculation. In conformity with the usual custom practised here, animals which have not reacted, or those which have reacted doubtfully-and these being considered doubtful-are reinoculated with the blood of a second immune animal 21 days after the first inoculation. Nos. 338 and 339 were reinoculated with blood of D, Nos. 340 and 341 with blood of G, and Nos. 342, 343, and 344 with blood of H. For the seven following days the animals were run in the paddock, where they showed no signs of illness, and then smears and temperatures were recommenced.

Every one of these animals on the 28th day after the first inoculation, and 7 days after the second, showed marked blood changes, far more than are usually found following inoculation for redwater. Grantlar basophilia, nucleated red corpuscles, anisocytosis, and polychromasia were all very marked.

The blood showed all these features, while in addition No. 343 showed numerous piroplasms as well. How are these changes to be accounted for? The second series of inoculations are complicated by the fact that a second inoculation had been carried out in each case, but it is thought
that the occurrence of organisms in the blood of No. 343, and the blood changes in the whole five, were most likely due to the first inoculation and not to the second. The argument in favour of this is that blood changes do not usually commence after so short a period as seven days, while on the other hand organisms may be sometimes found weeks after inoculation. Even were it contended that the marked blood changes occurring in the blood cit these animals were consequent on the second inoculation, the result is equally remarkable. It rarely happens that marked blood changes oceur so often as a week after inoculation at any time, and with the blood of any immune animal, while here were a whole series all showing these blood changes.

The two series represent two different types of reaction, the first being the most frequent, therefore, perhaps, the typical, where the temperature reaction coincides with the appearance of the organisms (7-14th day), the second atypical, where the temperature reaction does not coincide with the appearance of organisms in the blood, hut is followed some weeks later by marked blood changes and may be then the appearance of piroplasms.

Since these two series were inoculated with blood from the same animal, it follows that there had been between the dates mentioned some alteration or change in the virulence of the blood of Bleeder 13. Whether this change was a result of the animal heing kept free from ticks over by far the greater period of time between the dates mentioned, or whether this change in virulency depended on the age of the animal, it is impossible to say. Perhaps both factors operated.

## - Pleuro-Pneumonia Contagiosa of Cattle.

A note is made here in connection with this disease, firstly, because of its prominence in the North, and, secondly, because of the many erroneous ideas which exist, both regarding the means by which this disease is spread, and the means of inoculation used in its suppression.

The disease in North Queensland shows little tendency to assume the epizootic form. It exists as an enzootic. Outbreaks are, as a rule, associated with the appearance of a few acute cases, and an equal or larger number of chronic cases, while the majority of animals do not seem to be affected. That the majority of cattle are not affected is borne out by abattoir inspection.

The insidious nature of the disease makes it very difficult to deal with, and the difficulty is further enhanced by the failure of some stockowners to report the occurrence of the disease in their stock, particularly in those cases where only a few head are lost. What frequently happens is that an owner kills an animal in the acute stage of the disease, draws off sufficient pleuritic fluid to inoculate his herd, and that is all that is done. The consequence is that usually the acutely affected animals die, while chronic ones remain affected, maybe for months, and then also frequently die or appear to recover. It is these chronic cases, or the so-called recovered animals, that are such a serious factor in the production of fresh outbreaks, particularly as many of these animals appear to be quite healthy. To eradicate the disease under such conditions appears to be almost an impossibility. Quarantine measures which are put into operation during outbreaks of this disease seem to have but
little influence in suppressing the trouble among station cattle on the run, but they are of much more value where the disease occurs in mobs of travelling cattle.

The disease is caused by a minute microorganism which is just within the limits of visibility of the highest powers of the microscope. It spreads from beast to beast by contact. Many stock-owners are still of the opinion that the disease arises spontaneously, and will point to the fact that in the wet years of 1917 and 1918 the disease appeared on many runs where it had not been seen for years, and where there had been no movement of stock on or off the run for some time previously. Whether the humidity of the atmosphere facilitates the spread of the disease is unknown, but the fact remains that outbreaks have recently occurred in the coastal region of the North, and these during the driest period on record.

In vaccination against this disease the usual method employed is to pass a small woollen seton soaked in the pleuritic fluid from an acute case of the disease through the end of the tail. This pleuritic fluid contains the causal organism, and this latter finding a suitable medium in the subcutaneous tissue of the tail, commenees to multiply. A swelling results, and in a typical case of the disease reaches the size of an egg, or a little larger, and then disappears. The animal is afterwards found to be immune. It occasionally happens that the swelling passes upwards along the tail, and if neglected reaches the buttocks. There is then growth of the virus in the subcutaneous tissue of the hind quarter, often followed by gangrene of the part. Death often supervenes as a result of toxæmia, but where this does not occur there is a sloughing of the part followed by gradual healing. Where the swelling is spreading upwards, if the tail is removed before the buttocks are reached, the animal usually recovers and is found to be immune.

Unless an animal shows any swelling of the tail after inoculation, it can usually be deduced that there has been no reaction, and this is found to occur in many animals, possibly because of the possession of a strong natural immunity.

The insertion through the tail of the seton is usually performed by means of a special needle. One drawback to the use of the seton is that there is usually a small amount of hæmorrage in the area, and this, soaking into the seton, helps to dilute and wash out the organisms. Further, as the wound caused by the insertion of the seton is by no means aseptic-in fact far from it-if the tail is examined a few hours afterwards there is always a serous oozing, and this also helps to remove the few drops of virus in the seton. By far the better method of inoculating is to insert a few drops of virus under the skin at the end of the tail by means of a strong hypodermic syringe, but, as many cannot use a syringe properly, the more simple method of the seton is universal.

One of the most erroneous notions that exists in regard to the vaccination of cattle against this disease is that, where a large percentage of swollen tails occur after inoculation, such is due to the carelessness of the inoculator in injuring one of the bones at the end of the tail. It could only be gross carelessness on the part of the inoculator should such occur, and furthermore, even if the bone is deliberately
touched with the needle, as a rule no untoward effects follow. Where a large number of swollen tails occur, it can be assumed that the inoculation has been successful and the animals will afterwards be found to be immune.

## Impaction Paralysis cf Cattle.

This disease, an account of which appears in the Agricultural Journal for May of this year for the first time as far as Queensland is concerned, is found to occur in certain areas in the Charters Towers district. Sirice then, although no actual cases have been seen in other parts, from accounts which have been received there appears to be little doubt that this condition is in no way confined to the areas where it was first discovered.

The condition is apparently akin to the "impaction paralysis", of Victoria, the "dry bible" of South Australia, and resembles in some way the "lamziekte" of South Africa.

It was held for many years that the "lamziekte" of South Africa was probably a form of deficiency disease, and many experiments were formed in an attempt to throw light on the disease from this particular point of view. Similarly, in parts of Australia it was believed by many that the disease was also of the nature of a food deficiency. Recently, work by Theiler in South Africa and by Seddon in Victoria has thrown considerable light on the disease. Their experiments have shown that the disease is in all probability produced as a result of the ingestion of powerful bacterial toxins. These toxins are produced in the carcasses of animals lying dead in the open, and they are introduced into the body of the affected animal as a result of the bone-chewing habit. It is well known that the bone-chewing habit is common-in some cases very common-in areas where the disease is prevalent, and it is because of this habit that the condition has been ascribed to some deficiency in the natural herbage.

All the information that the writer has been able to gather appears in the issue of the journal referred to above, and it seems unnecessary to repeat it here. It was there suggested that, the disease probably being caused as a result of the ingestion of bones, all carcasses on an affected run should be burnt out, and that lime should be supplied in troughs. This has been carried out in one small area, and there appears to be a marked decline in the mortality. On the other hand, it is a big problem to commence burning up all carcasses on a large badly infected run, especially as most cattle stations are now working as short-handed as possible.

As the disease in other parts appears to be the result of ingestion of bacterial toxins, investigation along these lines is required in Queensland.

## Appendix.

Chemical work during the year consisted chiefly of routine analysis of dipping fluids, of which 273 samples were submitted, and tested as follows:-
$1.1 \%$ (last year $.6 \%$ ) contained up to 2 lb .
$4.8 \%$ (last year $3 \cdot 6 \%$ ) contained from 2 to 4 lb , $19 \cdot 1 \%$ (last year $15.8 \%$ ) contained from 4 to 6 lb . $4.2 \%$ (last year $16.5 \%$ ) contained from 6 to 7 lb . $23 \cdot 1 \%$ (last year $19 \cdot 3 \%$ ) contained from 7 to 8 lb . $20.1 \%$ (last year $23.8 \%$ ) contained from 8 to 9 lb . $9.5 \%$ (last year $10.7 \%$ ) contained from 9 to 10 lb . $8.1 \%$ (last year $9.7 \%$ ) contained 10 lb . and over
of which-
$87 \cdot 1 \%$ (last year $81.5 \%$ ) free from oxidation
$.9 \%$ (last year $1.2 \%$ ) contained under .5 lb .
$2 \cdot 1 \%$ (last year $1 \cdot 6 \%$ ) contained from $\cdot 5$ to 1 lb .
$3.0 \%$ (last year $4.3 \%$ ) contained from 1 to 2 lb .
$1 \cdot 3 \%$ (last year $4 \cdot 2 \%$ ) contained from 2 to 3 lb .
$5 \cdot 6 \%$ (last year $7.2 \%$ ) contained 3 lb . and over
Of the above, 20 samples were from the Experiment Station and office spray. In addition there, were also analysed-

Dipping concentrates, 2
Waters, 8.
Arsenic, 3.
Viscera and stomach contents, 4 (one positive for arsenic).
Limestones and rocks, 9,
whilst 12 pints of standard iodine were prepared and despatched, 7 pints being for the use of inspectors.

## Dip Concentrates.

Two samples of different proprietary preparations, recognised by the Department, were found to be much below the specifications set out thereon, with regard to the arsenic content.

## General Analytical Work.

It was hoped that general analytical work would be performed on the completion of the new laboratory, which has been fully equipped for same, but such has not yet been sanctioned. It should be immediately made known that the chemical analyses of many different products can be carried out in the Townsville Laboratory, and this work, with the collaboration of the Council of Agriculture, should be significant.

## Parasites of the Pig.

In the report for 1921-2, the discovery of two nematode parasites was recorded. These were Necator Americanus and Avkylostoma duodenale.

It is now ncessary to place on record the further discovery of two other nematode parasites, both from the stomach of the pig.

It had been frequently noticed by the slaughtering inspector of Townsville (Mr. J. A. Rheuben) that certain pigs at the abattoirs were found to be in poor condition. These pigs were fed under similar conditions to other pigs arriving in prime condition, and there appeared to be no reason for the poverty, until it was discovered that these animals were infected with small nematodes in the stomach and duodenum.

Specimens were collected and forwarded to Dr. Georgina Sweet, Associate Professor of Biology, Melbourne University, who writes that the specimens represent two species of nematodes. They are Arduenna Strongylina and Physocephalus sexalatus.

The former has been already recorded in Australia, but is not yet known whether the latter has yet been recorded. Credit for the discovery of these parasites is due to the slaughtering inspector, and if all inspectors could be induced to work so assiduously as this officer there is no doubt that valuable information could be obtained, as officials engaged in slaughtering work are in a unique position in having so much material passing under their eyes.

JOHN LEGG, B.Se., B.V.Sc., M.R.C.V.S.,
Government Veterinary Surgeon, and
Director, Stock Experiment Station.

## REPORT OF THE INSTRUCTOR IN SHEEP AND WOOL.

The Farmers’ Wool Scheme.
This branch of departmental activity still shows an advance in numbers of farmers sending along their clips. Several clips have dropped out from the list owing to the fact that the numbers of sheep exceeded the 1,500 limit imposed.

Wool has been received from all parts of Queensland from the Tweed River to Burketown and the Gulf, and from as far west as Cunnamulla. Three hundred and sixty-nine bales were sold comprising about $81,000 \mathrm{lb}$. of wool, and realised very good prices. For merinos top price was $27 \frac{1}{2} d$. for a Cunnamulla sheep farmer, the lowest price being 5 d . for locks; the average price being 201 t , per 1 b .-highly satisfactory prices. Cross-breds sold up to $22 \frac{1}{2} d$. for fine qualities down to 4d. for low-grade fleece wool and 3 d . for locks; the average working out to about 13 d . per lb . for all qualities. This difference reflects the position cross-breds hold as against merino in the world's market.

The new wool-room is now finished and will materially assist by its handiness in reducing the cost of handling to the Department. The new season's wools should soon be arriving, as most farmers begin to shear in the spring of the year.

## Instruction.

On the introduction of sheep into the Biggenden district Mr. Wynne and myself visited many farmers around Degilbo, and have pleasure in stating that sheep are doing remarkably well on several places. There is a general movement towards keeping sheep as a side-line.

The other districts visited were the Southwest of Queensland by both officers-Longreach, Winton, Hughenden, Muttaburra, and the coastal areas from Townsville down. With such a large area to cover it was, of course, difficult to see a great many sheep-farmers. More detailed visits can now be made, as in the Council of Agriculture scheme an agent can be found who will advise your instructors when and how to go in the various districts.

Lectures were given by me at Capella, Emerald, and Springsure to good attendances of sheep men. In most districts prevailing drought prevented a good deal of work being taken on. Several visits were paid to Roma, and a lecture delivered to the settlers at Mount Hutton on sheep matters.

Now that the blowfly investigations are closed down by the Institute of Science and Industry, nothing is being done in the matter.

Your officers have travelled over a good deal of Queensland, visiting sheep-farmers and wouldbe sheep-farmers and advising them on sheep and wool matters.

## Health of Flocks.

Sheep generally in Queensland have been healthy. Blowflies have not been in evidence excepting in very isolated places, and never seriously numerous even in these. The season, of course, is responsible for this. Flies require moist conditions. On the Peak Downs weaners were much troubled with stomach worms. This pest is spreading very much, and it is worth while considering whether a campaign should not be initiated against it, such as was carried out in the blowfly investigations. There is no doubt means lie at hand to at least control the pest.

## Farmers' Flockis on Coastal Areas.

These are becoming more numerous every year, and sheep can now be found in small numbers from the southern boundary up to Burketown. Time is showing that they do well enough if looked after. The chief drawback on the coastal areas, as elsewhere, is the dingo. Many farmers would take on sheep but for fear of losses by dogs.

## British Empire Exhibition.

A collection of wool is being made by your officers to be shown in the Australian Wool Exhibit. Queensland, if worthily represented, will not be far behind the leading places of Australia in quality and price.

## Royal National Show.

The Department showed a good collection of wool at the Annual Show. This attracted a good deal of attention from those interested. One of your officers also judged the British breeds of sheep.

## The Farmers' Sheep Bulletin.

The first edition of 1,000 copies printed in 1920 became exhausted, therefore under instruction I revised the first one and brought the second edition up to date. The proofs are nearly ready and the bulletin should be published within the next few weeks. It is in the printer's hands now.

Articles have been contributed to the "Queensland Agricultural Journal."

W. G. BROWN, Instructor in Sheep and Wool.

## 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, 1923.

## 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, \&cc.; by school teachers for help in their Nature study lessons; and by forest officers for identification of trees, \&c. On these matters a large number of specimens were examined and reported on during the past twelve months.

## Field Work.

General.-For the purposes of general botanical collecting, visits were paid to the following places:-Glass House Mountains. (September), Silverwood, Darling Downs (September), Tallebudgera (March), Beech Mountain (April), D'Aguilar Range (May). The collections made comprised a lot of interesting material; all have been worked out, and after we have taken what was deemed necessary for the herbarium collections the remainder were distributed as exchanges to botanic establishments in the other States and abroad.

Forestry.-In July I paid a visit to Stradbroke Island in company with Deputy Forester Petrie, and in addition to identifying a large number of trees and plants for the Forestry Department made a general botanical collection.
$\Rightarrow$ During October my assistant (Mr. Francis) paid a visit to the Forest Survey camp on the Eungella Range, North Queensland. The trip was undertaken partly to aid the foreman in charge in identifying the trees growing on the range, to add to our stock of specimens, field notes, and photographs of Queensland trees, and also to investigate the botany of the range, particularly the trees, many of which reach here their southern or northern limits in distribution respectively.

During November I spent a few days in the country around Inglewood in company with Forester Overseer C. J. Smith. A large collection of trees and woody plants was made. The trip was undertaken to get additional specimens, photographs, \&c., of trees and other plants sent for identification by Mr. Smith, and which comprised several interesting species.

Empire Exhibition.-In March my assistant visited the Clermont and Springsure districts for the purpose of collecting sheaves of grasses for exhibit at the British Empire Exhibition in 1924.

Stock Poisoning.-In May I paid a visit to Tewantin to examine a property on the Noosa River, where losses among stock almost annually occur. The trouble is one characteristic of much of the poorer coastal country in South-eastern Queensland, and is supposed by some veterinarians to be due solely to the extreme poorness
of the pastures. Many stockowners, however, who have cattle running on this country are firmly convinced that poisonous plants are the cause, and most blame the small grass-tree (Xanthorrhcea hastilis). Examination of the country showed the small grass-tree and a Dianella ( $D$. loevis) to be very abundant. Other plants, poisonous or suspected poisonous, were also seen but not in sufficient quantity to cause worry.

Feeding experiments with grass-trees both here and in New South Wales have so far given negative results, but the feeding tests have perhaps not been conclusive. Dianella has been suspected of causing losses among horses in Queensland, and the roots have been suspected of the cause of deaths among pigs in New South Wales. A species of Dianella is also said to be used in the preparation of a rat poison in the Malay States. I have recommended that feeding experiments be carried out with these two plants during October or November of this year. The knowledge gained from the experiments should be of value generally to all graziers having stock running on this class of country for a large part of the year.

Native Mangosteens.-For some years past the United States Department of Agriculture has been endeavouring to obtain seeds of Garcinia Mestoni, a species of mangosteen native to North Queensland, for purposes of a stock for and for hybridising purposes with the ordinary mangosteen ( $G$. mangostana). The true mangosteen of the East can only be grown successfully under very definitely tropical conditions, and, as G. Mestoni grows on the Bellenden-Ker Ranges at an altitude of from 1,700 to 4,700 feet, it is thought that by using it as a stock for the ordinary mangosteen it might be possible to produce a race of mangosteens that could be grown under subtropical or almost substropical conditions. In 1914 Miss Gibbs, well known for her botanical endeavours in the mountains of Borneo and Fiji, ascended the central peak of the Bellenden-Ker Ranges and brought back a second species of mangosteen, since named $G$. Gibbsce. I wrote to the U.S. Department and suggested that this should also be tried along with $G$. Mestoni. The U.S. Department then wrote to the Department of Agriculture and Stock, Brisbane, with a view to soliciting their aid in obtaining the required material.

The fruiting season of these mangosteens is from January to March, and on a trip to the Bellenden-Ker Ranges in March, 1921, in company with Forest Ranger D. Fraser, we found the trees of both species to be common but no fruits were seen. In January, 1923, a further trip to the Bellenden-Ker Ranges was undertaken, in company with the Curator of the Brisbane Botanic Gardens (Mr. E. W. Bick) and the District Forester (Mr. A. L. Merrotsy), and about 300 seeds of both $G$. Mestoni and $G$. Gibbsce were gathered. About half of these have been sown at the Brisbane Botanic Gardens, and the other half despatched to Washington. The results of the experiments with these mangosteens should be of value alike to Queensland and the United States.

Queensland $\overline{\text { N }} u t$.-The Queensland Nut or Bush Nut (Macadamia ternifolia) is unquestionably granted on all sides to be one of the finest flavoured nuts obtainable, especially for highclass confectionery, but a great drawback to its extended use on a commercial scale is the very hard shell or putamen in which the kernel is enclosed. Besides Southern Queensland the tree is common on the Northern Rivers district of New South Wales, and Mr. J. B. Waldron, of Upper Eungella, Tweed River, New South Wales, has for some years past given a good deal of attention to the Queensland Nut; he has growing on his property a large collection of distinct varieties or forms, among them a particularly thin-shelled one. This last should have great possibilities as a commercial nut. The shell measures in parts only 1 mm . ( $\frac{1}{2}$-line) in thickness, and, in addition to being thin, usually cracks along one side of the suture so that a penknife can be inserted, the shell opened, and the kernel extracted with great ease.

In June of this year I visited Mr. Waldron's property and reported on the possibilities of the nut. The Department has secured a number of seeds, and it is intended to raise a number of plants to see if the variety will come true to seed, and also to attempt to keep on improving it by selection so that eventually a large thin-shelled nut may be produced. It is further intended to try other methods of propagation, in an attempt to perpetuate the variety in case seedlings do not come true.

Pasture Improvement.-There have been several problems connected with the improvement of pastures that have been brought under the notice of this office during the past twelve months. Some of these demand for their elucidation quite a considerable amount of experimental work to be carried out. So many specimens are sent in for identification that with this work, answering general queries, and keeping our knowledge of the State's flora up to date, I am not left the time to give to these problems I should like; and during the year I brought under your notice the desirability of appointing an agrostologist, to carry out field experiments with grasses and forage plants, and generally to advise farmers as to the best means of laying down pastures or improving old ones. Some of the problems to attract the attention of an agrostologist to begin with are- (1) The eradication of Sour Grass or Yellow Grass (Paspalum conjugatum) on the Ravenshoe and Millaa Millaa areas, North Queensland, by smothering with a better growth of grasses or legumes or other forage plants ; (2) the improvement of worn-out pastures on the Darling Downs and near West; (3) the possible improvement of poor coastal tracts by the laying down of grasses and legumes suitable for this class of country ; (4) the introduction, distribution, and trial under cultivation of new grasses and forage crops; (5) the collection, cultivation, and trial of native grasses and fodders, and their possible improvement: (6) the trial, by means of feeding experiments, of plants suspected poisonous or harmful to stock. It has been suggested that one of the field assistants working under the Director of Agriculture might devote the major part of his time to this work, and though a good deal may be done monder these circumstances I think the importance of the subject warrants a specialist putting his whole time into the work. However, I hope to
be able to report next year =ume progress in elucidating some of the problems just quoted.

## Herbarium.

The existing herbarium space is now packed to its fullest capacity, and until at least some of the new shelving requisitioned for has been fitted up it is possible to put away only a very small proportion of the material received, either local specimens or specimens received by way of exchange.

Exchanges of herbarium material have been maintained with the Botanic Gardens, Sydney, New South Wales; Botanic Gardens, Buitenzorg, Java, Dutch East Indies; Botanic Gardens, Berlin, Germany ; Botanic Gardens, Singapore; United States National Herbarium, Washington, U.S.A.; and the Bureau of Science, Manila, Philippine Islands.

## Library.

The additions to the Library, with the exception of a few periodicals, have been mostly exchanges with correspondents and institutions in various parts of the world. Among these latter a valuable addition was "A Manual of the Trees of North America," by Professor C. S. Sargent, received from the Arnold Arboretum, Boston, U.S.A.; "Beitrage zur Flora von Papuasien"' Nos. I.-IX., from the Botanic Gardens, Berlin, Germany; and "Catalogue des Plantes Phanerogames de la Nouvelle Caledonie and miscellaneous papers on French Oceania from M. A. Guillaumin, Museum d'Histoire Naturelle, Paris, France.

Botanical Museum.
Additions to the Botanical Museum have not been very numerous; the carpological and timber collections have been added to from time to time.

## 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 drawn to those not generally known to be of value as fodder plants. The willingness of this division to name and report on specimens of weeds, grasses, trees, \&ce. for farmers and others was brought under public notice.

## Publications.

The following papers were issued during the year :-

White, C. T.: Weeds of Queensland Nos. 27-32 (six papers in the "Queensland Agricultural Journal" in coatinuance of a series on the weeds of the State); A Contribution to our knowledge of the Flora of Papua, British New Guinea (Proceedings, Royal Society of Queensland, vol. xxxiv., pp. 5-65) ; A Mangosteen from North Queensland ("Queensland Agricultural Journal," July 1922) ; A Native Fodder Tree from North Queensland ("Queensland Agricultural Journal," August 1922) ; Nettles and Stinging Trees (a Nature study lesson written for the Queensland "School Paper," October 1922) ; An Elementary Text Book of Australian

Forest Botany, vol. i., Sydney 1923, 223 pages, with 105 half-tone and line figures in the text. (This work, which has been on hand for the past four years, has received very favourable reviews from the Australian Press, and should fulfil a distinct want; it is practically a complete introduction to the study of Australian forest plants, and was designed more especially for use in Australian forestry schools and for the use of forest officers generally.)

White C. T. and Francis W. D.: "Queensland Trees" Nos. 12-21. (Ten papers in the "Queensland Agricultural Journal" in continuance of a series on the trees of the State.)

Francis, W. D.: Some characteristics of Queensland Rain-Forests and Rain-forest Trees (Proceedings, Royal Society of Queensland, vol. xxxiv., pp. 209-219).

## 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 critical material, and a paper describing ten new species of Queensland plants and a number of new records for the State is now in the hands of the printer. A number of
other plants have been put by for critical examination as time permits.

In January, 1922, the Government of Papua appointed Mr. C. E. Lane Poole, late Conservator of Forests in Western Australia, to visit the territory to report on its timber resources and to draw up a forest policy for future development. This office was asked if it would undertake the determination of any specimens Mr. Lane Poole might collect in connection with his work, and we are now going through a series of 442 specimens sent for identification. When fully gone through and written up our work on the collection should make a very material addition to our knowledge of the botany of the territory. The Assistant Botanist has in preparation a paper on the buttresses of "scrub" (rain-forest) trees, which embodies the results of his observations on these as characters for help in determining species in the field, and also regarding the part they play in the life of the tree.

I am gathering together a number of notes on the Australian members of some important families and genera of plants which I believe are badly in need of revision, but pressure of other work has prevented me so far from publishing revised accounts of several genera I have had on hand in rough manuscript form for some time past.

## C. T. WHITE,

Government Botanist.

## REPORT OF THE CURATOR OF THE BOTANIC GARDENS.

Sir,-I have the honour to submit the following report of the work of the Botanic Gardens for the year ended 30th June, 1923.

## Weather.

The year started well with good rains in July aggregating 471 points, and with the exception of August, with only 43 points, the rainfall was fairly consistent, until the end of December, sufficient rain falling during the intervening months to keep vegetation moderately active, but not enough to permit a good soaking of the soil. This was very apparent as the heat of sumner developed, and in January, February, and March, when heavy rains usually occur, the rainfall was conspicuous by its absence, and vegetation suffered severely. The conditions were also aggravated by restrictions imposed by the Metropolitan Water and Sewerage Board, prohibiting the use of hoses between the hours of 6 a.m. and 6 p.m., and great difficulty was experienced in keeping plants in growth; the lawns, trees, and shrubs suffered severely.

Good rains in April relieved the situation, and the cooler weather experienced, with consequently less exaporation, also the lifting of restrictions regarding the use of water, rapidly improved conditions. The rain came rather late for tropical and sub-tropical vegetation, it being unable to make much headway before the cold of winter came; but many flowering shrubs, creepers, and roses made good growth, and had a fine flowering season. Dahlies experienced a poor growing year owing to the great heat of summer and lack of humidity, and only comparatively small flowers were preduced. The distribution of rainfall was not good, rain having been registered on 88 occasions against 129 for the previous year. The two dry months were May with 31 points and August with 43, and those with most rain April with 611 and December with 420 points.

Grass temperatures were taken during the winter months; frost was registered on several occasions, the lowest reading being 29 on the 10th July and 29.8 deg . on the 21 st August. Following is a list of the rainfall registered, the amount for the corresponding month of the year being in parentheses :-

| January | $\ldots$ | 238 | $(378)$ | July | $\ldots$ | 471 | $(613)$ |
| :--- | ---: | ---: | ---: | :--- | :--- | ---: | ---: |
| February | $\ldots$ | 70 | $(870)$ | August | $\ldots$ | 43 | $(48)$ |
| March | $\ldots$ | 209 | $(253)$ | September |  | 281 | $(266)$ |
| April | $\ldots$ | 611 | $(35)$ | October | $\ldots$ | 237 | $(118)$ |
| May | $\ldots$ | 31 | $(278)$ | November | . | 330 | $(407)$ |
| June | . | $265(180)$ | December | .. | 420 | $(1,048)$ |  |
|  |  |  |  | Total | $\ldots$ | 3,206 | $(4,494)$ |

## Plant Distribution.

Good stocks of plants have been maintained and a busy year experienced in distribution. Plants supplied to State schools for Arbor Day show a slight decrease in number, but an increase in number of schools, thus decreasing the average number of plants per school. Every assistance possible is rendered teachers who wish to improve their school grounds, and numerous inquiries regarding the naming of plants, the suitability of localities for certain plants, and in some cases on the lay-out of grounds, are received and dealt
with. Regarding the time of planting, Arbor Days may be held from the 1st of May until the end of August. I suggest that teachers in warm localities plant as early as possible during that period, and those in cold districts wait until towards the end of the season. This will enable the newly set plants to escape the coldest portion of winter. A large amount of work, both clerical and otherwise, also a good deal of expense, is involved in Arbor Day work, and good results can only be obtained by teachers taking a keen interest in this useful work.

Apart from State schools, the number of plants sent out show an increase principally on account of experimental work, this item being chiefly coffee plants supplied to new growers of coffee., The item "other Government departments," chiefly represents plants supplied to the Railway Department, State Farms, and Gatton Agricultural College. Plants were supplied as follows:-460 State schools received 2,280 plants; other Government departments, 724 ; local authorities, 302 ; churches, convents, and cemeteries, 177 ; progress associations, memorials, and recreation reserves, 350 ; hospitals, 141; botanic gardens, 351 ; experimental work, 550 ; general exchanges, 819 . Total, $5,694$.

## Exchanges

A large quantity of seeds of indigenous plants have been collected and forwarded to numerous correspondents and botanic gardens abroad, and exchanges of a useful and interesting nature have been received. I am indebted to correspondents for seeds, bulbs, and plants, chiefly the first named, from France, Egypt, India, America, South and West Africa, Java, Mauritius, Cuba, Singapore, and Rabaul. Amongst those that may be mentioned are plants of Warszewiczia coccinea from the United States, Bureau of Plant Industry, Washington; a collection of orchids from Rabaul; seeds of Juniperus procera, a tropical African species, from the Arnold Arboretum, Boston, Mass., from which a large number of plants have been raised; and seeds of Colvilla racemosa from Mauritius. Exchanges with the Southern States and those of this State have been well maintained, and I desire to record my appreciation of same.

## Repairs and General Improvements.

The asphalt walks have all been repaired and top-dressed with tar and sand. Many of the older ones were in a very bad state, and it necessitated the using of a lot of material for repair purposes. A tar "painting" and sand is necessary annually to keep the paths in good order, as owing to the heavy foot traffic and sunheat the surface soon commences to crumble, and increased cost of repairs eventuates.

The work of renewing hardwood path edgings to paths is being carried on. It is a continual source of work and expense owing to the decay of timber and getting out of alignment of the edges; a more lasting material such as a narrow strip of concrete would be preferable, and I intend to try this method.

The open concrete water channels that carried storm water from the kiosk roof have been removed and underground pipes substi-
tuted. This was rendered necessary as the cement water tables were dangerous and unsightly. A rockery flower-bed was made and furnished with plants near the kiosk and new gravelled paths laid down to carry the heavy traffic from the Technical College entrance.

The garden seats are receiving attertion, by repairing where necessary, and painting. There are over 300 , and about one-third have been repaired and given two coats of paint. Bitumastic solution is being used; it is non-poisonous and appears to stand the exposure well. Many of the seats are in a bad state for want of paint, having been in use from twelve to twenty years unpainted. It is proposed to continue this work until all have received attention.

The rose plots have again been added to by the making of new beds and extra places for climbers. The collection has been inereased by the addition of over 200 new plants, and now numbers over 900 kinds. Over 100 of these were reseived from Mr. J. F. Bailey, Director, Botanic Gardens, Adelaide, by exchange. Great interest is taken by visitors in the rose collection, and rose-growers are enabled to see many of the newer kinds in flower, and judge what, or what not, to order from nurserymen. Some of the novelties that are largely advertised in raisers' catalogues do not turn out well, but in many cases are really good.

## Collecting.

In September I spent a portion of my annual leave on the Eungella Range, near Mackay, and collected a large number of plants, chiefly ferns, for the Gardens. The vegetation of the "scrubs" or rain forests there is rather different from those of South Queensland, or of those of farther north, and many interesting plants are to be found. One of these-Baa hygroscopica, Order Gesneriaceæ, a small-growing plant with soft woolly leaves and beautiful deep-blue flowers-is quite a feature of the small mountain streams, growing on rocks in the water. Tree ferns are also to be seen in large quantities, chiefly Alsophila australis and Alsophila Rebeccce. Before returning to Brisbane I called at Rockhampton, visited the Botanic Gardens, and arranged some useful exchanges with Mr. R. Simmons, the Curator.

In January I accompanied the Government Botanist to the Bellenden-Ker Range. We went primarily to obtain seeds of Garcinia Mestoni (Meston's mangosteen) for the Department of Agriculture and Buceau of Plant Industry, Washington, U.S.A., who propose to carry out certain experimental work with the object of producing a mangosteen that will thrive in subtropical countries. Although only a comparatively small number of trees were fruiting, also being rather early in the season, we were successful in obtaining a quantity of seeds, and a good supply of Garcinia Gibbsice, the fruit of which had not been previously collected. Seeds of both species were sent to Washington, the Rockhampton and Townsville Botanic Gardens, and the remainder planted here. The seeds were very slow in germinating; at present there are about three dozen plants; the other seeds are apparently quite sound, and I expect quite a number of them to grow.

The opportunity was taken to collect plants and seeds for the Gardens, resulting in a number
of plants being obtained for cultivation for the first time, prominent among them being Alsophila Baileyana. Specimens of this fern were collected by the late F. M. Bailey when with the BellendenKer Expedition in 1889, and named by him Alsophila Rebecce var. commutata (Wig Fern). Subsequently Dr. K. Domin, a well-known European botanist, who when on a visit to Queensland in 1912 examined the specimens in the Herbarium, raised it to specific rank under the name of Alsophila Baileyana, thus associating the name of Queensland's Grand Old Botanist with this beautiful and unique fern. The name "Wig Fern" was given because of a curious wig-like growth that is found on the lower portion of the fronds, near the trunk, the divisions of which growth are narrow, much forked, very intricate, and in a young state of a greenish colour, that when older becomes purplish brown. We have the only plants in cultivation, and they are making good growth. Another interesting fern and now in cultivation is Alsophila Robertsiana, the Slender-stemmed Tree Fern. This is also very curious, as, unlike most tree ferns, the fronds do not form a crown, but are somewhat distantly placed on the stem.

Seeds of several palms that are new to the Gardens were also obtained, a prominent one being Calyptrocalyx australasicus. This is a slender-growing palm not unlike a small growth of Howea Forsteriana, but with suckers around base that furnish the centre stem in a graceful manner. Several hundred seeds were collected; they have germinated freely, providing a large stock of plants. A good supply of seeds of Bacularia minor and Bacularia Palmeriana, two palms of the Midgen or Walking-stick Palm family, were also secured. Both these palms also sucker around base of centre stem, and should make very graceful pot plants. Bacularia minor is small in growth, from 2 to 4 feet high, with stems not much thicker than a black lead pencil. A nice stock of plants of both Bacularias have been raised. Orania appendiculata-the Native Coconut Palm-seeds were also secured. This is a beautiful palm, and takes its vernacular name from the resemblance to the Coconut Palm. A large number of seeds were collected, but so far very few have germinated. Seeds of a number of trees were also collected, from which plants have been raised.

A number of plants of Tapinocheilos queens-landor-an interesting plant of Order Scitaminæ, Ginger Family - were obtained. This plant bears a beautiful large conical infloresence with bracts of a vivid rich crimson, and small yellow flowers in centre. They are a striking feature when in flower, in the lower scrubs of the Cairns district. The genus is supposed to be of a single species, and is met with in the Indian Archipelago,
Papua, and North Queensland.

I desire to record my appreciation and thanks for the good work done by Mr. A. L. Merrotsy, Deputy Forester, Atherton, who acted as our guide on the Bellenden-Ker Range. He worked very hard, and our success was largely due to his efforts.

## ${ }^{\text {Lawns. }}$

Paspalum dilatum, Eleusine indica (Crow's. foot), and Sporobofus indicus (Rat's-tail Grass) still give a lot of trouble in the lawns. Eradication by chipping out, the filling of holes with
soil, and top-dressing is being carried out. It is a difficult problem to get sufficient top-dressing material of a suitable nature to carry out this work properly. Panicum didactylum. (Blue Couch) is also being planted, as this grass when in good growth smothers out many objectionable ones. Eleusine aristata, a creeping grass, with somewhat the habit of buffalo grass, and grows well in shady places, is being planted on bare patches under trees, and gives every promise of success.

## Visitors.

The Gardens have been well patronised by visitors. Many of those from Southern States and overseas evince great interest in the subtropical vegetation, and many inquiries are dealt with from them. Amongst the overseas visitors may be mentioned Mr. Reasoner, of Oneco, Florida, and Mr. G. Bryant, of Illinois, U.S.A. Both gentlemen are interested in nursery work, and exchanges with Mr. Reasoner's firm are in hand. Mr. Reasoner spoke enthusiastically of the Guatemalan kinds of avocada pears that are now being largely grown in Florida, and suggested that they should thrive equally well in Queensland.

## Correspondence.

A good deal of correspondence in connection with the distribution of plants takes place, also inquiries relating to horticultural subjects; and the naming of garden plants receives attention.

## Electric Lighting.

The electric lighting system proved very satisfactory, and little trouble took place beyond a few renewals and repairs necessary owing to the corroding of underground cables at several points. It is anticipated that it will be necessary to provide for far more work in this direction in the near future. The Gardens were open on Saturday and Sunday nights from the first Sunday in October until the last Sunday in June, and for eight nights covering the Exhibition week in August for the benefit of country visitors. Large crowds still attend on Sunday nights during the summer months, but there is a noticeable decline in the attendance when the colder nights of May and June make themselves felt.

## Zoological Collection.

Keen interest is taken in the zoological collection by visitors. The chief additions during the year were three pairs of mandarin ducks, a pair each Chinese geese and Japanese teal, two young cassowaries, two kangaroos, two wallabies, and a pair of racoons and a young baboon donated by Mr. Ellis Joseph, of Sydney, to the proposed Brisbane zoological gardens. The collection of waterfowl has been increased by the breeding of black ducks and redbills. Numbers of night herons also make their home in the Gardens, showing out only at feeding time or at dusk. Additions, repairs, and the remodelling of existing aviaries are urgently needed, but the
expense is hardly justifiable at present in view of the possibility of the proposed zoological gardens coming into existence.

## Band Concerts.

Band concerts have been regularly held on Sunday afternoons, and Sunday nights when the Gardens were open. They are still very popular. Any particularly good band always draws a large audience. The popular Ipswich Vice-Regal Band played on two occasions to large crowds, and during the band contest of Easter week visiting bands from the Southern States were well received. Other bands that gave concerts were Brisbane Citizens, Excelsior, Federal, Hibernian, Ithaca, Labour and Union, South Brisbane, and the Royal Society of St. George. There still appears to be rather many bands; a fewer number and stronger ones would give more satisfaction to the mfusic-loving community.

## Domain.

The sports ground has been largely availed of, particularly during the football season, and the members of numerous clubs use the ground for practice purposes. Hockey teams of the University and senior girls of the Central Technical College play during the season, and the concrete wicket is made full use of during the cricket season. The two tennis courts handed over to the Central Technical College last year have not been made use of, and it is proposed to do away with them and plant up the area with suitable trees. A lot of filling and grading of the uneven surface near boatshed has been done; the remaining portion will be attended to as suitable material becomes available.

## Children's Playground.

The children's playground is still largely patronised by children, and full advantage of the apparatus provided is taken. A good deal of trouble is caused by adults using the swings, and by rough usage considerable damage is done. A new notice board prohibiting the use of all apparatus by persons over fourteen years of age has been provided. Probably it will be necessary to prosecute offenders for breach of this regulation.

## Staff.

The only changes in staff were caused by the death of James Hain on 28th February, and the appointment of G. G. Worman in March as a temporary labourer.

The late Mr. Hain had completed over seven years of service in the Gardens. He was well liked by his fellow workmen; we all deeply regretted his death, and express our sympathy with his widow.

I wish to record my appreciation of the good work and loyal support of the staff.
E. W. BICK, Curator.


## Queensland Weather Chart

## Diagram showing the Average Monthly and Yearly Rainfall of Towns within the State of Wide Geographical Distribution.

The area of Queensland is $429,120,000$ acres, of which 53.5 per cent. is Tropical, and 46.5 per cent. is Sub-tropical, and the uses to which this vast area is put depend upon the rainfall. With such a wide variety of soils, climate, and range of rainfall, it is therefore not unreasonable to say that Queensland offers the greatest induce ment of any country to settlers on the land.

Scale.-Each vertical space equals two inche of rain.
Prepared by A. J. STRONACH.

## REPORT OF THE REGISTRAR-GENERAL ON LIVE STOCK FOR THE YEAR 1922.

## INDEX.




INDEX.



## REPORT OF THE REGISTRAR-GENERẢL ON LIVE STOCK FOR THE YEAR 1922.

Table No. I.
Return showing the Number of Live Stock in the State for Two Years, and the Increase or Decrease for the Year 1922.


Table No. II.
Return for Ten Years showing the Number of Horses, Cattle, Sheep, and Swine in the State.

| Year. |  |  |  |  |  | Horsos. | Cattle. | Sheep. | Swine. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1913 |  | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 707,265 | 5,322,033 | 21,786,600 |  |
| 1914 | ... | ... | $\ldots$ | ... | $\ldots$ | 743,059 | 5,455,943 | 23,129,919 | $166,638$ |
| 1915 | ... | ... | $\ldots$ |  | ... | 686,871 | 4,780,893 | 15,950,154 | 117,787 |
| 1916 | ... |  |  |  | ... | 697,517 | 4,765.657 | 15,524,293 | 129,733 |
| 1917 | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 733,014 | 5,316,558 | 17,204,268 | 172,649 |
| 1918 | $\ldots$ | $\ldots$ | $\ldots$ |  | $\ldots$ | 759,726 | 5,786,744 | 18,220,985 | 140,966 |
| 1919 | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | 731,705 | 5,940,433 | 17,379,332 | 99,593 |
| 1920 | ... | ... | $\ldots$ | $\ldots$ | ... | 742,217 | 6,455,067 | 17,404,840 | 104,370 |
| 1921 | $\ldots$ |  |  |  | ... | 747,543 | 7,047,370 | 18,402,399 | 145,083 |
| 1922 | ... | ... |  |  | $\ldots$ | 714,055 | 6,955,463 | 17,641,071 | 160,617 |

Table No. III.
Return for Ten Years showing the Centesimal Increase or Decrease in Live Stock.

| Year. |  |  |  |  |  | Horses. | Cattle. | Sheep. | Swine. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1913 | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | 485 | 2.13 | $7 \cdot 27$ | - $2 \cdot 54$ |
| 1914 | $\ldots$ | ... | ... | .. | $\ldots$ | $5 \cdot 06$ | $2 \cdot 52$ | 617 | 18.99 |
| 1915 | $\ldots$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | $7 \cdot 56$ | -12.37 | -31.04 | - 29.31 |
| 1916 | ... | $\ldots$ | ... | ... | $\ldots$ | - 1.55 | - 0.32 | - $2 \cdot 67$ | $10^{\circ} 14$ |
| 1917 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $5 \cdot 09$ | 11.56 | $10 \cdot 82$ | $33 \cdot 12$ |
| 1918 | ... | ... | ... | ... | ... | $3 \cdot 64$ | $8 \cdot 84$ | $5 \cdot 91$ | $-18 \cdot 37$ |
| 1919 | $\ldots$ | ... | ... | ... | ... | - 3.69 | $2 \cdot 66$ | - 462 | $-29.35$ |
| 1920 | ... | ... | ... | ... | .. | 1.44 | $8 \cdot 66$ | $0 \cdot 15$ | 4:80 |
| 1921 | ... | ... | .. | ... | $\ldots$ | 0.72 | $9 \cdot 18$ | 5.73 | 39.01 |
| 1922 | ... | $\ldots$ | ... | ... | $\ldots$ | - 448 | -130 | - $4 \cdot 14$ | $10 \cdot 71$ |

Table No．IV．
Return showing the Density and the Proportion of the Various Kinds of Live Stock in the several
Pastoral Districts and the Number per Capita in the State for the Year 1922.
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． | 눙 <br> 영륜 <br> 会 <br> 枟品 <br>  | Horses．， |  |  | Cattle． |  |  | Sherp． |  |  | All Kinds in terms or Sheer． |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Acres per Head． |  | Per－ centage to Total in State． |  |  | Per－ centage to Total in State． | Acres per Head． |  | Per－ centage Total in State． | Acres per Head． | $\begin{aligned} & \text { Number } \\ & \text { per } \\ & \text { Square } \\ & \text { Mile. } \end{aligned}$ | Per－ centage to Total in State． |
| Burke | 65，3\＄3．040 | 15.24 | 1，120 | $0 \cdot 57$ | $8 \cdot 18$ | 73 | 876 | $12 \cdot 86$ | 25 | $25 \cdot 52$ | 14.78 | $5 \cdot 39$ | 118.78 | 12.86 |
| Burnett | 7，972，480 | 186 | 188 | 3.41 | $5 \cdot 95$ | 16 | $40 \cdot 79$ | $7 \cdot 31$ | 740 | 0.86 | 006 | 1.45 | 44290 | 5.85 |
| Cook ．．． | 63，601，920 | 14.82 | 1，280 | $0 \cdot 50$ | $6 \cdot 96$ | 125 | $5 \cdot 10$ | $7 \cdot 29$ | 359，333 | 0.062 | 0.001 | 11.42 | 5602 | $5 \cdot 90$ |
| Darling Downs．．． | 16，249，600 | 3.79 | 210 | 3.04 | 10.82 | 28 | $22 \cdot 51$ | $8 \cdot 22$ | 13 | 48.44 | 6.97 | $2 \cdot 11$ | 304.00 | $8 \cdot 18$ |
| Gregory North ．．． | 51，266， 240 | 12.64 | 1，751 | 037 | $4 \cdot 34$ | 158 | 4.05 | 4.94 | 31 | 20.95 | 10.069 | 982 | $65 \cdot 14$ | $5 \cdot 85$ |
| Gregory South ．．． | 31，617，920 | $7 \cdot 37$ | 2，487 | $0 \cdot 26$ | 1.78 | 189 | $3 \cdot 39$ | $2 \cdot 41$ | 110 | 580 | 1.62 | $15 \cdot 15$ | 42.25 | $2 \cdot 21$ |
| Leichbardt | 30，946，560 | $7 \cdot 21$ | 590 | 1.08 | $7 \cdot 35$ | 42 | $15 \cdot 11$ | 10.51 | 37 | $17 \cdot 44$ | 4.78 | 357 | $179 \cdot 41$ | $9 \cdot 20$ |
| Maranoa ．．． | 25，110，400 | $5 \cdot 85$ | 777 | 0.82 | $4 \cdot 53$ | 67 | 955 | $5 \cdot 39$ | 12 | 52.91 | 11.77 | 4.09 | 15664 | 6－ 2 |
| Mitchell ．．． | 35，431，680 | $8 \cdot 26$ | 721 | 089 | $6 \cdot 88$ | 138 | 465 | 370 | 6 | 116.09 | 36.43 | $3 \cdot 73$ | 171.49 | 10.06 |
| Moreton ．．． | 5，649，920 | 1：32 | 77 | $8 \cdot 34$ | $10 \cdot 31$ | 10 | $62 \cdot 17$ | $7 \cdot 89$ | 526 | $1 \cdot 22$ | 0.06 | 091 | $706 \cdot 28$ | $6 \cdot 61$ |
| North Kennedy ．． | $21.832,960$ | 5.09 | 249 | 2.57 | 12.27 | 41 | $15 \cdot 68$ | $7 \cdot 69$ | 5，002 | $0 \cdot 13$ | 0.03 | 3.50 | 182.61 | $6 \cdot 60$ |
| Port Curtis ．．． | 8，994，560 | 2.09 | 203 | $3 \cdot 15$ | 6.21 | 19 | 33.72 | 6.81 | 373 | 1.72 | $0 \cdot 14$ | 1.73 | 370.49 | $5 \cdot 52$ |
| South Kennedy．．． | 19，528，960 | 455 | 466 | $1 \cdot 37$ | $5 \cdot 87$ | 42 | $15 \cdot 42$ | 676 | 120 | $5 \cdot 35$ | 0.92 | $3 \cdot 69$ | 173：31 | $5 \cdot 61$ |
| Warrego ．．．．． | 37，333， 760 | $8 \cdot 70$ | 1，542 | 0.42 | $3 \cdot 39$ | 167 | $3 \cdot 81$ | $3 \cdot 22$ | 17 | 37.31 | $12 \cdot 34$ | $8 \cdot 02$ | $79 \cdot 85$ | $4 \cdot 94$ |
| Wide Báy | 5，200，000 | 121 | 141 | 4．54 | $5 \cdot 16$ | 15 | 42.85 | 5.00 | 1，005 | 0.64 | 0.03 | $1 \cdot 35$ | 474．50 | $4 \cdot 09$ |
| State | 429，120，000 | 100.00 | 601 | 1.06 | $100 \cdot 00$ | 62 | 1037 | 100.00 | 24 | $26 \cdot 31$ | $100 \cdot 00$ | $4 \cdot 55$ | 140＊70 | $100 \cdot 00$ |
| Number per Capita Population ．．． |  |  | 0.90 |  | $\ldots$ | $8 \cdot 80$ |  | ．．． | $22 \cdot 32$ |  | $\ldots$ | $119 \cdot 38$ |  |  |

Table No． V ．
The following table shows，from the latest information available，the live stock density in various countries：－

|  |  |  |  |  |  |  | Live Stock in Terms of <br> Sheep per Square Mile． |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Queensland $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 141 |  |
| New South Wales | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 215 |  |
| Victoria | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 393 |
| United Kingdom | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 1,334 |  |
| Argentina $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 350 |  |
| United States of America | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 309 |  |  |
| Union of South Africa | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 347 |  |  |

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 1922,

| Division． |  |  |  |  | Horses． |  | Cattle． |  | Sheep． |  | Swine． |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | No． | \％ | No． | \％ | No． | \％ | No． | \％ |
| Southern Division ．．．Central DivisionNorlhern Division ．．． | $\cdots$ |  | $\ldots$ | ．．． | 307，204 | 43.02 | 2，872，282 | $41 \cdot 30$ | 5，807，229 | $32 \cdot 92$ |  |  |
|  | ．．． | $\ldots$ | ．．． | ．．． | 177，430 | 24.85 | 1，923，792 | $27 \cdot 66$ | 9，187，892 | 5208 | $7,783$ | 88.53 4.85 |
|  |  | ．．． | $\ldots$ | ．．． | 229，421 | $32 \cdot 13$ | 2，159，389 | 31.04 | 2，645，950 | 15.00 | $10,639$ | 485 662 |
| Total State | ．．． |  |  | $\ldots$ | 714，055 | $100 \cdot 00$ | 6，955，463 | $100 \cdot 00$ | 17，641，071 | $100 \cdot 00$ | 160，617 | $100 \cdot 00$ |

## 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 1922.

| Division， |  | $\begin{aligned} & \text { Area in } \\ & \text { sq. miles. } \end{aligned}$ | Population． | Horses． |  | Cattle． |  | Shekr． |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\underset{\text { Mile }}{\mathrm{P}} \mathrm{F}$ ． | Per Capita <br> of Popula－ tion． | $\begin{aligned} & \mathrm{Per} \\ & \text { sq. Mile. } \end{aligned}$ | Per Capita of Popu－ lation． | $\begin{aligned} & \text { Per } \\ & \text { sq. Mile. } \end{aligned}$ | Per Capita of Popu－ lation． | $\begin{gathered} \text { Per } \\ \text { sq. Mile. } \end{gathered}$ | Per C＇apita of Popu－ lation． |
| Southern Division | $\cdots$ |  |  |  |  |  |  |  |  |  |  |
| Central Division Northern Division | ．．． | $209,340$ | $\begin{array}{r} 20,769 \\ 92,769 \end{array}$ | $\begin{aligned} & 1705 \\ & 0.85 \end{aligned}$ | 1.91 | $9 \cdot 19$ | 20.74 | 27.66 43.89 | 10.33 99.04 | $179.07$ |  |
| Northern Division |  | 251，180 | 135，332 |  | 1.70 | $8 \cdot 60$ | 15.96 | 10.53 | 19．55 | $\begin{aligned} & 144: 26 \\ & 105 \cdot 64 \end{aligned}$ | $\begin{aligned} & 325.54 \\ & 196.07 \end{aligned}$ |

[^1]Table No. VIII.
Return showing the Number of Horses Imported and Exported into and from the State for the Year 1922.


Table No. IX.
Return for Ten Years showing the Number of Entire and other Horses.

| Year. |  |  |  |  |  |  | Entire Horses. | Other Horses. | Total. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1913 |  |  |  |  |  |  | 9,691 | 697,574 | 707,265 |
| 1914 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 9,719 | 733,340 | 743,059 |
| 1915 | ... | ... | ... | ... | ... | $\ldots$ | 8,629 | 678.242 | 686,871 |
| 1916 | ... | ... | $\ldots$ | $\ldots$ | $\ldots$ | ... | 7,861 | 689,656 | 697,017 |
| 1917 | $\ldots$ |  | $\ldots$ | ... | ... | ... | 7,762 | 725,252 | 733,014 759 |
| 1918 | ... | $\ldots$ | ... | ... | $\ldots$ | $\ldots$ | 7,664 | 752,062 | 759,726 |
| 1919 |  | ... | . | $\ldots$ | ... | $\ldots$ | 6,616 | 725,089 | 731,705 |
| 1920 |  |  | . | ... | $\ldots$ | ... | 6,402 | 735,815 | 74,2,217 |
| 1921 |  |  | ... | ... | ... | ... | 6,164 | 741,379 | 747,543 |
| 1922 | ... | ... | ... | ... | $\ldots$ | $\ldots$ | 4,930 | 709,125 | 714,050 |

Table No. $\mathbf{X}$.
Return for Ten Years showing the Number of Owners and the Sizes of Hereds under
Various Groupingas.
For Details of Sizes of Herds of Cattle in Pastoral Districts, for the Year 1922, see Table No. XXXI.


* Included in group 301 to 500 .
$\dagger$ Included in group 1,001 to 5,000 .

Table No. XI,
Return for Ten Years showing the Number of Owners and the Sizes of Flocks under various Groupings For details of Sizes of Flocks of Sheep in Pastoral Districts for the Year 1922 see Table No. XXXII


Table No. XII.
Return showing the Results of Lambing, Losses, Etc., in the State for the Year 1922. For details see Table No. $X X X V I I$.


Table No. XIII.
Return for Two Years showing the Nomber of Cattle Exported and Killed.

|  | Cattle. |  | Shekp and Lambs. |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 1921. | 1922. | 1921. | 1922. |
| Exported, less number imported alire Oversea | 434 | 169 | 1,074 | 74 |
| " " " Overland, 12 months | 243,751 | 128,027 | 1,491,786 | 648,728 |
| Preserved, frozen, and boiled down | 252,103 | 216,428 | 120,654 | 68,396 |
| Hetimated number killed for food for home consumption | 247,889 | 287,966 | 648,706 | 694,144 |
|  | 744,177 | 632,590 | 2,262,220 | 1,411,342 |

## 111

Table No. XIV.
Return for Ten Years showing the Number of Cattle and Sheep Imported into and Exported


* Interstate Coastwise Traffe no longer available.

Table No. XV.
Return showing the Number, \&C., of Bacon-Curing and Meat-Preserving Works for the


## Table No. XVI.

Return Showing Number of Swine Slaughtered and the Products thereof in tee several Petty Sessions Districts of the State for the Year 1922.


[^2]
## Table No. XVII. <br> WOOL.

Return for Ten Years showing the Number of Sheep Shorn and the Wool Produded
For details for the year 1922 see Table No. XXXVI.


* Based on Oversea Export value.

Table No. XVIII.
Return for Ten Years showing the Average Price of Wool.

| Average Export Price of Wool (Oversea). | 1913.* | 1914.* | 1915.* | 1916.* | 1917** | 1918.* | 1919.* | 1920.* | 1921.4 | 1922.* |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Greasy wool Scoured wool | Per lb. <br> $0 \frac{4}{5} \mathrm{~d}$. <br> $18 \frac{1}{2} \mathrm{~d}$. | Per ib $10 \frac{1}{2} \mathrm{~d}$. 19 d . | Per lb. 9 2d $18 \frac{1}{5} \mathrm{~d}$. | Per lb. $11 \frac{1}{2} \mathrm{~d}$. $20 \frac{3}{4} \mathrm{~d}$. | Per lb. $15 \frac{1}{2} \mathrm{~d}$. $28 \frac{1}{2} \mathrm{~d}$ | Per lb $17 \frac{1}{4} \mathrm{~d}$. 27 d . | Per lb. $17 \frac{1}{2} \mathrm{~d}$ 28 d . | Per Ib. <br> $17 \frac{1}{2} \mathrm{~d}$. <br> $29 \frac{1}{4} \mathrm{~d}$. | $\begin{aligned} & \text { Per 1b. } \\ & 15 \mathrm{~d} . \\ & 281 \mathrm{~d} . \end{aligned}$ | $\begin{aligned} & \text { Per lb. } \\ & 14 \mathrm{~d} . \\ & 24 \frac{1}{4} \mathrm{~d} . \end{aligned}$ |

* Oversea only.

Table No. XIX.
Return for Eight Years showing the Quantity and Value of Wool Exported Oversea.

| Exports of Wool,Oversea Only. |  |  |  | Greasy. |  | Scoured. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Quantity. | Value. | Quantity. | Value. |
| 1914-1915 | Year. |  |  | Lb. gross. | $\boldsymbol{\Sigma}$ | Lb. gross. |  |
| 1915-1916 |  |  | $\ldots$ | $78,206,793$ <br> 52,620 | 3,058,035 | 17,5ヶ9,369 | 1,435,150 |
| 1916-1917 | $\ldots$ | $\ldots$ | ... | 51,906,001 | 2,511,222 | 16,268,471 | 1,410,708 |
| 1917-1918 |  |  | ... | 35,272,597 | 3,382,793 | 16,901,805 | 2,019,060 |
| 1918-1919 |  |  |  | 56,666,969 | 2,529,684 | 8,972,507 | 1,011,748 |
| 1919-1920 |  |  |  | 92,835,718 | 4,114,183 | 22,780,888 | 2,651,034 |
| 1920-1921 |  |  |  | 71,532,151 | $6,730,813$ $4,467,815$ | 20,019,683 | 2,435,603 |
| 1921-1922 | $\cdots$ |  | $\ldots$ | 140,302,968 | $4,487,815$ $8,284,688$ | 25,427,103 | 1,749,033 |

## 114

Table No. XX.
Return for Ten Years showing the Amount of Scoured Wool used in Manufacture

|  | 1913. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Table No. XXI.
Return for Two Years showing the Export Oversea of Home Produce.


* Exclusive of Furred Skins:-1920-21, $\boldsymbol{2 1 1 , 8 6 0}$; 1921-22, $£ 1,864$.

Table No. XXII
Return for Two Years showing the Details of Pastoral Produots Exported Oversea.

*Exclusive of Bacon, Poultry, \&c., these being treated as products of Agriculture.
Table No. XXIII.
Return for Ten Years showing the Number of Common Goats in the State and the Number Killed for Food, \&c.

|  |  |  | Number Depastured. | Number Killed. | Weight: Lb. | Average Weight. | Number of Skins sold. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1.913 | $\ldots$ | .. | 148,006 | 35,541 | 978,244 |  | * |
| 1914 | ... | .. | - 134,967 | 31,471 | 831,93: | $2643$ | * |
| 1915 | ... | $\ldots$ | 126,730 | 35,153 | 880,352 | 25.04 | * |
| 1916 |  | .. | 119,645 | 28,992 | 791,321 | $27 \cdot 29$ | * |
| 1917 | $\ldots$ | ... | 129,173 | 27,700 | 731,591 | 26.41 | * |
| 1918 | $\ldots$ | ... | 124,964 | 26,375 | 719,033 | 27.26 | 13,851 |
| 1919 |  | ... | 122,088 | 26,903 | 698,874 | 25.98 | 16,133 |
| 1910 | . | $\ldots$ | 122,993 | 30,863 | 801,474 | 25.97 | 18,994 |
| 1922 |  | $\cdots$ | 134,177 | 25,080 | 689,587 | $27 \cdot 49$ | 11,630 |
| 1522 | ... | - | 127,784 | 24,468 | 638,323 | 26.09 | 9,759 |

Table No. XXIV.
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 Ob̧tained. | Number Killed for Meat. | Skins Obtained. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1913 |  |  |  |  |  |  | ${ }^{\text {Lb. }}$ |  |  |
| 1914 |  |  | $\ldots$ | $\ldots$ | $\ldots$ | 5,543 | 6,935 |  | 1,063 |
| 1915 1916 |  |  | $\ldots$ | $\ldots$ | $\cdots$ | 5,043 | 3,427 3,864 | 687 | 632 |
| 1916 1917 |  |  |  | $\ldots$ | $\ldots$ | 4,462 | 3,864 4,012 | 860 | 691 |
| 1917 1918 |  |  |  |  | $\ldots$ | 4,462 3,774 | 4,012 | 577 | 587 |
| 1918 1919 |  |  |  |  |  | 3,774 3,569 | 3,144 2,188 | 526 | 441 |
| 1919 1920 |  |  |  |  |  | 3,569 3,682 | 2,188 | 501 | 411 |
| 1920 |  |  |  |  | $\cdots$ | 3,682 | 2,181 | 528 | 477 |
| 1921 |  |  |  |  | $\ldots$ | 3,210 | 1,858 | 406 | 314 |
| 1922 |  |  |  |  |  | 4,248 3,503 | 2,895 1,596 | 625 | 517 |
|  | $\ldots$ | $\cdots$ |  |  | $\ldots$ | 3,503 | 1,596 | 565 | 617 |

Table No. XXV.
Return for Ten Years showing the Number of Camel.s, Ostriohes, and Mules in the State, together with the Increase and Decreasf,


Table No. XXVI.
Return for Five Years showing the Number of Calves Returned as Branded and the Increase and Decrease. For details of 1922 see Table XXVIII.

|  | Year. |  | Male. |  | Increase or Decrease. | Female. |  | Increase or Decrease. | Total. |  | Increase or |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1918 | $\cdots$ | $\ldots$ | *592,720 |  |  |  |  |  |  |  |  |
| 1919 | ... | $\ldots$ | 588,008 |  | $0 \cdot 79$ |  |  |  | *1,198,123 |  |  |
| 1920 | ... | $\ldots$ | 674,523 |  | 14.71 | 598,524 690,876 |  | $1 \cdot 14$ | 1,186,532 |  | 0.97 |
| 1921 | ... | $\ldots$ |  |  | $10 \cdot 12$ | 690,876 777013 |  | 1543 | 1,365,399 |  | $15 \cdot 07$ |
| 1922 | $\ldots$ |  | 586,171 |  | 21.09 | $\begin{aligned} & 777,013 \\ & 631,170 \end{aligned}$ |  | 12.47 | 1,519,824 |  | $11 \cdot 31$ |
|  | . | $\ldots$ | 586,171 |  | 21.09 |  |  | 18.77 | 1,217,341 |  |  |

Table No. XXVII.
Return of the Number of Horses, Cattle, Sheep, and Swine in the various Petty Sessions Districts of the State, together with the Inorease and Decrease of Cattle and Sheep on the 31st December, 1922.


Table No, XXVII,-continued.
Return of the Number of Horses; Cattle, Sheep, and Swine in the various Petty Sejsions Districts of the State, together witif the Increase and Degrease of Cattle and Sheep on the 31st December, 1922.


## Table No. XXVIII.

Return showing Number of Calves Returned as Branded in the several Petty Sessions Districts of the State during the Years 1921 and 1922 together with the Increase or Decrease in the Latter Year.


- Decrease.


## Table No, XXVIII.-continued.

Return showing Number of Calves Returned as Branded in the several Petty Sessions Districts of the State during the Years 1921 and 1922, together with the Increase or Decrease in the Latter Year.


- Decrease.

Table No. XXIX.
Return of the Number of Horses, Cattle, Sheep, and Swine in the various Pastoral Distriots of the State for the Years 1921 and 1922, together with the Numerical and Centesimal Increase or Decrease in the Latter Year.

| Pastoral District. | Year. | IIorses. | Cattle. | Sheop. | Swine. | Numerical Increase or Decrease - |  |  |  | Centesimal Increase or Decrease - |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Horses. | Cattle. | Sheep. | Swine. | Horses. | Oattle. | Sheep. | Swine. |
| Burke | $\left\{\begin{array}{l} i 921 \\ 1922 \end{array}\right.$ | $\begin{aligned} & 59,910 \\ & 58,402 \end{aligned}$ | $\begin{aligned} & 883,705 \\ & 894,325 \end{aligned}$ | $\begin{aligned} & 2,479,894 \\ & 2,666,955 \end{aligned}$ | $\begin{aligned} & 684 \\ & 636 \end{aligned}$ | $-1,508$ | 10,620 | 127,061 | - 48 | $-\dddot{2} 52$ | $\dddot{1} 20$ | $\ddot{5}$ | $-7.02$ |
| Burnett | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 43,552 \\ & 42,502 \end{aligned}$ | $\begin{aligned} & 525,058 \\ & 508,140 \end{aligned}$ | $\begin{array}{r} 5,223 \\ 10,774 \end{array}$ | $\begin{aligned} & 17.736 \\ & 21,511 \end{aligned}$ | -1,050 | $-16,918$ | 5,551 | 3,775 | 241 | - $\dddot{3} 22$ | $106 \cdot 28$ | $21 \cdot 28$ |
| Cook | $\left\{\begin{array}{l} 1921 \\ 1922 \end{array}\right.$ | $\begin{aligned} & 52,521 \\ & 49,689 \end{aligned}$ | $\begin{aligned} & 465,654 \\ & 507,010 \end{aligned}$ | $\begin{aligned} & 399 \\ & 177 \end{aligned}$ | $\begin{aligned} & 5,168 \\ & 4,518 \end{aligned}$ | $-2,832$ | 41,356 | - 222 | - 650 | $-\widetilde{5} 39$ | $\dddot{8} \cdot 88$ | $-\ddot{5} \cdot 64$ | $-1 \dddot{2} \cdot 58$ |
| Darling Downs | $\begin{aligned} & 19 \% 1 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 80,255 \\ & 77,266 \end{aligned}$ | $\begin{aligned} & 597,643 \\ & 571,610 \end{aligned}$ | $\begin{aligned} & 1,117,956 \\ & 1,229,783 \end{aligned}$ | $\begin{aligned} & 29,798 \\ & 34,428 \end{aligned}$ | - 2,989 | $-26,033$ | 111,827 | 4,630 | $-3772$ | $-436$ | $10 \cdot 00$ | $15 \cdot 54$ |
| Gregory Nurth | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 34,289 \\ & 31,000 \end{aligned}$ | $\begin{aligned} & 382,898 \\ & 343,719 \end{aligned}$ | $\begin{aligned} & 2,061,699 \\ & 1,776,378 \end{aligned}$ | $\begin{aligned} & 169 \\ & 157 \end{aligned}$ | $-3,289$ | $-39,109$ | - 285,321 | - 12 | - 959 | $-10 \cdot 22$ | $-13 \cdot 84$ | $-7 / 10$ |
| Gregory South | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 13,277 \\ & 12,715 \end{aligned}$ | $\begin{aligned} & 168,565 \\ & 167,395 \end{aligned}$ | $\begin{aligned} & 319,702 \\ & 286,419 \end{aligned}$ | $\begin{aligned} & 13 \\ & 21 \end{aligned}$ | 562 | - 1,170 | - 33,283 |  | $-4 \cdot 23$ | - 0.69 | $-10 \cdot 41$ | 61.54 |
| Leichhardt | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 55,427 \\ & 52,458 \end{aligned}$ | $\begin{gathered} 759,999 \\ 730,726 \end{gathered}$ | 917,444 843,496 | $\begin{aligned} & 1,497 \\ & 1,351 \end{aligned}$ | $-2,969$ | $-29,273$ | - 73,948 | $-146$ | $-5 \cdot 36$ | $-3 \cdot 85$ | $-8 \cdot 06$ | $-9775$ |
| Maranoa | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 33,590 \\ & 32,319 \end{aligned}$ | $\begin{aligned} & 373,699 \\ & 374,653 \end{aligned}$ | $\begin{aligned} & 2,023,562 \\ & 2,075,934 \end{aligned}$ | $\begin{aligned} & 1,694 \\ & 1,469 \end{aligned}$ | - 1,271 | 954 | 52,372 | - 225 | $-3.78$ | $\dddot{0} \cdot 26$ | $\cdots$ | $-13 \cdot 28$ |
| Mitchell | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{array}{r} 49,160 \\ 49,159 \end{array}$ | $\begin{aligned} & 251,918 \\ & 257,517 \end{aligned}$ | $\begin{aligned} & 6,854,732 \\ & 6,427,205 \end{aligned}$ | $\begin{aligned} & 894 \\ & 555 \end{aligned}$ | $-{ }^{\cdots} 1$ | 5,599 | -427,527 | - 339 | - 0.002 | $\dddot{2} 22$ | - $6 \cdot 24$ | $-37 \cdot 92$ |
| Moreton | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 78,688 \\ & 73,593 \end{aligned}$ | $\begin{aligned} & 587,182 \\ & 548,837 \end{aligned}$ | $\begin{aligned} & 12,083 \\ & 10,736 \end{aligned}$ | $\begin{aligned} & 61,275 \\ & 68,895 \end{aligned}$ | -5,095 | $-38,345$ | -- 1,347 | 7,620 | $-6.47$ | $-\dddot{6} 53$ | - 11.15 | $1 \dddot{2} \cdot 44$ |
| North Kennedy | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 90,356 \\ & 87,592 \end{aligned}$ | $\begin{aligned} & 520,917 \\ & 534,914 \end{aligned}$ | $\begin{aligned} & 5,028 \\ & 4,365 \end{aligned}$ | $\begin{aligned} & 6,046 \\ & 4,643 \end{aligned}$ | $-2,764$ | 13,997 | - 663 | -1,403 | $-3.06$ | $\dddot{2} 69$ | $-13 \cdot 19$ | $-23 \cdot 21$ |
| Port Curtis | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 48,084 \\ & 44,315 \end{aligned}$ | $\begin{aligned} & 485,307 \\ & 473,963 \end{aligned}$ | $\begin{aligned} & 25,861 \\ & 24,132 \end{aligned}$ | $\begin{aligned} & 6,285 \\ & 5,898 \end{aligned}$ | $-3,769$ | - 11,314 | - 1,729 | 387 | $-784$ | $-\dddot{2} 34$ | - $6 \cdot 69$ | $-\dddot{6} \cdot 16$ |
| South Kennedy | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 42,966 \\ & 41,947 \end{aligned}$ | $\begin{aligned} & 440,171 \\ & 470,575 \end{aligned}$ | $\begin{aligned} & 162,146 \\ & 163,250 \end{aligned}$ | $\begin{array}{r} 1,219 \\ 971 \end{array}$ | $-1,019$ | 30404 | 1,104 | 248 | $-237$ | $\dddot{6} 91$ | $0 \cdot 68$ | $-20 \cdot 31$ |
| Warrego | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 27,747 \\ & 24,219 \end{aligned}$ | $\begin{aligned} & 259,443 \\ & 223,941 \end{aligned}$ | $\begin{aligned} & 2,412,383 \\ & 2,176,291 \end{aligned}$ | $\begin{aligned} & 576 \\ & 388 \end{aligned}$ | $-3{ }^{3}$,528 | $-35,502$ | $-236,092$ | 188 | $-12 \cdot 71$ | $-13 \cdot 68$ | $-9 \cdot 79$ | $-3 \% 64$ |
| Wide Bay | $\begin{aligned} & 1921 \\ & 1922 \end{aligned}$ | $\begin{aligned} & 37,721 \\ & 36,879 \end{aligned}$ | $\begin{aligned} & 345,281 \\ & 348,138 \end{aligned}$ | $\begin{aligned} & 4,287 \\ & 5,176 \end{aligned}$ | $\begin{aligned} & 12,029 \\ & 15,176 \end{aligned}$ | - $\quad 342$ | 2,857 | ... 889 | 3147 | $-2023$ | $\dddot{0} 83$ | 20.74 | $26 \cdot 16$ |

Table No. XXX.
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. |  |  | Sheer. |  |  | All Kinds in terms of Sheer. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Acres per | $\begin{aligned} & \text { Number } \\ & \text { per } \\ & \text { Square } \\ & \text { Mile. } \end{aligned}$ | $\begin{gathered} \text { Number } \\ \text { per Capita } \\ \text { Popula- } \\ \text { tion. } \end{gathered}$ | $\begin{aligned} & \text { Acres } \\ & \text { per } \\ & \text { Head. } \end{aligned}$ | $\begin{aligned} & \text { Number } \\ & \text { per } \\ & \text { square } \\ & \text { Mile. } \end{aligned}$ | Number per Capita Population. | Acres per Head | $\begin{aligned} & \text { Number } \\ & \text { per } \\ & \text { square } \\ & \text { Mile. } \end{aligned}$ | Number Population. | $\begin{aligned} & \text { Acres per } \\ & \text { Head. } \end{aligned}$ | $\begin{aligned} & \text { Number } \\ & \text { per } \\ & \text { square } \\ & \text { Mile. } \end{aligned}$ | $\begin{aligned} & \text { Number } \\ & \text { per Capita } \\ & \text { Popula- } \\ & \text { tion. } \end{aligned}$ |
| 1913... | 607 | 1.05 | 1.07 | 81 | $7 \cdot 94$ | $8 \cdot 06$ | 20 | 3249 |  |  |  |  |
| 1914... | 577 | $1 \cdot 11$ | $1 \cdot 10$ | 79 | $8 \cdot 14$ | $8 \cdot 06$ | 19 | 34.50 | 33.18 | $5 \cdot 23$ $5 \cdot 04$ | 122.42 | 124:33 |
| 1915... | 625 | $1 \cdot 02$ | $1 \cdot 00$ | 90 | $7 \cdot 13$ | $6 \cdot 96$ | 27 | $23 \cdot 79$ | $23 \cdot 22$ | 6.08 | 125.34 | 125.79 |
| 1916... | 615 | 1.04 | 1.04 | 90 | $7 \cdot 11$ | $7 \cdot 12$ | 28 | $23 \cdot 15$ | $23 \cdot 19$ | $6 \cdot 12$ | 104.63 | 102.80 |
| 1917... | 585 | $1 \cdot 09$ | 1.06 | 81 | $7 \cdot 92$ | $7 \cdot 72$ | 25 | 25.66 | 24.99 | 5.52 | 115.88 | 104.78 |
| 1918... | 565 | $1 \cdot 13$ | $1 \cdot 09$ | 74 | $8 \cdot 63$ | $8 \cdot 33$ | 24 | $27 \cdot 17$ | 26.24 | $5 \cdot 13$ | 124.81 | 112.85 |
| 1919... | 586 | $1 \cdot 09$ | $1 \cdot 01$ | 72 | $8 \cdot 86$ | $8 \cdot 20$ | 25 | 25.92 | 23.96 | $5 \cdot 10$ | 124.81 | 120.51 |
| 1920... | 578 | $1 \cdot 11$ | $1 \cdot 01$ | 66 | $9 \cdot 63$ | $8 \cdot 74$ | 25 | 25.96 | 23.57 | $4 \cdot 80$ | 125.43 | 115.97 |
| 1921... | 574 | $1 \cdot 11$ | $0 \cdot 97$ | 61 | 10.51 | $9 \cdot 15$ | 23 | 27.45 | -3.90 |  | 133.70 |  |
| 1922 .. | 601 | 1.06 | $0 \cdot 90$ | 62 | $10 \cdot 37$ | 8.80 | 24 | 26.31 | 23.90 $22 \cdot 32$ | 4.45 | $143 \cdot 70$ 14070 | $125 \cdot 13$ $119 \cdot 38$ |

## Table No. XXXI

Return showing the Number of Owners and the Sizes of Herds of Cattle under various Groupinges in the several Pastoral Distriots of the State during the Year 1922.

| Pastoral Districts. | 1 to 100. |  | 101 to 300. |  | - 301 to 500. |  | 501 to 1,000. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Owners. | Cattle. | Owners. | Cattle. | Owners. | Cattle. | Owners. | Cattle. |
| Burke | 359 | 11,211 | 109 | 21,541 | 50 | 21,762 | 45 | 32,549 |
| Burnett | 4,105 | 152,417 | 579 | 93,371 | 103 | $40,349$ | 81 | 56,762 |
| Cook . | 1,532 | 41,117 | 136 | 23,294 | 19 | 7,827 | 20 | 15,398 |
| Darling Downs | 7,906 | 236,773 | 807 | 133,532 | 116 | 46,393 | 73 | 50,394 |
| Gregory North | 174 | 4,669 | 33 | 6,475 | 28 | 11,514 | 18 | 13,000 |
| Gregory South | 48 | 1,433 | 32 | 6,320 | 15 | 5,679 | 14 | 10,994 |
| Leichhardt | 1,387 | 42,281 | 374 | 66,632 | 107 | 42,305 | 105 | 75,170 |
| Maranoa | 1,334 | 45,205 | 282 | 50,211 | 71 | 27,563 | 68 | 49,319 |
| Mitchell | - 640 | 17,867 | 109 | 19,994 | 45 | 18,015 | 55 | 38,915 |
| North Kennedy | 11,124 2,358 | 303,291 50,406 | 830 | 133,672 | 114 | 42,391 | 46 | 30,565 |
| Port Curtis . | 2,806 | 82,512 | 191 | 33,154 | 77 | 29,962 35,764 | 44 | 32,041 |
| South Kennedy | 1,338 | 30,925 | 115 | 20,505 | 39 | 35,764 14,766 | 76 | 53,981 31,170 |
| Warrego . | 495 | 13,431 | 116 | 21,328 | 51 | 20,616 | 44 | 33,081 |
| Wide Bay | 5,434 | 144,321 | 549 | 87,534 | 79 | 30,385 | 44 | 29,426 |
| Totals | 41,040 | 1,177,859 | 4,663 | 786,218 | 1,010 | 395,291 | 777 | 525,765 |
| Pastoral Districts. | 1,001 to 5,000. |  | 5,001 to 10,000 . |  | 10,001 and upwards. |  | Totals, |  |
|  | Owners. | Cattle. | Owners. | Cattle. | Owners. | Cattle. | Owners. | Cattle. |
| Burke .. | 62 |  | 15 |  | 30 |  | 670 |  |
| Burnett Cook | 67 | 121,844 | 2 | 12,564 | 3 | 30,833 | 4,940 | 508,140 |
|  | 30 | 71,410 | 11 | 73,867 | 12 | 274,097 | 1,760 | 507,010 |
| Darling Downs Gregory North | 51 | 88,879 | 2 | 15,639 |  |  | 8,955 | 571,610 |
|  | 29 | 72,780 | 9 | 57,299 | 13 | 177,988 | 304 | 343,719 |
| Gregory South | 20 | 42,204 | 5 | 32,740 | 5 | 68,025 | 139 | 167,395 |
| Maranoa | 124 | 270,939 | 20 | 139,590 | 8 | 93,809 | 2,125 | 730,726 |
| Mitchell | 58 | 156,001 | 5 | 36,154 | 1 | 10,200 | 1,833 | 374,653 |
| Moreton | 25 | 115,604 38,918 | 5 | 33,055 | 1 | 14,067 | 913 | 257,517 |
| North Kennedy | 64 | 141,873 | 20 |  |  |  | 12,139 | 548,837 |
| Port Curtis . | 87 | 191,094 | 7 |  | 5 | 103,038 | 2,759 3,473 | $534,914$ |
| South Kennedy | 57 | 137,421 | 14 | 95,625 |  |  | 3,473 | $473,963$ |
| Warrego - . | 40 | 86,454 | 3 | 23,990 | 3 | 140,163 25,041 | 1,616 752 | $\begin{aligned} & 470,575 \\ & 223,941 \end{aligned}$ |
| Wide Bay | 28 | 56,472 |  | -3,00 |  | 25,041 | 6,134 | $348,138$ |
| Totals | 814 | 1,731,341 | 118 | 817,350 | 90 | 1,494,639 | 48,512 | 6,955,463 |

Pastoral and Petty Sessions Districts.


Table No．XXXII．
Return showing the Number of Owners and the Sizes of Flocks of Shekp under various Groupings in the several Pastoral Districts of the State for the Year 1922.

|  | \％ |  |  |
| :---: | :---: | :---: | :---: |
|  | saoumo |  |  |
|  | 离 |  |  |
|  | smano | ${ }^{-1}!: 0^{-1}: 0^{-\infty}$ ：：：：： |  |
|  | 妾 |  |  |
|  | ягаим | $\cdots::^{\infty-1}$－$^{\text {－}}$ ：$:^{-\cdots}$ |  |
|  | 妾 |  |  |
|  | ягомо |  |  |
| $\begin{gathered} \text { Begis id } \\ \text { Big } \end{gathered}$ | 番 |  |  |
|  | sяомо | \％：${ }^{\infty \text { ¢ }}$ |  |
|  | 衰 |  |  |
|  | янино |  |  |
|  | 砣 |  |  |
|  | saoumo | \％－®\％ |  |
| Hicioig | 颜 |  |  |
|  | ssoumo |  |  |
| $\begin{aligned} & \text { gig } \\ & \stackrel{\rightharpoonup}{8} \\ & \stackrel{\rightharpoonup}{0} \end{aligned}$ | $\frac{\text { 妾 }}{10}$ |  |  |
|  | smoma |  |  |
| $\begin{aligned} & \text { 잉 } \\ & \stackrel{\circ}{\circ} \end{aligned}$ | 8 |  Nem |  |
|  | згапо |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Return for Ten Years showing the Estimated Number of Cattle，Sheep，Etc．，Slaughtered for Consumption as Food in the Statr，together with the Average Dead Weight of each Animal and the Estimated Quantity Consumed per Capita（exclusive of Factories engaged in Slaughtering for Preservation）．

Table No. XXXIV.



Table No. XXXV.

Table No. xxxvi.
Return shofing Number of Sheep Shorn and Quantity of Wool Produced, together with the Classification of Sheep and Value of Machinkry on Holdings for the Year 1922 .


## Table No. XXXVII.

Return showing the Results of Lambing, Losses, Sheep Killed for Food on Holdings, \&o., in the several Pastoral Districts of the State for the Year 1922.


* Causes included in "Other"-
a Bogged, cancer. droving, eaglehawks, fire, killed for baits, killed for skins, lightning, marking, missing, rain after shearing, wild pigs.
$b$ Crows, eaglehawks, foxes, impaction, worms
c Bogged, burst, cancer, cold after shearing, dipping, dogs, droving, eaglehawks, foxes, grass seed, heavy rain at shearing, marking, nasal fly, pink-eye, poison weed, staggers, stolen, strayed, tetanus, worms.
d Bogged, cancer, droving, fire, killed for baits poisoned by caustic and other milk plants, stolen
$e$ Eaglehawks, poison weed.
1 Bogged, bush-fire, cancer, cold after shearing, eaglehawks, $\underset{\text { grass-seed, missing, poisonous weeds, stolen, swollen jaw, travelling, }}{\text { g, }}$
g Blight, cancer, crows, domestic dogs, eaglebawks, foxes, marking, missing, prickly-pear, smothered, wild pigs, worms.
$h$ Blight, bogged, cancer, cold after shearing, crows, eaglehawks, killed for skins, marking, missing, poisonou weeds, rain after shearing, travelling, worms,
$i$ Domestic dogs, foxes, serub-ticks, worms.
$j$ Domestic dogs, choked, shot,
$k$ Grass-seed, rain after shearing, worms.
$l$ Bush-fires, domestic dogs, eaglehawks, grass-seed, marking, worms.
$m$ Accident, bogged, cancer, droving, drowned, foxes, killed for skins, missing, prickly-pear, rain after shearing, tetanus
※ Dogs, foxes, grass-seed, scrub-ticks, strayed, worms


Registrar-Gcneral.
Brisbane, 8th November, 1923.

## REPORT OF THE REGISTRAR-GENĖRAL ON AGRICULTURAL PRODUCTION FOR THE YEAR 1922.

## INDEX.




## REPORT OF THE REGISTRAR-GENERAL ON AGRICULTURAL PRODUCTION FOR THE YEAR 1922.



* Estimated.

Table No. II.
Return Showing Details of the Principal Datrying Divisions for the Year 1922

a 103101 galions of this were sent from the Moreton Division to New south Wales.
b $1.031,014$ gallo 8 of this were sent from the Moreton Division and 56,890 gullons from the Downs Division to New South Wales,

## Table No. III.

BUTTER, CHEESE, AND CONDENSED MILK.
Return Showing Quantity Exported Oversea for Five Years (Australian Produce Only).

| Year. | Butter. |  |  | Cherse. |  |  | Condensed Milk. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Quantity <br> Exported <br> Oversea. | Value, | Value per lb. | Quantity <br> Exported Oversea. | Value. | $\begin{aligned} & \text { Value } \\ & \text { per lb, } \end{aligned}$ | Quantity Exported Oversea. | Value. | Value per lb. |
| $\begin{aligned} & 1917-18 \\ & 1918-19 \\ & 1919-20 \\ & 1920-21 \\ & 1921-22 \end{aligned}$ | $\begin{array}{r} \text { lbs. } \\ 19,595,849 \\ 7,839,356 \\ 5,793,447 \\ 26,067,478 \\ 40,723,861 \end{array}$ | $\begin{array}{r} £ \\ 1,320,992 \\ 603,587 \\ 469,135 \\ 2,964,204 \\ 2,382,125 \end{array}$ |  | $\begin{gathered} \text { lbs. } \\ 5,633,832 \\ 1,112,394 \\ 2,745,336 \\ 7,936,289 \\ 10,782,950 \end{gathered}$ | $\begin{aligned} & \frac{c}{c} \\ & 226,295 \\ & 50,370 \\ & 126,102 \\ & 427,725 \\ & 370,878 \end{aligned}$ | $\begin{array}{cc} 8 . & d . \\ 0 & 97 \\ 0 & 107 \\ 0 & 10 \% \\ 0 & 11 \\ 0 & 1 \\ 0 & 8 t \end{array}$ | $\begin{gathered} \text { lbs. } \\ 2,925,648 \\ 862,925 \\ 5,282,142 \\ 7,709,256 \\ 7,926,297 \end{gathered}$ | $\begin{gathered} f \\ 111,299 \\ 3,498 \\ 216,989 \\ 4017,159 \\ 417,45 \end{gathered}$ |  |

Table No. IV.
CONDENSED MILK MANUFACTURED-RETURN FOR FIVE YEARS.


## Table No. V

Return Showing the Numbers of Poultry and Eggs Produced in the Principal Districts of the State for the Year 1922


Note.-Total value poultry and eggs-1921, £ 429,$983 ; 1922, £ 417,052$
APIARIES.
Table No. VI
Return Showing the Particulars of the Bee Industry for the Year 1922.

| Petty Sessions District. | No. of Hives. |  | Honey. | Average per Productive Hive. | Wax. | Petty Sessions District. | No. of Hives. |  | Honey. | $\begin{aligned} & \text { Average } \\ & \text { per } \\ & \text { Productive } \\ & \text { Hive. } \end{aligned}$ | Wax. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Productive. | Non-Productive. |  |  |  |  | Productive. | Non-Productive. |  |  |  |
|  |  |  | Lb. | Lb. | Lb. |  |  |  | Lb. | Lb. | Lb. |
| Brisbane (A) | 180 | 163 | 13.979 4.630 | $\begin{aligned} & 30 \\ & 96 \end{aligned}$ | 96 | Maroochy ... ... | 601 | 346 | 30.780 | 51 | 429 |
| Caboolture | 1,251 | 199 | 41,928 | 36 | 58 769 | Naryborough | 578 | 174 | 23,707 | 41 | 552 |
| Charters Towers | 1, 77 | 26 | 3,060 | 40 | 80 | Oakey | 168 81 | 28 | 4,700 | 28 | 32 |
| Cleveland ... | 159 | 72 | 4,586 | 29 | 84 | Pittsworth .. | 239 | 45 | 12,620 | 67 53 | + 40 |
| Conk | 279 | 12 | 17,518 | 63 | 545 | Redeliffe ... | 235 | 43 | 12,020 8,134 | 35 | 193 |
| Dalby | 321 | 67 | 16,406 | 51 | 139 | Rockhampton | 1,118 | 180 | 85,894 | 77 | 1,056 |
| Dugandan | 211 | 49 | 3,192 | 15 |  | Rosewood ... | -180 | 121 | 4,100 | 23 | 1,056 |
| Gatton | 294 | 218 | 10,564 | 36 | 140 | Southport ... | 187 | 67 | 3,210 | 17 | 132 |
| Gladstone | 47 | 10 | 5,929 | 126 | 60 | Stanthorpe | 195 | 47 | 9,688 | 50 | 117 |
| Gympie | 876 | 222 | 22,110 | 25 | 473 | Warwick | 1,064 | 233 | 82,975 | 78 | 842 |
| Harrisville | 201 | 58 | 5,965 | 30 |  | Woodford | 129 | 59 | 4,930 | 38 | 90 |
| Highfields ... | 184 | 34 | 13,000 | 71 | 12 | All other Districts | 1,653 | 1,188 | 43,543 | 26 | 991 |
| Jondaryan... | 81 | 68 | 4,050 | 50 | 75 |  |  |  | 4,513 |  | 951 |
| Killarney . | 660 | 36 | 42,780 | 65 | 462 | Totals, 1922 | 12,936 |  |  |  |  |
| Laidley | 143 | 74 | 7,310 | 51 |  | Totals, 1921 ... | 12,062 | 4,145 | $598,357$ | $\begin{aligned} & 40 \\ & 50 \end{aligned}$ | $\begin{aligned} & 8,895 \\ & 8,231 \end{aligned}$ |
| Logan | 774 | 122 | 35,200 | 45 | 749 |  |  |  |  |  |  |
| Lowood | 136 | 75 | 4,530 | 33 | 71 |  | 874 |  |  |  | 664 |
| Mackay | 162 | 15 | 3,618 | 22 | 90 | Decrease, 1922 | 874 | 45 | 18,300 | 5 | 664 |

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. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1904 ... | 17,854 | ... |  | 577,896 |  |  |
| 1913 ... | 23,472 | $2 \cdot 2$ | 31.5 | 920,010 |  |  |
| 1914 ... | 24,553 | $4 \cdot 6$ | 37.5 | 981,218 | 8.95 6.65 | $59 \cdot 20$ $69 \cdot 79$ |
| 1915 ... | 24,828 | $1 \cdot 11$ | 39.06 | 1,059,401 | 6.65 7.97 | 69.79 83.32 |
| 1916 ... | 25,713 | 356 | 44.02 | 1,077,342 | $1 \cdot 69$ | 86.42 |
| 1918 ... | 26,041 | $0 \cdot 62$ | $44 \cdot 91$ | 998,036 | $-7 \cdot 36$ | 72.70 |
| 1919 ... | 26,713 | 0.65 <br> 2.58 | $45 \cdot 86$ | 982,066 | -1.60 | 69.94 |
| 1920 ... | 26,921 | 2. 28 | $49 \cdot 62$ | 988,541 | $0 \cdot 66$ | $71 \cdot 6$ |
| 1921 ... | 28,122 | 0.78 4.46 | 50.78 | 1,018,444 | $3 \cdot 02$ | 76.23 |
| 1922 ... | 29,390 | 4.46 4.51 | 57.51 | 1,045,342 | $2 \cdot 64$ | $80 \cdot 89$ |
|  | 29,850 | 4.51 | 64.61 | 1,090,816 | $4 \cdot 35$ | 88.76 |

The minus sign $(-)$ implies a decrease

Table No. VIII.
Return showing Labour Employed, Including Owners or Occupiers Working on Holdings, and the Capital Invested in Farming Machinery, Etc., 1922.

N.B.-Biisbane (B) refers to South Brisbane.

Table No. IX.
Return Showing Land Treated for Cultivation, Etc., for the Year 1922.

|  | $\ldots$ |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |

* See Table No. XII. for details of areas and owners.

Table No. $\mathbf{X}$.
Return for Ten Years Showing Land Selected in each Year Destined to Become Freehold.


Table No. XI.
Return Showing the Value of Agricultural Crops for the Year 1922.


Tue minus sign $(-)$ indicates a de crease.

Table No. XII.
Return Showing Area under Cultivation and Sizes of Farms for the Year 1922.


* Includes Wowan.
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. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1913 | $\ldots$ | . | . | $\ldots$ | ... | 11,904 | 1918 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 6,947 |
| 1914 | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 11,809 | 1919 | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | 9,267 |
| 1915 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | 11,842 | 1920 | ... | $\ldots$ | $\ldots$ | $\ldots$ | ... | 9,803 |
| 1916 | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 10,886 | 1921 | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 11,264 |
| 1917 | ... |  | $\cdots$ | $\ldots$ | ... | 4,467 | 192. | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | 14.314 |

Table No. XIV.
Return Showing the Area Irrigated and the Principal Crops Treated for the Year 1922.


Table No. XV.
WHEAT (GRAIN).
Return for Ten Years Showing the Area and Produce of Wheat for Grain.

|  |  |  |  |  |  |  |  |  |  | INCRKASE |  | as prkvious |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  | Area. | Produce. | $\begin{aligned} & \text { Average per } \\ & \text { Acre. } \end{aligned}$ |
| 1913 |  |  |  |  |  |  | Acres | Bushels. | Bushels: | Acres. | Bushels. | Bushels. |
| 1914 | ... | $\ldots$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | 127,015 | 1,769,432 | 13.34 12.48 | 7,692 $-\quad 540$ | 206,073 | - 2.47 |
| 1915 |  |  |  |  | ... |  | 93,703 | 1,414,438 | $4 \cdot 42$ | $\begin{array}{r}\text { - } \\ \hline\end{array}$ | - 11784,345 | - 0.86 $-\quad 8.06$ |
| 1916 | ... | $\ldots$ | $\ldots$ | $\ldots$ |  | $\ldots$ | 227,778 | 2,463,141 | $10 \cdot 81$ | - 134,075 | - $\begin{array}{r}1,170,649 \\ 2,048703\end{array}$ | - 8.06 |
| 1917 | $\ldots$ | ... | ... | ... | ... | $\ldots$ | 127,815 | 1,035,268 | $8 \cdot 10$ | - $-99,963$ | - $1,427,873$ | 6.39 -2.71 |
| 1918 | $\ldots$ | ... | $\ldots$ | ... | $\ldots$ | ... | 21,637 | 104,509 | $4 \cdot 83$ | -106,178 | - 930,759 | - 327 |
| 1920 |  |  |  |  |  | ... | 46,478 | 311,638 | 6.71 | 24,841 | 207,129 | 1.88 |
| 1921 |  |  |  |  |  |  | 177,320 | $3,707,357$ $3,025,786$ 1,858 | 20.91 18.37 | 130,842 | 3,395,719 | 14.20 |
| 1922 |  |  |  |  |  | $\ldots$ | 145,492 | 1,877,836 | 12.91 | - 19,178 | $-681,51$ $-1,147,950$ | - 2.54 -5.46 |
| Average of Ten Years |  |  |  |  | ... | $\ldots$ | 126,456 | 1,629,449 | $12 \cdot 89$ |  | $\ldots$ |  |

Table No. XVI.
WHEAT.
Return for Ten Years Showing Average Yield per Acre in Each State.

| states. |  |  | Average Produce per Acre-Bushels. |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1913. | 1914. | 1915. | 1916. | 1917. | 1918 | 1919. | 1920. | 1921. | 1922. | $\begin{aligned} & \text { Mean for } \\ & \text { 10 Years } \\ & \text { ending } \\ & 1922 . \end{aligned}$ |
| Queensland ... | ... | ... | $13 \cdot 34$ | $12 \cdot 48$ | 4.42 | $10 \cdot 81$ | $8 \cdot 10$ |  |  |  |  | 12.91 | 12.89 |
| New South Wales | $\ldots$ | ... | $11 \cdot 86$ | $4 \cdot 65$ | 15.94 | 9.61 | $11 \cdot 33$ | $7 \cdot 60$ | $2 \cdot 96$ | $17.79$ | $13 \cdot 39$ | $9 \cdot 65$ | $10 \cdot 48$ |
| Yictoria ... |  | ... | 12.81 | 1.38 | 15.90 | $16 \cdot 37$ | 1403 | $11 \cdot 40$ | 7.75 | $17 \cdot 19$ | 16.80 | 13.50 | 12.72 |
| South Australia |  | -.. | $7 \cdot 47$ | 1.41 | $12 \cdot 46$ | $16 \cdot 46$ | $12 \cdot 18$ | $10 \cdot 49$ | 7.77 | $15 \cdot 80$ | $10 \cdot 46$ | $11 \cdot 73$ | $10 \cdot 62$ |
| Western Australia |  | ... | $12 \cdot 15$ | 1.91 | $10 \cdot 52$ | $10 \cdot 28$ | 7.44 | 7.72 | 10.77 | $9 \cdot 6$ | $10 \cdot 41$ | 9.06 | 8.99 |
| Tasmania ... | ... | $\ldots$ | 18.97 | $16 \cdot 10$ | 20.43 | 12.53 | 11:57 | $15 \cdot 66$ | 18.58 | 20.01 | 20.62 | 19.74 | 17.42 |

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.


Table No. XVIII.
Return Showing the Quanfify of Wheat Treated in Queensland during the Year 1922.

| District. | NumberofEstablish-ments. | Number of Hands Employea | Pairs of stones. | Sets of Rollers. | Wheat Treated. | flotr made. |  | meal. madz. |  | bran and pollard. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  | Tons. | Value. | Tons. | Value. | Bushels. | Value. |
| $\underset{\text { Elsewhere }}{\text { Metropolitan }}\} 1922\{$ | $\stackrel{2}{9}\}$ | 273 | Pairs. $7$ | Sets. $95$ | $\begin{gathered} \text { Bushels. } \\ 2,496,011 \end{gathered}$ | 51,476 | $\begin{gathered} \boldsymbol{\ell} \\ 694,297 \end{gathered}$ | 270 | $$ | 2,203,685 | $\begin{gathered} \boldsymbol{£} \\ 193,309 \end{gathered}$ |
| Total, 1921 | 11 | 258 | 7 | 90 | 2,652,580 | 54,694 | 1,098,268 | 281 | 5,634 | 2,553,984 | 202,888 |

Table No. XIX.

## BARLEY.

Return for Two Years Showing the Result of the Crop.

| Barley. |  |  |  |  |  |  |  |  | 1921. | 1922. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |  | $\begin{aligned} & \text { Acres. } \\ & \overline{5}, 292 \end{aligned}$ |
| Mown for hay | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\begin{array}{r} 7,730 \\ 862 \end{array}$ | $\begin{array}{r} 5,292 \\ 149 \end{array}$ |
| Used for green food | ... | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | . | 15,958 | 12,590 |
| Totals | $\ldots$ | $\cdots$ | $\cdots$ | ... | ... | ... | $\cdots$ | $\ldots$ | 24,550 | 18,031 |

Table No. XX.
BARLEY.
Return for Two Years Showing Result of Grain Crop.


* Increase in A verage Yield, Decrease in Area and Produce.

Table No. XXI.
BARLEY.
Return Showing Result of Crop, Distingulshinf between Malting and Other Varieties, for the Year 1922.


Table No. XXII.

> MALT.

Return for Ten Years Showing Quantity of Malt Made and How Dealt With.


## Table No. XXIII.

MAIZE.
Return for Five Years Showing the Area and Produce of Matze.

| Year. |  |  |  |  |  |  |  | Grain. |  | Average per Acre. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1918 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ |  |  |  | Acres. <br> 149,505 | Bushels. | Bushels. |
| 1919 | ... | ... | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | 105,260 | 1,830,664 |  |
| 1920 | ... | $\ldots$ | ... | $\ldots$ |  | ... | .. | 115,805 | 2,012,864 | 17.39 |
| 1921 | ... |  | ... | $\ldots$ |  | $\ldots$ | $\ldots$ | 135,034 | 2,907,754 | 17.38 |
| 1922 |  | . | ... | ... | $\ldots$ | $\ldots$ | $\ldots$ | 149,048 | 3,217,848 | 21.53 |

Table No. XXIV.
MAIZE (GRAIN).
Refurn Showing the Area and Production in Each Division of the State for the Year 1922.

| Division or Group. |  |  |  |  | Acres. | Pruãuce. | Average. | Proportion of Divisional Area to Total Area of |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Moreton |  | $\ldots$ |  | .. | 51,063 | Bushels. <br> 1,114,582 | Bushels. 21.83 |  |
| Wide Bay ... | $\ldots$ | $\ldots$ | $\ldots$ | .. | 38,126 | 760,085 | 19.94 | 34.26 25.58 |
| Port Curtis | ... | ... | ... | ... | 1,245 | 21,535 | $17 \cdot 30$ | 0.84 |
| Edgecumbe | ... | ... | ... | ... | 167 | 2,677 | 16.03 | $0 \cdot 11$ |
| Rockingham | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 10,889 | 383,627 | $35 \cdot 23$ | $7 \cdot 31$ |
| York Peninsula | ... | ... | $\ldots$ | $\ldots$ | 77 | 2,096 | $27 \cdot 22$ | 1.05 |
| Carpentaria | $\ldots$ | ... | ... | $\ldots$ | 63 | 924 | 14.67 | 004 |
| Central Western South Western | $\ldots$ | :.. | $\ldots$ | $\ldots$ |  | ... | ... | ... |
| Central . $\therefore$. | ... | $\ldots$ | $\ldots$ |  | 59 | 1,005 | $17 \cdot 03$ | $0 \cdot 04$ |
| Maranoa | $\ldots$ |  | ... | ... | 170 | 1,527 | $8 \cdot 98$ | $0 \cdot 11$ |
| Downs | ... | ... | ... | ... | 47,189 | 929,790 | $19 \cdot 70$ | 31.66 |
| Total | ... | $\ldots$ | $\ldots$ | ... | 149,048 | 3,217,848 | 21.59 | $100 \cdot 00$ |

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. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | 1921. | 1822. | $\begin{aligned} & \text { Increase } \\ & \text { or } \\ & \text { Decrease } \end{aligned}$ | 1921. | 1922. |  | 1921. | 1922. |  |
|  |  |  |  | Acres. | Acres. | Acres. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| Allora | ... | ... | $\ldots$ | 2,203 | 4,336 | 2,133 | 44,989 | 88,159 | 43,170 | 20.42 | 20.33 | - 0.09 |
| Atherton | ... | ... | ... | 15,021 | 10,770 | - 4,251 | 445,175 | 381,873 | - 63,302 | $29 \cdot 64$ | 35.46 | $5 \cdot 82$ |
| Beaudesert | $\ldots$ | $\ldots$ | ... | $2.44 \%$ | 2,546 | 100 | 53,219 | 54,356 | 1,137 | $48 \cdot 21$ | 21.35 | -26.86 |
| Bundaberg | ... | ... | ... | 1,206 | 649 | 557 | 29,589 | 10,437 | - 19,152 | 24.53 | 16.08 | -8.45 |
| Clifton |  |  |  | 3,643 | 6,825 | 3,182 | 67,606 | 126,730 | 59,124 | 18.56 | 18.57 | 0.01 |
| Cooyar |  |  |  | 532 | 813 | 281 | 11,796 | 12,306 | 510 | $22 \cdot 17$ | $15 \cdot 14$ | - 703 |
| Crow's Nest |  |  |  | 4.230 | 5,406 | 1,176 | 94,183 | 112,328 | 18,145 | $22 \cdot 27$ | 20.78 | - 1.49 |
| Dugandan |  |  |  | 8,721 | 10,010 | 1,289 | 191,494 | 245,003 | 53,509 | $21 \cdot 97$ | 24.48 | 2.51 |
| Esk |  |  |  | 2,45 | 2,324 | 132 | 47,914 | 55,042 | 7,128 | 19.51 | 23.68 | $4 \cdot 17$ |
| Gatton |  |  | ... | 5,455 | 5,694 | 239 | 89,730 | 130.980 | 41,250 | $16 \cdot 45$ | $23 \cdot 00$ | $6 \cdot 55$ |
| Gayndah |  |  | ... | 2,179 | 1,905 | 274 | 48,863 | 30,702 | - 18,161 | 22.42 | 16.12 | -6.30 |
| Gladstone |  |  | $\ldots$ | 943 | 516 | 427 | 23.079 | 11,525 | - 11,554 | 24.47 | 22.34 | - 2.13 |
| Goombungee |  |  | ... | 1,185 | 2,386 | 1,201 | 24,226 | 44,306 | 20,030 | $20 \cdot 44$ | 18.57 | - 1.87 |
| Gympie | ... | ... | ... | 1,555 | 1.383 | 172 | 61,630 | 56,568 | - 5,062 | 29.63 | $40 \cdot 90$ | $11 \cdot 27$ |
| Harrisville |  |  | $\ldots$ | 3,093 | 3,901 | 808 | 55,773 | 85,443 | 29,670 | 18.03 | 21.90 | $3 \cdot 87$ |
| Helidon Highfields |  | $\ldots$ | $\ldots$ | 1,064 1,905 | 1,198 2,423 | 134 | 20,178 | 23,541 | 3,363 | 18.96 | 19.65 | $0 \cdot 69$ |
| Ipswich | $\ldots$ |  |  | 1,905 570 | 2,423 | 518 137 | 48,406 10,961 | 41,169 | 7,237 | 25.41 | 16.99 | - 8.12 |
| Jondaryan |  |  |  | 1,409 | 1,838 | 429 | 10,961 | 12,247 17,619 | 1,286 $-\quad 4,262$ | 18.91 | 17.32 $9 \cdot 6$ | $\begin{array}{r}1 \\ -\quad 159 \\ \hline\end{array}$ |
| Kilcoy |  |  | ... | 676 | 749 | 73 | 20,480 | 32,376 | 11,896 | 3030 | 4323 | - $\quad 12.94$ |
| Killarney | ... |  |  | 3,567 | 6,892 | 3,325 | 87,573 | 142,872 | 55,299 | 24.55 | $2 \cdots 73$ | - 3.82 |
| Laidley | ... |  | ... | 6,893 | 7,409 | 516 | 126,481 | 132,942 | 6,461 | 18.35 | 1794 | - 0.41 |
| Logan | ... |  | ... | 693 | 564 | 129 | 15,444 | 10,964 | - 4,480 | $22 \cdot 29$ | $19 \cdot 44$ | - 285 |
| Lowood |  |  |  | 4,493 | 4,588 | 95 | 86555 | 99,393 | 12,838 | $19 \cdot 26$ | $21 \cdot 66$ | $2 \cdot 40$ |
| Marburg | $\ldots$ |  | ... | 1,823 | 1,500 | 323 | 33,280 | 28,141 | - 5,13\% | 18.26 | 18.76 | 0.50 |
| Nanango | ... | $\ldots$ |  | 16,612 | 15,233 | - 1,379 | 256,981 | 291,468 | 37,487 | 16.47 | $19 \cdot 33$ | 2.86 |
| Nerang | ... | ... | $\ldots$ | 590 | 487 | 103 | 16,706 | 13,839 | - 2,867 | 28.32 | 28.42 | 010 |
| Oakey Pittsworth | .... | $\ldots$ | $\ldots$ | 3,150 1,102 | 5,787 1,705 | 2,637 | 77,112 | 89,265 | 12,153 | 2148 | $15 \cdot 43$ | - 9.05 |
| Rosewood |  |  | $\ldots$ | 1,102 | 1,705 1,926 | 603 336 | 15,991 27,858 | 25,503 31,555 | 9,512 3,697 | 14.51 | 14.96 | 0.45 |
| Tiaro |  |  |  | 639 | 510 | - 129 | 19,867 | 13,494 | 6,697 | 11.23 31.69 | 1638 $26 \cdot 46$ | $\begin{array}{r}5.15 \\ -\quad 463 \\ \hline\end{array}$ |
| Toowoomba |  |  |  | 1,615 | 2,587 | 972 | 34,364 | 47,706 | 13,342 | 21.28 | 18.44 | $\begin{array}{r}\text { a } \\ \hline\end{array}$ |
| Warwick |  |  |  | 6,592 | 11,259 | 4.667 | 134,739 | 293,260 | 158.521 | 20.42 | $26 \cdot 05$ | $5 \cdot 63$ |
| All other Distric |  |  |  | 17,955 | 16,973 | 982 | 425,111 | 328,593 | - 96,518 | 23.68 | $19 \cdot 36$ | - 4.32 |
|  |  |  | ... | 7,228 | 5,249 | - 1,979 | 138,520 | 93,143 | - 45,377 | $19 \cdot 16$ | 17.74 | - $1 \cdot 42$ |
| Total State |  |  | ... | 135,034 | 149,048 | 14,014 | 2,907,754 | 3,217,848 | 310,094 | $21 \cdot 53$ | 21.59 | 006 |

Table No. XXVI.
OATS.
Return for Five Years Showing the Area under Crop.


Table No. XXVII.
OATS.
Return for Two Years Showing the Result of the Grain Crop.


* Increase in Average Yield per a cre; Decrease in Area and Produce.

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. |
| 1918 | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\ldots$ | $\ldots$ | 2 | 20 | 10.00 |
| 1919 | $\ldots$ | ... | ... | ... | $\ldots$ | ... | 3 | 20 | 6.67 |
| 1921 | $\ldots$ | $\ldots$ | $\cdots$ | $\ldots$ | $\ldots$ | $\ldots$ | 72 | 1,046 | 14.53 |
| 1922 | $\ldots$ | . | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 5 4 | 60 | 12.00 |
|  | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | 4 | 39 | $9 \cdot 75$ |

Table No. XXIX.
POTATOES.
Return for Five Years Showing the Area, Production, and Value of tife English Potato Crop.

|  | ${ }^{\text {Acres. }}$ |  | Tons. |  | Value. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 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 |
| 1922 | 7,649 | . | 10,517 | $\cdots$ | £77,826 |

Table No. XXX.
COTTON.
Return for Two Years Showing the Area and Produce of Cotton.


+ Includes Wowan.


## Table No. XXXI

SUGAR.
Return Showing the Number of Plantations, Area of and Average Area for the Year 1922.


Table No. XXXI.
SUGAR.
Return Showing the Number of Plantations, Area of and Average Area for the Year 1922.


Table No. XXXII.
Return for Five Years Showing the Number of Plantations, Area and Produce of Sugar-cane.


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 zach acre crusined. |  | Tons of Cane to One Ton of Sugar. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  | Tons of Cane. | Tons of Sugar. |  |
| 1918 | $\ldots$ | ... | ... | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | 15.01 | 1.70 | $8 \cdot 82$ |
| 1919 | $\ldots$ | ... | ... | $\cdots$ | $\ldots$ | ... | $\cdots$ | $\ldots$ | 14.83 | 1.91 | $7 \cdot 76$ |
| 1920 | ... | ... | ... | - | $\ldots$ | ... | ... | . | 15.03 | 1.88 | $8 \cdot 00$ |
| 1921 | ... | ... | ... | ... | ... | ... | ... | ... | $18 \cdot 60$ | $2 \cdot 30$ | $8 \cdot 11$ |
| 1922 | ... | ... | ... | ... | $\ldots$ | ... | ... | ... | $15 \cdot 39$ | $2 \cdot 04$ | $7 \cdot 53$ |

Table No. XXXIV.
Return Showing Area, Produce, \&C., in each Division of thee State for the Year 1922.

| Division and District. | $\begin{gathered} \text { Area } \\ \text { for } \\ \text { flants. } \end{gathered}$ | $\begin{gathered} \text { Area } \\ \text { Stand-over } \\ \text { or } \\ \text { Unproductive. } \end{gathered}$ | $\begin{aligned} & \text { Area } \\ & \text { Crushed for } \\ & \text { Sugar. } \end{aligned}$ | Total Area for sugar. | Weight of Cane. | $\begin{aligned} & \text { Sugar } \\ & 94 \end{aligned}$ | Molasses Returned. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Rockingham and York PeninsulaCairns and Douglas Ingham and Mourilyan, \&c. | $\begin{aligned} & \text { Acres. } \\ & 1,075 \\ & 1,486 \end{aligned}$ | Acres. <br> 6,088 <br> 9,976 | Acres. <br> 22,896 <br> 30,283 | $\begin{aligned} & \text { Acrrs. } \\ & 30,059 \\ & 41,7+5 \end{aligned}$ | Tons. <br> 381,014 <br> 483,780 | Twns. <br> 52,915 <br> 67,702 | $\begin{gathered} \text { Gallons. } \\ 1,911,995 \\ 2,125,336 \end{gathered}$ |
| Total | 2,561 | 16,064 | 53,179 | 71,804 | 864,794 | 120,617 | 4,037,331 |
| Edgecumbe- |  |  | 5 |  |  |  |  |
| Ayr and Townsville | 702 | 7,039 | 17,237 | 24,978 | 314.160 | 43,167 | 1,882,655 |
| Proserpine and Bowen ... | 169 | 2,314 | 4,173 | 6,656 | 37,646 | 5,214 | 148,000 |
| Mackay ... ... | 1,113 | 14,771 | 30,980 | 46,864 | $355,0: 8$ | 46,115 | 1,452,128 |
| Total | 1,984 | 24,124 | 52,390 | 78,498 | 706,864 | 94,595 | 3,482,783 |
| Wide Bay- <br> Bundaberg, Gin Gin, \&c. <br> $\left.\begin{array}{l}\text { Biggenden, Childers, Mary- } \\ \text { borough, Tiaro, \&c. }\end{array}\right\}$ <br> Gympie* | 291 | 8,311 | 19,282 | 27,884 | 318,551 | 40,553 | 1,444,404 |
|  | 97 | 4,179 | 12,96! | 17,237 | 216,634 | 25,769 | 1,095,445 |
|  | 1 | 139 | 46 | 186 | 489 | ... | ... |
| Total | 389 | 12,6:9 | 32,289 | 45,307 | 535,674 | 66,322 | 2,539,849 |
| Port Curtis- | $\ldots$ | 24 | 72 | 96 | 947 | $\ldots$ | $\ldots$ |
| Jiockhamptonfl ... |  | ${ }^{2}$ | 3 | ${ }_{5}^{5}$ | 47 | ... | ... |
| St Lawrence $\dagger$.. | 24 |  |  | 815 | 7,160 | ... |  |
| Total | 24 | 492 | 400 | 916 | 8,154 | ... | . |
| Moreton- | 5 | 683 | 676 | 1,364 | 12,377 | 1,280 | 35,616 |
| Marburg* ... ... | 3 | 93 | 38 | 134 | 428 |  |  |
| Maroochy, \&c. ... | 28 | 2,374 | 1,878 | 4,280 | 39,699 | 4,970 | 223,300 |
| Total | 36 | 3,150 | 2,592 | 5,778 | 52,504 | 6,250 | 258,916 |
| Totial of State | 4,994 | 56,459 | 140,850 | +202,303 | 2,167,990 | 287,785 | 10,318,879 |

[^3]
## Table No. XXXV.

Return ©howing the Sugar Averages in each Division of the State for the Year 1922



Table No. XXXVII.
Return for Two Years Showing Percentages in Each Division of the State


Table No. XXXVIII.
Return Showing the Area and Produotion of Sugar-cane and Sugar Beet in Australia for the


Table No. XXXIX.
Return Showing Number of Sugar Mills in Queensland during the Year 1922


Notk - In addition, 3 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, 1922.

1. Number of Sugar Mill Companies to which advances have been made under-

$\begin{array}{lcccccccc}\text { From Consolidated Revenue (North Eton and Racecourse) } & \text {.. } & . . & . . & 2 \\ \text { From General Loan Fund } & . . & . . & . . & . . & . . & . . & . . & . . \\ 7\end{array}$
2. Number of Tramway Companies to which advances have been made under-

The Sugar Works Guarantee Acts (Double Peak)
1
4 Under other conditions
None.
5. Total amount of advances made to 31st December, 1922, under the Sugar Works Guarantee Acts

| Marian Mill |  |
| :--- | :--- |
| Mount Bauple Mill |  |
| Mleystowe Mill | . |
| Nerany River | Mill |
| Gin Gin Mill | . |
| Plane Creek | Mill |
| North Eton Mill | . |
| Proserpine Mill | . |
| Moreton Mill | . |
| Mulgrave Mill | . |
| Isis Mill | . |
| Mossman Mill | . |
| Johnstone Mill | .. |


| $£$ | $s$ | $d$. | $£$ |  | s. | $d$. |
| ---: | ---: | ---: | ---: | :--- | :--- | :--- |
| 39,000 | 0 | 0 |  |  |  |  |
| 32,480 | 16 | 1 |  |  |  |  |
| 35,472 | 1 | 3 |  |  |  |  |
| 19,998 | 18 | 10 |  |  |  |  |
| 50,000 | 0 | 0 |  |  |  |  |
| 65,000 | 0 | 0 |  |  |  |  |
| 18,200 | 0 | 0 |  |  |  |  |
| 54,000 | 0 | 0 |  |  |  |  |
| 32,864 | 15 | 0 |  |  |  |  |
| 46,000 | 0 | 0 |  |  |  |  |
| 38,636 | 0 | 0 |  |  |  |  |
| 66,300 | 0 | 0 |  |  |  |  |
| 847 | 17 | 8 |  |  |  |  |
|  |  |  | 498,800 | 8 | 10 |  |

6. Under "The Sugar Works Act of 1911 "-

| Babinda Mill | . | .. | .. | .. | .. | .. | .. | 371,088 | 15 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| South Johnstone |  |  |  |  |  |  |  |  |  |

From Consolidated Revenue
North Etori Mill .. .. .. .. .. .. .. 26,000 0 0
Racecourse Mill .. $\quad . . \quad .$.
$47,000 \quad 0 \quad 0$
From General Loan Fund-
North Eton Mill .
Mount Bauple Mill
Gin Gin Mill
Proserpine Mill
Moreton Mill
$62,965 \quad 18 \quad 4$

Mossman Mil
8,000 0
$\begin{array}{rrr}2,000 & 0 & 0\end{array}$
14,765094
$14,350 \quad 0 \quad 0$
$119,653 \quad 1 \quad 8$
7. Indebtedness at 31st December, 1922, under the Sugar Works Guarantee Acts-

8. Under "The Sugar Works Act of 1911 "-
$\begin{array}{lllllllllll}\text { Babinda Mill } & \text { Mill } & \text {.. } & \text {.. } & . & . . & . & . & 316,584 & 8 & 10 \\ \text { South Johnstone }\end{array}$

- Under Consolidated Revenue-

North Eton Mill
Under General Loan Fund-


Table No. XLI.
ARROWROOT.
Return for Two Years Showing Area and Produce, \&c., of Arrowroot Tubers in Petty Sessions Districts.

| Petty Sessions District. |  |  |  |  | 1921. |  | 1922. |  | Increase or Decrease 1922. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Area. | Produce. | Area. | Produce. | Area. | Produce |
| Beaudesert Cleveland Esk | $\ldots$ |  |  |  | Acres. $1$ | Tons. 12 | Acres. | Tons. | Acres. | $\begin{array}{r} \text { Tons. } \\ -\quad 12 \end{array}$ |
|  | ... | ... | $\ldots$ | $\ldots$ | 15 | 190 | 16 | 153 |  | - $\quad 12$ |
|  |  |  | ... |  |  |  | 1 | 5 |  | 5 |
| Gatton ... |  | ... | ... | $\ldots$ | 3 | Nil |  |  |  |  |
| Gayndah | ... |  |  | ... | 2 | 40 | $\ldots$ | $\ldots$ | - 2 $-\quad 2$ | - ${ }^{*} 40$ |
| Gin Gin | ... |  |  | $\ldots$ | 1 | 5 | $\ldots$ |  | - 1 | - 5 |
| Gladstone | ... |  |  | $\ldots$ | 5 | 25 | $\ddot{2}$ | 10 | - 3 | - 15 |
| Gympie | $\ldots$ |  |  | $\ldots$ | .. |  | 2 | 60 | - 2 | - 60 |
| Ipswich | ... |  |  | $\ldots$ |  | $\ldots$ | 2 | 4 | 2 | 4 |
| Kilcoy | ... | ... | ... | ... | 4 | 30 | 3 | 46 | - 1 | 16 |
| Logan | ... |  |  | $\ldots$ | 575 | 7,995 | 166 | 1,788 | -409 | -6,207 |
| Lowood |  |  |  | $\ldots$ | 1 | 10 | 1 | 14 |  | - 4 |
| Marburg |  |  |  | $\ldots$ | 8 | 35 | 3 | 5 | - ${ }^{-1}$ | - 30 |
| Maroochy |  | $\ldots$ | $\ldots$ | $\ldots$ | 6 | 32 | 8 | 81 | 2 | - 49 |
| Maryborough | .. | $\ldots$ | ... | ... |  |  | 6 | 19 | 6 | 19 |
| Nerang | ... | ... | ... | ... | 343 | 6.220 | 182 | 1,549 | $-161$ | -4,671 |
| Rosewood |  |  | ... |  | 3 | 20 | 2 | 10 | - 1 | - 10 |
| Tiaro |  |  |  |  | 1 | 5 | 1 | , |  | 1 |
| Wienholt |  |  |  | $\ldots$ | $\ldots$ |  | 2 | 2 | 2 | 2 |
|  | ... |  |  |  | ... | $\ldots$ | 1 | 2 | 1 | 2 |
|  | al S |  | ... | $\ldots$ | 968 | 14,619 | 3.98 | 3,754 | $-570$ | -10,865 |

Table No. XLII.
Return Showing Arrowroot Manufactured during the Year 1922.


Table No. XLIII.
TOBACCO.
Return for Two Years Showing Area and Production of Tobacco.

| Division and Petty Sessions District. |  |  |  |  | 1921. |  | 1922. |  | Increase or Decrease 1922. |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | Area. | Produce <br> Dried Leaf. | Area. | Produce Dried Leaf. |  |  |
| Moreton - |  |  |  |  | Acres.$\begin{aligned} & 2 \\ & 1 \end{aligned}$ | Lb. <br> 407 <br> $\$ 00$ | Acres.$\begin{aligned} & 2 \\ & 3 \end{aligned}$ | $\begin{gathered} \text { Lb. } \\ 464 \\ 4,480 \end{gathered}$ | $\begin{gathered} \text { Acres. } \\ { }^{\prime} \\ \end{gathered}$ | $\begin{gathered} \text { Lb. } \\ 37 \\ 3,68( \end{gathered}$ |
| Nerang | $\ldots$ |  |  | $\ldots$ |  |  |  |  |  |  |
| Chau- |  |  |  |  |  |  |  |  |  |  |
| $\boldsymbol{E}$ dgecumbe- | $\ldots$ |  | $\ldots$ | $\ldots$ | 3 | 469 | ... | ... | 3 | - 469 |
| Bowen | $\ldots$ |  |  | ... | 4 | 3,072 |  |  |  |  |
| Proserpine |  |  | $\ldots$ | ... | 6 | 2,572 | 2 | \%30 | 4 4 | - 3,072 |
| Townsville | ... |  | ... | ... | 8 | 4,846 | 8 | 6,776 |  | $\begin{array}{r}-1,742 \\ 1,930 \\ \hline\end{array}$ |
| Goondiwindi |  |  |  |  |  |  |  |  |  |  |
| Inglewood |  |  |  | $\ldots$ | 45 |  |  |  | - 6 | - 900 |
| Killarney ... |  |  |  | $\ldots$ | 1 | 29,114 | 12 | 22,801 | - 12 | - 6,313 |
| Pitsworth |  |  |  | $\ldots$ |  | 728 | 12 | 12,075 | 11 | 11,347 |
| Texas |  |  |  | $\ldots$ | 12.2 | 103,186 | 118 | 114,736 | - 4 | +916 |
| Total State |  |  | $\ldots$ | ... | 198 | 146,094 | 179 | 163,078 | - 19 | 16,984 |

Table No. XLIV.
COFFEE.
Return for Two Years Showing Area and Production of Coffee.


Table No. XLVI.
Return for Two Years Showing Area under Vines and Production of Grapes in the Principal Distriots of the State.

| Petty Sessions District. |  |  | area under vings, |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1921. |  |  | 1922. |  |  | $\begin{gathered} \text { Increase } \\ \text { or } \\ \text { Decrease-. } \end{gathered}$ | $\frac{1921 .}{\substack{\text { Grapes } \\ \text { Gathered. }}}$ | $\frac{1922 .}{\substack{\text { Grapes } \\ \text { Gathered. }}}$ |
|  |  |  | Bearing. | $\begin{aligned} & \text { Not } \\ & \text { Bearing. } \end{aligned}$ | Total Area. | Bearing. | Not Bearing | Total Area. |  |  |  |
| Brisbane (A) |  |  | Acres. 276 | Acres. 8 | $\begin{aligned} & \text { Acres. } \\ & 284 \end{aligned}$ | Acres. 25 5ั | Acres. | Acres. <br> 264 | Acres. $-20$ | $\begin{aligned} & \text { Lb. } \\ & 393,867 \end{aligned}$ | $\stackrel{\mathrm{Lb}}{356,346}$ |
| Brisbane (B) ... | ... | ... | 5 | ... | 5 | 5 | 3 | 8 | 3 | 6,669 | 10,500 |
| Charleville ... |  | ... | 2 | ... | 2 | 2 |  | 2 |  | 8,670 | 6,470 |
| Charters Towers |  | ... | 11 | 4 | 15 | 4 | 2 | 6 | -9 | 19,194 | 10,496 |
| Condamine ... |  | ... | 4 | ... | 4 | 2 | ... | 2 | -2 | 11,477 | 12,423 |
| Crow's Nest . |  | ... |  | $\ldots$ |  | 2 | ... | 2 | 2 |  | 11,130 |
| Dalby ... | $\ldots$ | $\ldots$ | 3 |  | 3 | 6 | ... | 6 | 3 | 27,338 | 19,165 |
| Gatton |  | $\ldots$ | 5 | 1 | 6 | 8 | ... | 8 | 2 | 4,950 | 6,766 |
| Herberton | ... | $\ldots$ | 3 | 1 | 4 | 3 | 2 | 5 | 1 | 8,062 | 8,830 |
| Killarney ... | ... | $\ldots$ | 2 | 1 | 3 | 2 | 2 | 2 | -1 | 2,335 | 9,320 |
| Lowood ... | ... | $\ldots$ | 58 | ... | 58 | 71 |  | 78 | 20 | 2,046 | 7,737 |
| Maryborough | $\ldots$ | ... | 15 | 2 | 17 | 17 | 2 | 19 | 2 | 22,297 | 21,304 |
| Nanango |  | ... | 5 | ... | 5 | 5 | 1 | 6 | 1 | 10,926 | 11,010 |
| Oakey ... |  | ... | 4 | $\ldots$ | 4 | 3 |  | 3 | -1 | 9,415 | 9,480 |
| Rockhampton |  | $\ldots$ | $21)$ | 2 | 22 | 24 | 1 | 25 | 3 | 37,871 | 29,684 |
| Roma . | $\ldots$ | $\ldots$ | 301 | 32 | 333 | 312 | 6 | 318 | -15 | 852,759 | 959,434 |
| Stanthorpe | ... | ... | 155 | 148 | 303 | 158 | 147 | 305 | 2 | 594,074 | 566,402 |
| Toowoomba | ... | $\ldots$ | 27 |  | 27 | 26 |  | 26 | $-1$ | 37,587 | 37,044 |
| Warwick |  | ... | 58 | 6 | 64 | 63 | 5 | 68 | 4 | 132,005 | 91,162 |
| Wienholt |  | ... | 3 | ... | 3 | 3 | ... | 3 |  | 12,021 | 6,364 |
| Wynnum |  |  | 9 |  | 9 | 6 |  | 6 | $-3$ | 19,816 | 17,412 |
| All other Districts |  | $\ldots$ | 76 | 34 | 110 | 75 | 5 | 80. | -30 | 125,557 | 93,301 |
| Totals | $\ldots$ | ... | 1,042 | 239 | 1,281 | 1,052 | 190 | 1,242 | -39 | 2,338,966 | 2,301,830 |

Table No. XLVII.
Return for Five Years Showing the Average Production of Grapes in Certain Petty Sessions Distriots of the State.

| P Petty Sessions District. |  | 1919 Average per Acre. | $\frac{1920 .}{\text { Average per Acre. }}$ | 1921. Average per Acre. | 1922. Average per Acre. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Brisbane | $\stackrel{\mathrm{Lb}}{1,611}$ | $\underset{2,059}{\mathrm{Lb} .}$ | $\begin{aligned} & \text { Lb. } \\ & 1,962 \end{aligned}$ | $\begin{aligned} & \mathrm{Lb} . \\ & 1,427 \end{aligned}$ | $\stackrel{\text { Lb. }}{1,397}$ |
| Roma | 563 | 2,216 | 2,813 | 2,833 | 3,075 |
| Brisbane (B), including Wynnum | 4,042 | 2,95 | 2,610 | 1,892 | 2,537 |
| Stanthorpe ... | 1,568 | 2,087 | 2,967 | 3,833 | 3,585 |
| Toowoomba | 1,310 | 1,571 | 1,672 | 1,392 | 1,425 |
| Warwick | 1,468 | 978 | 598 | 2,276 | 1,447 |
| State $\quad . . \quad$... ... .. | 1,468 | 2,002 | 2,312 | 2,245 | 2,188 |

N.B,-Brisbane (B) refers to Sou'h 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 <br> Wine Made. | Quantity of Wine Spirit Distilled. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1918 | $\ldots$ | ... | ... | $\ldots$ |  | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 90 | $\begin{aligned} & \text { Gallons. } \\ & 44,491 \end{aligned}$ | $\begin{aligned} & \text { Gallons. } \\ & 1,029 \end{aligned}$ |
| 1919 | ... | $\ldots$ | .. | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\cdots$ | $\ldots$ | . | 80 | 48,495 | 1,360 |
| 1920 | $\ldots$ | ... | $\ldots$ | $\cdots$ | $\ldots$ | ... | $\cdots$ | $\ldots$ | $\ldots$ | $\cdots$ | 61 | 71,403 | 1,700 |
| 1921 | $\ldots$ | $\ldots$ | $\cdots$. | ... | .. | $\cdots$ | ... | $\ldots$ | - | $\cdots$ | 58 | 57,793 | 642 |
| 1922 | $\cdots$ | $\cdots$ | ... | $\ldots$ | $\cdots$ | $\cdots$ | ... | - $\cdots$ | $\cdots$ | $\cdots$ | 65 | 53,171 | 905 |

## Table No. XLIX.

Return Showing the Principal Districts in which Wine was Made during the Year 1922.

N.B.- Brisbane (B) refers to South Brisbane.

Table No. L.
BANANAS.
Return for Two Years Showing the Area and Production of Bananas in thr Principal. Districts of the State.


## Table No. LI.

Return Showing the Average Yield of Bananas in the Principal Districts of the State during THE Year 1922


Table No. LII.
PINEAPPLES.
Return for Two Years Showing the Area and Production of Pineapples in the State

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.


Table No. LIV.
MANGOES.
Return for Two Years Showing the Area and Production of Mangoes in the Principal Districts of the State.


Table No. LV.
STRAWBERRIES.
Return for Two Years Showing the Area and Production of Strawberries in the Principal Distriots of the State.

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 Distriots of the State.

| Petty Sessions District. |  |  | Area. |  | Increase or Decrease 1922. | Bearing,$1922 .$ | $\begin{gathered} \text { Not } \\ \text { Bearing, } \\ 1922 . \end{gathered}$ | Produce. |  | Increase or Decrease 1922. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1921. | 1922. |  |  |  | 1921. | 1922. |  |
|  |  |  | Acres. | Acres. | Acres. | Acres. | Acres. | Bushels. | Bushels. | Bushels. |
| Atherton ... | ... ... | $\ldots$ | 7 | 7 | ... | 1 | 6 | 1,515 | 58 | - 1,457 |
| Crow's Nest | ... -.. | ... | ... | 2 | 2 | 2 | $\ldots$ | ... | 249 | 249 |
| Killarney ... | ... | ... | 2 | 1 | 1 | 1 | ... | 27 | 150 | 123 |
| Nanango | .... | $\ldots$ | 9 | 6 | - 3 | 5 | 1 | 171 | 160 | - 11 |
| Stanthorpe ... | ... ... | ... | 3,288 | 3,457 | 169 | 2,069 | 1,388 | 113,614 | 113,344 | - 270 |
| Toowoomba | ... | $\ldots$ | 11 | 8 | 3 | 7 | 1 | 334 | 465 | 131 |
| Warwick |  |  | 248 | 251 | 3 | 95 | 156 | 1,062 | 1,247 | 185 |
| All other Districts | ... ... | ... | 21 | 15 | 6 | 13 | 2 | 500 | 255 | - 245 |
| Totals | ... ... | $\ldots$ | 3,586 | 3,747 | 161 | 2,193 | 1, 254 | 117,223 | 115,928 | - 1,295 |

## Table No. LVII.

## OTHER FRUITS.

Return Showing the Area and Production of Other Fruits during the Year 1922

| Apricots | $\ldots$ | $\ldots$ |  | Acres. |  |  |  | Yield. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | $\ldots$ | $\ldots$ | 86 | ... | 2,948 bushels |
| Cape gooseberries | ... |  |  | ... | .. | 12 | ... | 11,425 quarts |
| Cherries ... |  |  |  | ... | ... | 14 |  | 556 bushels |
| Citrons |  |  |  |  | ... | 3 |  | 300 bushels |
| Custard apples | $\ldots$ | $\ldots$ |  | $\ldots$ |  | 283 |  | 18,112 bushels |
| Figs ... | ... |  |  | $\ldots$ | .. | 14. |  | 946 bushels |
| Lemons ... | ... | $\ldots$ | $\ldots$ | $\ldots$ | .. | 360 | $\ldots$ | 24,012 bushels |
| Nectarines | ... | $\ldots$ |  | ... | .. | 206 | ... | 9,065 bushels |
| Passion fruit | $\ldots$ | $\ldots$ | ... | ... | .. | 79 | .. | 13,710 bushels |
| Paw-paws | .. | ... | ... | ... |  | 258 |  | 76,383 dozen |
| Peaches | ... | ... | ... | $\ldots$ |  | ,004 |  | 90,472 bushels |
| Pears - ... |  | $\ldots$ | ... | ... |  | 274 |  | 8,822 bushels |
| Persimmons |  |  |  | ... |  | 15 |  | 1,4) 2 bushels |
| Plums |  |  |  | ... |  | ,008 |  | 33,743 bushels |
| Quinces | $\ldots$ | $\ldots$ | ... | $\ldots$ | ... | 34 | ... | 1,019 bushels |
| Rosellas | $\ldots$ | .. | ... | ... | ... | 6 |  | 575 bushels |

Table No. LVIII.
OTHER VEGETABLES.
Return for Two Years Showing Area and Production of Other Vegetables.


Table No. LIX.
PRINCIPAL OTHER CROPS.
Return for Two Years Showing the Area and Production of Other Crops.


Table No. LX.
PASTURAGE.
Return for Five Years Showing the Area under Pasturage.


Table No. LXI.
HAY.
Return for Two Years Showing the Area and Production of Hay Crops.


Table No. LXII.
ARTIFICIALLY GROWN PASTURE.
Return for Two Years Showing the Area under Artificially Grown Pastures.

| Petty Sessions District. |  |  |  |  |  | 1921. | 1922. | Increase, 1922. | Decrease, 192. |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Atherton |  |  |  |  |  | Acres. <br> 41,809 | Acres. 38,958 | Acres. | Acres. 2.851 |
| Beaudesert ... | $\cdots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | 41,809 | 38,908 6,171 | 898 |  |
| Biggenden ... | ... | ... | - | $\ldots$ | ... | 16,193 | 18,172 | 1,979 |  |
| Crow's Nest ... | ... | ... | ... | ... | ... | 722 | 3,208 | 2,486 |  |
| Dalby ... | ... | ... | ... | $\ldots$ | ... | 30,502 | 24,505 |  | 5,997 |
| Dugandan ... | $\ldots$ | ... | ... | $\ldots$ | $\ldots$ | 4,804 | 4,871 | 67 |  |
| Gatton $\quad$. | ... | ... | ... | ... | $\ldots$ | 5,395 | 5,047 | ... | 348 |
| Gayndah ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | 29,161 | 18,169 |  | 10,992 |
| Gladstone ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | 3,081 | 15,2)5 | 12,124 |  |
| Gympie ... | ... | ... | ... | ... | $\ldots$ | 90,938 | 89,609 |  | 1,329 |
| Helidon ... | ... | ... | ... | ... | $\ldots$ | 2,398 | 3,058 | 660 | 1,320 |
| Maroochy Mount Morgan* | ... | ... | ... | $\ldots$ | ... | 48,737 | อ)0,178 | 1,441 | ... |
| Mount Morgan* | $\ldots$ | ... | ... | $\ldots$ | ... | 8,880 | 12,216 | 3,336 |  |
| Nanango | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 32,131 | 34,358 | 2,227 |  |
| Nerang ... | . | ... | $\ldots$ | ... | $\ldots$ | 21,702 | 25,054 | 3,352 |  |
| Pittsworth ... | $\ldots$ | ... | ... | ... | $\ldots$ | 7,465 | 6,020 |  | 1,445 |
| Rockhampton | $\ldots$ | $\ldots$ | ... | ... | ... | 14,494 | 29,670 | 15,176 |  |
| Tiaro | ... | ... | ... | ... |  | 4,638 | 5,056 | -4,18 |  |
| Wienholt |  | ... |  |  |  | 51,176 | 57,076 | 5,900 |  |
| Woodford ... | $\ldots$ | ... | ... | $\ldots$ | ... | 12,659 | 10,0:37 |  | 2,652 |
| All other Districts | $\ldots$ | ... | ... | ... | $\ldots$ | 27,756 | 18,618 | $\ldots$ | 9,138 |
| Totals | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 459,914 | 475,226 | 15,312 | ... |

Including Wowan

## Table No. LXIII.

ENSILAGE.
Return for Two Years Showing Number of Makers and Enstlage Made in the Several Petty Sessions Districts of the State.

150
Retijrn Showing the Resulte of the Datrying Industry in the Several Petty Sessions Districts of the State during the Year 1922 ,

| District. | $\begin{gathered} \text { Total } \\ \text { Ohtaiked } \\ \text { Obtaind. } \end{gathered}$ | how dituskd. |  |  |  |  |  |  | еstabishmexts. |  |  | darby cattre. |  | $\begin{gathered} \text { A verage } \\ \text { per } \\ \text { Cow. } \end{gathered}$ | butrer madr. |  |  | chirse mads. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | For Butter on Farms | For Cheese on Farms | For Domestic Purposes by Producer. | $\begin{aligned} & \text { separated for } \\ & \text { Sale. } \end{aligned}$ | $\begin{gathered} \text { sold for } \\ \text { cor } \\ \text { tion aum Mik. } \end{gathered}$ | Sold to Con- densed Milk Factories. | $\begin{gathered} \text { Sold to } \\ \text { Cheese } \\ \text { Factories. } \end{gathered}$ | Dairying. | ${ }_{\text {chen }}^{\text {Butter }}$ Factories. | ${ }_{\text {cheese }}^{\text {Chatories. }}$ | In Milk. | Dry. |  | $\stackrel{\text { At }}{\text { At }}$ | $\underset{\text { Farmers. }}{\text { By }}$ | Total. | ${ }_{\text {Factories. }}{ }^{\text {At }}$ | ${ }_{\text {Farmers. }}^{\text {By }}$ | Total. |
| MoretonBrisbane (A) Brisbane <br> Beaudesert <br> Caboolture <br> Cleveland <br> Orow's Nest <br> Dugandan <br> Esk <br> Gatton <br> Harrisvilie <br> Helidon <br> Kilcoy <br> Laidley . <br> Lowood <br> Marburg <br> Nerang <br> Rosewood <br> Woodford <br> Wynnum |  |  | Gallons. $\qquad$ $\ldots$ <br> $\ldots$ <br> ... <br> 200 <br> $\ldots$ <br> 5,000 <br> $\ldots$ | Gallons. $\square$ 531,862141,494 24,8524,88424,87 74,569132,334118,580 145,0266,85073,807 <br> 62,213 <br> 5,1045,01047,404111,03781,35865,591 <br> 40,362 244,43083,087 63,08760,68760,544 4,7993,74020,043 |  |  | Gallons. <br> ... <br> $\ldots$ <br> $1,484,034$ $\square$ <br> $\ldots$ $\cdots$ $\cdots$ $\qquad$ $\cdots$ | Gallons. <br> .... <br> ... <br> 1,318 <br> .... <br> $\ldots$ <br> $\ldots$ <br> 130,552 <br> 33,799 |  | No. $\cdots$ $\cdots$ ${ }^{1}$ $\cdots$ $\cdots$ $\cdots$ 1 1 1 1 $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ $\cdots$ |  |  |  |  |  |  |  | Lb. <br> $\ldots$ $\ldots$ $\ldots$ <br> $\ldots$ $\cdots$ <br> $\ldots$ $\ldots$ $\ldots$ <br> $1, \ddot{3} 99$ <br> ... $\ldots$ $\ldots$ <br> $\cdots$ <br> ... <br> ... <br> 62,000 <br> 46,518 | Lb. <br> ... <br> $\ldots$ <br> ... $\cdots$ <br> $\cdots$ $\cdots$ <br> $\ldots$ <br> ${ }^{150}$ <br> ... <br> $\ldots$ $\cdots$ $\cdots$ <br> 4,500 <br> .... | Lb. <br> $\ldots$ $\ldots$ $\ldots$ <br> $\ldots$ <br> 1,399 <br> .... <br> $\cdots 150$ <br> .... $\qquad$ 62,000 <br> 62,000 4,500 46,518 |
| Total Moreton | 49,772,819 | 1,777,698 | 5,200 | 2,018,574 | , 6 ,60,28 | 3,681,358 | 1,484,034 | 165,669 | 7,782 | 16 | 2 | 164,458 | 8,470 | 236 | 19,627,400 | 775,6 | 20,403,0 | 109, | 4,850 | 114,567 |
| Wide Bay- <br> Biggenden <br> Ohilders <br> Eidsvold <br> Gayndah <br> Gin Gin <br> Kilkivan <br> Maryborough <br> Mount Perry <br> Nanango <br> Wienholt |  |  |  |  |  |  |  | 157,240 <br> 133,251 <br> … <br> 1227,142 <br> 28,712 |  |  | $\begin{array}{ll}  & 2 \\ \ldots & 2 \\ \cdots & \\ \cdots & 2 \\ \ldots & \\ \cdots & 1 \\ \cdots & 1 \\ \cdots & 1 \\ \cdots & 1 \\ \cdots & 1 \end{array}$ |  |  |  | $\begin{array}{r} 800,822 \\ 674,902 \\ \ldots \\ 1,2004,831 \\ 5,294,693 \\ 763,840 \\ 3,867,753 \\ 2,479,772 \end{array}$ |  |  | 165,501 <br> 171,163 <br> … <br> 101,917 <br> 24,493 | $\begin{aligned} & \cdots \\ & \cdots \\ & \cdots \\ & \cdots \\ & \cdots \\ & \cdots \\ & 3,000 \end{aligned}$ | 165,501 <br> 171,163 <br> 101,917 $\begin{array}{r}3.000 \\ 24,493 \\ \hline\end{array}$ |
| Total Wide Bay | 34,097,637 | 1,477,067 | 4,250 | 1,270,992 | 30,626,195 | 272,788 | ... | 446,345 | 5,082 | 12 | 6 | 112,131 | 39,84 | 22 | 15,086,643 | 622,74 | 15,709.3 | 463,07 | 3,000 | 466,074 |
| Port Curtis <br> Banana... Gladstone Mount Morgan <br> st. Lawrence |  |  |  |  | 2,3066,674 <br> 2,367,622 | $\begin{gathered} 14,550 \\ 28,959 \\ 282,699 \end{gathered}$ |  |  | $\begin{aligned} & 2282 \\ & 380 \\ & 492 \\ & 492 \end{aligned}$ | $\cdots{ }^{*}$ |  |  | $\begin{aligned} & 4,726 \\ & \hline 7,46 \\ & 7,43 \\ & 138 \end{aligned}$ | $\begin{aligned} & 2921 \\ & 195 \\ & 175 \\ & 150 \\ & 80 \end{aligned}$ | $\begin{aligned} & 1,194,493 \\ & 1,3 \dddot{8,060} \end{aligned}$ |  |  | $\cdots$ | … | $\cdots$ |
| Total Port Curtis | 6,355,850 | 430,455 |  | 270,899 | 5,319,283 | 325,213 | ... | ... | 1,106 | 4 | ... | 24,466 | 12,725 | 171 | 2,542,563 | 153,748 | 2,686,301 |  |  |  |

151
Table No. LXIV-ontinued..
Return Showing the Results of the Dairying Industry in the Several Petty Sessions Distbicts of the State during the Year 1922 - continued.

| District. |  | $\begin{gathered} \text { Total } \\ \text { Milk } \\ \text { Obtained. } \end{gathered}$ | how utilised. |  |  |  |  |  |  | establishments. |  |  | datry cattle. |  | $\begin{gathered} \text { Average } \\ \text { per } \\ \text { Cow. } \end{gathered}$ | butter made. |  |  | cherse made. |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | For Butter on Farms. | For Cheese on Farms. | $\begin{gathered} \text { For } \\ \text { Domestic } \\ \text { Purposes by } \\ \text { Producer. } \end{gathered}$ | Separated for sale. | $\begin{aligned} & \text { Solid for } \\ & \text { Consump- } \\ & \text { tion as } \\ & \text { Milk. } \end{aligned}$ | Sold to Condensed Milk Factories. | Sold to Cheese Factories. | Dairying. | $\begin{gathered} \text { Butter } \\ \text { Factories. } \end{gathered}$ | Cheese Factories. | In Milk. | Dry. | $\stackrel{\text { At }}{\text { Factories. }}$ |  | $\begin{gathered} \text { By } \\ \text { Farmers. } \end{gathered}$ | Total. | $\stackrel{\text { At }}{\text { Factories. }}$ | $\begin{gathered} \text { By } \\ \text { Farmers. } \end{gathered}$ | Total. |
| Wons- |  |  | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | Gallons. | No. | No. | No. | No. | No. | Gallons. | Lb. | Lb. | Lb. | Lb. | Lb. | Lb. |
| Allora ... ... | ... | 2.123,724 | 52,110 |  | 59,214 | 1,687,857 | 2.460 |  | 322,083 | 237 |  |  | 4,075 | 1,264 | 398 | 915,559 | 22,526 | 938,085 |  |  |  |
| ${ }_{\text {Clifton }}^{\text {Condamine }}$.... | . | $2,989,133$ $1.083,199$ | 94,162 58,726 | $\ldots$ | 110,160 48,914 | $1,733,723$ 975,559 | 3,330 | $\ldots$ | 1,045,757 | 438 163 |  | 12 | 7,019 <br> 3,424 | 1,088 2,197 | 369 193 | ${ }^{4992323}$ | 4, 4,9295 2588 | 536,248 615,891 | 1,194,204 | $\ldots$ | 1,191,204 |
| Dalby ... | , | 7,030,275 | 260,364 | ... | 225,126 | 5,964,896 | 42,833 | ... | 537,056 | 880 | 2 | 5 | 20,455 | 8,466 | 243 | 2,531,668 | 105,303 | 2,636,971 | 636,445 | ... | 636,445 |
| Goombungee ... | . | 1,154.555 | 28,700 | ... | 16,625 | 1,006,530 | 800 | ... | 101,900 | 139 |  |  | . 2,881 | , 543 | 337 | 2,771,198 | 14,350 | , 785,548 | 190,750 | ... |  |
| $\underset{\substack{\text { Goondiwindi } \\ \text { Hightields }}}{\text { a }}$ | , | - $\begin{array}{r}337.922 \\ 1.085 .572\end{array}$ | 19,146 52,819 | ... | ${ }_{42,512}^{23,635}$ | ${ }_{813,803}^{287.221}$ | 4,770 | ... | 3,150 | ${ }^{98}$ |  |  | 1,181 | :,103 | 148 | 91,613 | 9,391 | 101,004 | 170,726 | $\ldots$ | 170,726 |
| Inglewood ... | $\ldots$ | ${ }^{\text {¢ }}$ 130.269 | 36,695 | .... | 57,795 | 509,107 | 2,800 | $\ldots$ | 23,872 | 122 | $\ldots$ |  | 2,133 | 1,052 | 198 |  | ${ }_{14,732}$ | 14,732 | ${ }_{202,361}^{120,94}$ | $\ldots$ | ${ }_{202}$ |
| Jondaryan ... | ... | 1,909,453 | 59.804 | ... | ${ }^{60,599}$ | 1,096,562 | 182 |  | 692,306 | 239 | ... | 9 | 5,054 | 2,055 | 269 |  | 24,983 | 24,983 | 654,158 | ... | 654,158 |
| Killarney Oakey | $\ldots$ | 2,098,777 $4,085,287$ | 93.869 85,170 | ... | 57,216 110,397 | ${ }_{2,572,641}^{1,920,975}$ | 4,815 18,915 | 290,699 | \% $\begin{array}{r}21,912 \\ 1,007,465\end{array}$ | ${ }_{455}^{203}$ | 1 |  | 3,460 9775 | 1, ${ }_{2,176}$ | 469 342 | 254,660 $1,618,000$ | 49,740 4,405 | 1,658.405 | 1,455 732 | $\ldots$ | 1,455,733 |
| Pittsworth | ... | 5,249,362 | 78,670 | ... | 195,570 | 1,393,786 | 6,600 | 356,784 | 3,217,952 | 577 |  | 12 | 13,067 | 2,740 | 332 |  | 34,112 | 34,112 | 2,955,305 | ... | 2,955,305 |
| Stanthorpe | ... | ${ }_{346351}^{149,855}$ | 38,260 17418 178 | ... | 0,635 | 26,500 | 4,150 | ... | $\cdots$ | 355 | $\ldots$ | ... | 735 | 193 | 161 |  | 16.248 | 16.248 | ... | ... | ... |
| Toowoomba |  | 2,658,473 | 117,324 | ... | 147,843 | 520,905 |  | 569,271 | 1,117,933 | ${ }_{487}^{71}$ | 1 | $\cdots{ }_{7}$ | ${ }_{6,696}^{1,518}$ | 1,429 | 151 | 2,666,5044 | 6,955 53,781 | 2,720,285 | 1,356,266 |  | 1,356,266 |
| Warwick | ... | 4,198,885 | 263,373 | ... | 212,236 | 2,776,933 | 112,788 |  | 1,833,555 | 629 | 1 | 7 | 9,446 | 3,301 | 329 | 1,657,411 | 105,606 | 1,763,017 | 991,121 |  | 991,121 |
| Total Downs |  | 37,131,081 | 1,356,610 | ... | 1,473,153 | 23,593,245 | 389,940 | 1,216,754 | 9,101,379 | 5,362 | 12 | 68 | 94,210 | 30,240 | 298 | 11,831,063 | 586,558 | 12,417,621 | 9,936,042 | ... | 9,936,042 |
| Oiher Districts | ... | 6,684,443 | 635,718 | 400 | 834,022 | 4,770,105 | 392,658 | $\ldots$ | 61,540 | 2,659 | 4 | 3 | 23, 8 86 | 16,049 | 171 | 2,324,599 | 234,614 | 2,559,213 | 43,373 | - 260 | +3,633 |
| Grand Total, 1922 Grand Total, 1921 | ... | $\begin{aligned} & 134,031,830 \\ & 151,080,892 \end{aligned}$ | $\begin{aligned} & 5,077,548 \\ & 5,915,545 \end{aligned}$ | $\begin{array}{r} 9,850 \\ 12,740 \end{array}$ | $\begin{aligned} & 5,867,640 \\ & 5,920,472 \end{aligned}$ | $\begin{aligned} & 104,949,114 \\ & 117,411,706 \end{aligned}$ | $\begin{aligned} & 5,061,957 \\ & 4,569,640 \end{aligned}$ | $\begin{aligned} & 2,700,788 \\ & 3,985,979 \end{aligned}$ | $\begin{array}{r} 9,764,933 \\ 13,264,810 \end{array}$ | $\begin{aligned} & 21,931 \\ & 21,695 \end{aligned}$ | $\begin{aligned} & 48 \\ & 47 \end{aligned}$ | $\begin{aligned} & 79 \\ & 83 \end{aligned}$ | $\begin{aligned} & \hline 418,351 \\ & 423,251 \end{aligned}$ | $\begin{aligned} & 145,332 \\ & 130,957 \end{aligned}$ | $\begin{aligned} & 238 \\ & \\ & \hline 173 \end{aligned}$ | $\begin{aligned} & 51,412,258 \\ & 58,550,238 \end{aligned}$ | $\begin{aligned} & 2,373,341 \\ & 2,372,956 \end{aligned}$ | $\begin{aligned} & 53,785,599 \\ & 60,923,194 \end{aligned}$ | $\begin{aligned} & 10,552,406 \\ & 15,188,627 \end{aligned}$ | 7,910 11,900 | $\begin{aligned} & 10,560,316 \\ & 15,200,527 \end{aligned}$ |
| Increase, 1922 Decrease, 1922 | $\ldots$ | 17,049,062 | 237,997 | 2,890 | 52,832 | 12,462,592 | 492,317 | 1,285,191 | 3,499,877 | 236 | 1 | 4 | 4,900 | $14,375$ | 35 | 7,137,980 | ${ }^{385}$ | 7,137,595 | 4,636,221 | 3,990 | 4,640,211 |


Table No. LXV.-continued.

$154$

＇766I \＆Va

\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multicolumn{2}{|l|}{\multirow[t]{4}{*}{DIVISIONS AND
PKTTY sKSSIONS Districts．}} \& \multicolumn{21}{|l|}{QUANTITY Of Produck．} \\
\hline \& \& \multicolumn{7}{|l|}{grain crops．} \& \multicolumn{2}{|l|}{potatoks．} \& \multirow[t]{3}{*}{送} \& \multicolumn{3}{|l|}{sugar－cane．} \& \multirow[t]{3}{*}{} \& \multirow[t]{3}{*}{} \& \multirow[t]{3}{*}{̈ㅜㅇ} \& \multirow[t]{3}{*}{} \& \& \multirow[t]{3}{*}{} \& \multirow[t]{3}{*}{} \& \multirow[t]{3}{*}{} \\
\hline \& \& \multirow[t]{2}{*}{Wheat．} \& \multirow[t]{2}{*}{Oats．} \& \multicolumn{2}{|l|}{Barley．} \& \multirow[t]{2}{*}{Maize．} \& \multirow[t]{2}{*}{Rye．} \& \multirow[t]{2}{*}{Rice．} \& \multirow[t]{2}{*}{English．} \& \multirow[t]{2}{*}{sweet．} \& \& \multirow[t]{2}{*}{\[
\begin{aligned}
\& \text { gig } \\
\& \frac{0}{8}
\end{aligned}
\]} \& \multirow[t]{2}{*}{\[
\begin{gathered}
\text { Area } \\
\text { Crushed. }
\end{gathered}
\]} \& \multirow[t]{2}{*}{Weight Obtained} \& \& \& \& \& \multirow[t]{2}{*}{Grapes
Gathered．} \& \& \& \\
\hline \& \& \& \& Maiting． \& Other． \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \\
\hline \& \& Bushels． \& Bushels． \& Bushels． \& Bushels． \& \& Bushels． \& Bushels． \& Tous． \& Tons． \& Tons． \& \& Acres． \& \& Tons． \& Lb． \& Lb． \& \& \& Bunches． \& \& \\
\hline  \& \& ．．．． \&  \& ．．．． \& ．．．． \& \[
\begin{array}{r}
6,314 \\
2.044
\end{array}
\] \& \(\ldots\) \& ．．． \& \[
\begin{array}{r}
18.3 \\
303 \\
74
\end{array}
\] \& \[
\begin{array}{r}
18 . \\
535 \\
18
\end{array}
\] \& rens．
1,351
118 \& Lib． \& Acres． \& Tons．
\(\ldots \ldots\)
\(\ldots .\). \& Tons．
\(\ldots \ldots\)
\(\ldots .\). \& Lb． \& Lb．
\(\cdots\)
\(\ldots\) \& \[
\begin{gathered}
733 \\
\hline 889
\end{gathered}
\] \&  \& Bunches．
290,977
\(1,0+6\) \& Dozens． \& Bushels．
1,355
980 \\
\hline Beaudesert \({ }_{\text {Caboolture }}\) ．．． \& \& ．．． \& 129 \& \(\ldots\) \& \(\ldots\) \& \[
\begin{aligned}
\& 2,041 \\
\& 54,356
\end{aligned}
\] \& \(\ldots\) \& \(\ldots\) \& 236 \& \[
\begin{aligned}
\& 18 \\
\& 83
\end{aligned}
\] \& 118
878 \& 298 \& ．．． \& \(\ldots\) \& \& \& ．．． \& 289
1,434 \& \& 1,046
265 \& \[
\begin{array}{r}
38,420 \\
38
\end{array}
\] \& \[
\begin{array}{r}
980 \\
1,171
\end{array}
\] \\
\hline Cleveland ．．．．．． \& \(\ldots\) \& \& 10 \& ．．．． \& \(\ldots\) \& 3.206
10 \& \(\ldots\) \& ．．．． \& 95
20 \& 53
14 \& \({ }_{7}^{4}\) \& 504 \& \(\ldots\) \& \(\ldots\) \& \(\cdots{ }_{153}\) \& ．．． \& \(\ldots\) \& \(\begin{array}{r}55 \\ 40 \\ \hline 10\end{array}\) \& 1,170
4.166 \& 27,361
15,073 \& 54.203
197.272 \& 2，722 \\
\hline Cooyar ．．．．．． \& \& \& \& \& \& 12，306 \& ．．． \& \(\ldots\) \& \& \& 80 \& 504 \& \(\ldots\) \& \(\ldots\) \& \& \(\ldots\) \& ．．． \& \({ }_{179}^{40}\) \& 4，166 \& 15，073 \& 197，272 \& \\
\hline Crow＇s Nest
Dugundan ．．．\(\ldots .\). \& \(\ldots\) \& 7，111 \& 922 \& 975 \& \({ }_{60}^{60}\) \& 112，328 \& ．．． \& \(\ldots\) \& 129 \& \& 476 \& \& ．．． \& \(\ldots\) \& ．．． \& \(\ldots\) \& \(\ldots\) \& 1，333 \& 11，130 \& \& \& 1，53n \\
\hline Esk ．．．．．．．．．． \& \& \& \(\ldots\) \& \& \& 145,063
55,042 \& ．．． \& ．．． \& 649
24.5 \& 85 \& 1.977 \& \({ }^{47,953}\) \& \(\cdots\) \& ．．． \& \& \(\ldots\) \& 㖪 \& 7，339 \& 970 \& 177 \& 60 \& \({ }_{417}\) \\
\hline \(\mathrm{Ga}_{\text {Gatton }}^{\text {Goodna }}\) ．．．．．． \& ．．． \& 259 \& ．． \& \(\ldots\) \& ．．． \& 130.980 \& ． \& \(\ldots\) \& 590 \& 673 \& \({ }_{3,142}^{1,292}\) \& r
145,262 \& \(\ldots\) \& \(\cdots\) \& ．．．\({ }^{5}\) \& \(\ldots\) \& \(\ldots\) \& 7，127 \& \(2,3,3\)
6,760 \& \(\ldots\) \& \(\ldots\) \& \({ }_{3,683}^{1,904}\) \\
\hline Harrisville．．．\({ }^{\text {a }}\) ． \& \& ．． \& 20 \& \(\ldots\) \& \(\ldots\) \& 1,000
85.443 \& ．． \& ．．． \& 17
109 \& 5 \& 10 \& 1，330 \& \(\ldots\) \& ．．． \& ．．． \& \(\ldots\) \& \(\ldots\) \& 57 \& \& \(\ldots\) \& \& \\
\hline Helidon ．．．．．． \& \& ．．． \& \& \(\ldots\) \& \(\ldots\) \& － 23.541 \& ．．． \& \(\ldots\) \& \({ }_{245}^{109}\) \& \({ }_{286}^{104}\) \& 1，080 \& 12，913 \& ．．． \& 析 \& \(\cdots\) \& ．．． \& ．．． \& 5.859 \& 966 \& ．．． \& ．．． \& 73 \\
\hline  \& ．．． \& \(\ldots\) \& ．． \& \(\ldots\) \& \(\ldots\) \& 12,247 \& ．．． \& \& 245
77 \& 286
76 \& \& 11,700
757 \& \(\ldots\) \& \(\ldots\) \& \({ }^{*}{ }_{4}\) \& \(\ldots\) \& \(\ldots\) \& 2，425 \& \& －．． 834 \& 6，270 \& 627
187 \\
\hline Kilcoy
Laidley
Len \& ．．． \& \(\ldots\) \& 星 \& \(\ldots\) \& \(\ldots\) \& 32，376 \& ．．． \& ．．． \& 152 \& 170 \& 530 \& \& ．．． \& \(\ldots\) \& \& \(\ldots\) \& ．．． \& \({ }_{202}^{637}\) \& 970 \& 5，593 \& 6，270 \& 187
592 \\
\hline Logan ．．．．．． \& \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\begin{array}{r}132.942 \\ 10964 \\ \hline\end{array}\) \& \(\ldots\) \& \(\ldots\) \& \(460^{\circ}\) \& 262 \& 1，495 \& 57.038 \& \& \& \& \& ．．．． \& 7，727 \& 4.900 \& \& \& \({ }_{235}\) \\
\hline Lowrod ．．．．．．． \& \& ．．． \& ．．． \& \(\ldots\) \& \(\ldots\) \& －99，393 \& \(\ldots\) \& ．．． \& \({ }_{372} 986\) \& －532 \& 14
974 \& \& 676 \& 12，377 \& 1,788
14 \& 464 \& ．．． \& 297
1,495 \& 5,830
7788 \& 68,379
3 \& \(\underset{\substack{43,687 \\ 2,213}}{ }\) \& 10，294 \\
\hline Marburg ．．．．．． \& ．．． \& ．．． \& ．．． \& ．．． \& ．．． \& 28，141 \& \(\ldots\) \& \& 99 \& 153 \& 95 \& 32，807 \& 38 \& 428 \& \({ }_{5}\) \& 404 \& \& 1，890 \& 5，794 \& \& \& \({ }_{418}^{656}\) \\
\hline Nerang ．．．．．． \& \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& －6，650 \& \(\ldots\) \& 250 \& －33 \& 86 \& 7 \& 390 \& 1，872 \& 39，630 \& 81 \& \& 3，556 \& 33 \& \& 511,250 \& 285.061 \& 101，543 \\
\hline Redclife
Rosewood \& ．．． \& \(\ldots\) \& \(\ldots\) \& ．．． \& \(\ldots\) \& \({ }_{9,704}\) \& ．．． \& \(\ldots\) \& 209 \& 1，279 \& \({ }_{61}^{30}\) \& 182 \& \& \& 1.549 \& 4，480 \& ．．． \& 68 \& 1，900 \& 212，013 \& \({ }_{7}^{734}\) \& 3，789 \\
\hline Southport ．．．．．． \& \(\ldots\) \& \(\ldots\) \& ．．． \& \(\ldots\) \& \(\ldots\) \& 31,555
136 \& ．．． \& ．．． \& \({ }^{65}\) \& ＋19 \& 252 \& 17，130 \& \& \& 10 \& ．．． \& ．．． \& 279 \& \& \& 250 \& \begin{tabular}{l} 
2，191 \\
\hline
\end{tabular} \\
\hline Woodiord ．．．．．． \& \& \(\ldots\) \& ．． \& ． \& ．．． \& 4,807 \& ．．． \& ．．． \& \({ }_{38}^{25}\) \& \& \& \& ．．． \& \(\ldots\) \& ．．． \& ．．． \& \(\ldots\) \& \({ }_{81}^{15}\) \& ．．． \& \& \& \(\ldots\) \\
\hline Wynnum ．．．．． \& \& … \& \(\cdots\) \& \(\cdots\) \& \(\because\) \& 4，255 \& \(\ldots\) \& ．．． \& \& \(\begin{array}{r}96 \\ 127 \\ \hline\end{array}\) \& \({ }_{69}^{15}\) \& 133 \& \(\ldots\) \& ．．． \& \& \& ．．． \& 18 \& 17，412 \& 6,475
3,020 \& 19.701 \& 1，494 \\
\hline Total Moreton \& \& 7，482 \& 1，081 \& 975 \& 120 \& 1，114，582 \& ．．． \& 250 \& 5，493 \& 5，294 \& 15，3？1 \& 392，363 \& 2，592 \& 52，504 \& 3，655 \& 4，944 \& 3，556 \& 44.254 \& 439，752 \& 1，293，48 \& 788,909 \& 136，694 \\
\hline Wide Buy Division． \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \\
\hline Bigyenden...
Bundaberg
Bra \& ．．．． \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& 7，306 \& \(\ldots\) \& \(\ldots\) \& \({ }_{38}^{25}\) \& ．．． \& \& 40，727 \& \& 1.238 \& \& ．．． \& ．．． \& 237 \& \& 4，000 \& 406 \& 58 \\
\hline Childers ．．．．．．：． \& ．．．． \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& 10，437 1 \& \(\ldots\) \& ．．． \& 38 \& ．．． \& 7 \& \({ }^{8} 8.935\) \& 15，655 \& 276，610 \& \& \& ．．． \& 1，029 \& 4，989 \& 34，416 \& 11，390 \& 4，501 \\
\hline Eidsvold ．．．．．．．．． \& \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& 1，605 \& \(\because\) \& \(\ldots\) \& \& \& \& \& 10，228 \& 177，872 \& \(\ldots\) \& \(\ldots\) \& ．．． \& 105 \& 770 \& 202 \& 115 \& 17，861 \\
\hline \(\underset{\substack{\text { Gayndah } \\ \text { Gin Gin }}}{\substack{\text { a }}}\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& ．． \& 30，702 \& ．．． \& ．．． \& 24 \& \({ }_{26}^{11}\) \& \({ }_{19}^{12}\) \&  \& ．．．． \& \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \({ }_{752}\) \& 1，725 \& 100 \& \& 2，580 \\
\hline  \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& 5．408 \& ．．． \& \(\ldots\) \& 21 \& 2 \& 2 \& 18，184 \& 3，627 \& 41，941 \& \& \(\ldots\) \& \(\ldots\) \& 308 \& 3，416 \& \& 300 \& 1，140 \\
\hline kilkivan ．．．．．．： \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& \(\ldots\) \& ．．． \& 56,568
6,356 \& \(\ldots\) \& \(\ldots\) \& 363
21 \& 226
5 \& 253
36 \& \& 46 \& 489 \& 60 \& \(\ldots\) \& ．．． \& \begin{tabular}{l}
876 \\
\hline 86 \\
\hline 88
\end{tabular} \& 736 \& 553，561 \& 8，204 \& \({ }_{124}^{84}\) \\
\hline Maryborouch \(\begin{gathered}\text { Mount Perry }\end{gathered}\) \& \(\cdots\) \& \(\ldots\) \& ．．． \& \(\ldots\) \& \(\ldots\) \& \({ }_{3,103}^{6,106}\) \& \(\ldots\) \& ．．． \& 198 \& 54 \& 36
76 \& 1,233
2,522 \& 1，553 \& 22，953 \& 19 \& ．．． \& Nil \& \({ }_{936}^{286}\) \& 21，304 \& 109，084 \& 28，681 \& － 24,088 \\
\hline Nrnangh ．．．．．．． \& \(\ldots\) \& 3，075 \& \& \(\ldots\) \& ．．． \& \& ．．． \& \(\ldots\) \& 1 \& 22 \& 9 \& 573 \& \& \& \& ．．． \& ．．． \& 7 \& \& 500 \& ．．． \& 870 \\
\hline Tiaro ．．．．．．：． \& \& \& 40 \& \(\ldots\) \& ．．． \& 29，4，468 \& \(\ldots\) \& \(\ldots\) \& 125
239 \& 37
19 \& 653

26 \& ${ }_{3}^{2,545}$ \& \& \& 6 \& ．．． \& $\ldots$ \& 3，520 \& 11，010 \& \& \& 613
6.319 <br>
\hline Wienholt ．．．．．． \& \& 9，329 \& 1，392 \& ＂ 276 \& $\cdots$ \& 328，593 \& $\ldots$ \& $\ldots$ \& 239
89 \& \& \& \& 1，098
$\ldots$ \& 14,571
$\ldots$ \& ${ }_{2}^{6}$ \& ．．． \& $\ldots$ \& \& 1,376
6,364 \& ${ }^{29,650}$ \& 3,020
250 \& $\begin{array}{r}6,319 \\ \hline 15\end{array}$ <br>
\hline Total Wide Bay \& \& 12，404 \& 1，651 \& 276 \& ．．． \& 760，085 \& \& ．．． \& 1，959 \& 455 \& 2，049 \& 459，170 \& 32，289 \& 535，674 \& 87 \& \& Nil \& 12，233 \& 51，690 \& 731，543 \& 52，366 \& 59，378 <br>
\hline Port Curlis Division． \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& <br>
\hline Banaua
Gladstone ．．．．... \& \& $\ldots$ \& $\ldots$ \& $\ldots$ \& $\ldots$ \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& \& 59 <br>
\hline Mount Morgan ．．．．． \& $\ldots$ \& $\ldots$ \& $\ldots$ \& $\ldots$ \& $\ldots$ \& 11.525
2.019 \& $\ldots$ \& $\ldots$ \& \& \& \& 1，716，775 \& 72 \& 947 \& 10 \& ．．． \& $\ldots$ \& 422 \& 772 \& 20．300 \& 1，987 \& 1.379 <br>
\hline Rockhampton
St．Lawrence \& ． \& $\ldots$ \& $\ldots$ \& ．．． \& $\ldots$ \& 7，651 \& $\ldots$ \& ．．． \& 303 \& 79 \& 206 \& 1，562，550 \& \& \& $\ldots$ \& ．．． \& $\ldots$ \& 1，683 \& 29，684 \& \& 17，194 \& 10，800 <br>
\hline \& \& ．．． \& ．．． \& ．．． \& ．．． \& \& ．．． \& I． \& 12 \& \& 1 \& 2，090 \& 325 \& 7，160 \& \& ．．． \& \& 100 \& \& 150 \& 100 \& 253 <br>
\hline Total Port Curtis \& \& ．．． \& ．．． \& ．．． \& ．．． \& 21，535 \& ．．． \& \& 1，123 \& 141 \& 388 \& 2，477，966 \& 400 \& 8，154 \& 10 \& ．．． \& \& 2，489 \& 30，456 \& 68，989 \& 21，131 \& 13，436 <br>
\hline
\end{tabular}

Table No. LXVI.-continued.

| divisions And PETTY SESSIONS DISTRICTS. | grain crops. |  |  |  |  |  |  | petatozs. |  | Pumpkins andMelons. | $\begin{aligned} & \text { ڭ̀ } \\ & \stackrel{ \pm}{0} \\ & 0 \end{aligned}$ | sugar-cane. |  |  |  | \% |  | vines. <br> Grapes Gathered. |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Wheat. | Oats. | Barley. |  | Maize. | Rye. | Bice. | English. | sweet. |  |  | Area Crushed. | Weight Obtained. |  |  |  |  |  |  |  |  |
|  |  |  | Malting. | Other. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eluerume Divioion. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels, | Tons. | Tons | Tons. | Lb. | Acres. | Tons. | Tons. | Lb. | Lb. | Tons. | Lb. |  |  | Bushels. |
| Ayr Arem Bowen | ... | $\ldots$ | $\ldots$ | $\ldots$ | 523 1,051 | ... | $\ldots{ }^{37}$ |  | 22 18 |  | 2,339 | 16,126 368 | 296,590 5,446 | ... | ... | $\ldots$ | 18 | ... | $\begin{aligned} & 8,720 \\ & 2,428 \end{aligned}$ | - $\begin{array}{r}74 \\ 6,687\end{array}$ | $\underset{5,815}{41}$ |
| Bowen Cape River | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\begin{array}{r}1,051 \\ 140 \\ \hline 200\end{array}$ | $\ldots$ | $\cdots$ | $\begin{array}{r} 76 \\ 4 \end{array}$ |  | 15 | 197 | 368 | ${ }^{5,446}$ | $\ldots$ | $\ldots$ | ... | 5 | 2,702 | 2,428 | ${ }^{6,687}$ | 5,315 |
|  | -... | $\ldots$ | $\ldots$ | $\ldots$ | 260 30 | $\ldots$ | $\ldots$ | 48 | $\begin{aligned} & 5 \\ & 4 \end{aligned}$ | $\begin{array}{r} 11 \\ 3 \end{array}$ | 9,489 555 | 30,980 | 355,058 | $\ldots$ | ... | $\ldots$ | 6 | 10,496 2,603 |  |  | 764 6.627 |
| Proserpine .... ... ... | ... | $\ldots$ | $\cdots$ | $\ldots$ | 433 | $\ldots$ | $\ldots$ | 73 | 2 | 16 |  | 3,805 | 32,200 | $\ldots$ | 830 | ${ }^{\prime} 112$ | ... | $\ldots$ | ${ }^{8} 8150$ | -828 | ${ }_{2,060}^{6,027}$ |
| Ravenswood Townsville | .... | $\ldots$ | ... | ... | 240 | $\ldots$ | $\ldots$ | 256 | 22 | 133 | ${ }^{-} 488$ | 1,111 | 17,570 | $\ldots$ | 6,776 | ... | ... | .... | 7,974 | 9,491 |  |
| Total Edgecumbe ... | ... | ... | ... | ... | 2,677 | ... | 37 | 478 | 73 | 278 | 13,068 | 52,390 | 706,864 | $\ldots$ | 7,606 | 112 | 29 | 15,801 | 28,137 | 18,708 | 15,992 |
| Rockingham Division. A therton |  |  |  |  | 381,873 |  |  |  |  |  |  |  |  |  |  |  | 91 |  |  |  |  |
| Osirns ... ... ... | ... | $\ldots$ | $\ldots$ | $\ldots$ |  | ... | ... |  | 107 | 5 | 3,063 | 18,887 | 318,604 | $\ldots$ | $\ldots$ |  | $\ldots{ }^{.91}$ | $\ldots$ | 20,640 | 11,998 | 26,825 |
| Oardwell Ohillagoe | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 77 30 | $\ldots$ | $\ldots$ | 1 | ${ }_{6}^{6}$ | $\ldots$ | $\ldots$ | ... | ... | ... | ... | ... | ... | ... | 270 |  | 6,157 |
| Herberton ${ }^{\text {. }}$... ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 977 | $\ldots$ | $\ldots$ | $\cdots$ | 9 | $\ldots$ | 390 | $\ldots$ |  | $\ldots$ | $\ldots$ | $\ldots$ | 6 | 8,830 | 605 | 75 | 119 198 |
| Ingham ... ... ... |  | ... | ... | ... | 30 | ... | ... |  | 8 |  |  | 13,442 | 214,382 | ... | $\ldots$ | $\ldots$ |  |  |  |  | 5,344 |
| Mourilyan ... ... ... | ... | ... | ... | ... |  | ... | ... | ... | 2 | 1 | ... | 16,841 | 269,398 | $\ldots$ | ... | ... | ... | ... | 7,766 | 380 | 672 |
| Total Rockingham ... | ... |  | ... | ... | 383,627 | ... | ... | 203 | 186 | 26 | 3,622 | 49,170 | 802,384 | ... | ... | 5,700 | 97 | 8,830 | 31,551 | 12,525 | 41,058 |
| York Peninsula Division. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\begin{array}{ll}\text { Ooen } \\ \text { Oook } & \text {... } \\ \text { cos }\end{array}$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | 60 1,840 | $\ldots$ | ... | 1 | ${ }_{64}^{4}$ |  | ${ }^{*} 344$ | .... | ... | $\ldots$ | $\ldots$ | .... | $\ldots$ | $\ldots$ | 106 2,883 | $\underset{1,102}{21}$ |  |
| Douglas ... ... ... | ... | ... | $\ldots$ | $\ldots$ | ${ }^{60}$ | ... | $\ldots$ | $\ldots$ | 1 | $\ldots$ |  | 4,009 | 62,410 | ... | $\ldots$ | ... | ... | ... | 212 | 1,410 | 1,403 |
| ${ }_{\text {Palmer }}^{\text {Pamerset }}$.... ...... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\begin{aligned} & 56 \\ & 80 \end{aligned}$ | $\ldots$ | $\ldots$ | $\ldots$ | 56 | 3 | ... | $\ldots$ | ... | .... | $\ldots$ | ... | .... | ... |  |  | .... |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Total York Peninsula... | ... | ... | ... | ... | 2,096 | ... | ... | 1 | 126 | ${ }^{26}$ | 344 | 4,009 | 62.410 | ... | ... | ... | ... | ... | 4,530 | 1,733 | 6,158 |
| Carpentaria Division, Burke | ... |  |  |  |  |  |  |  | 2 |  | ... | $\ldots$ |  |  |  |  |  |  | 230 |  |  |
| Oloncurry ... .... ... | ... | .... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | 2 | ... | $\ldots$ | ... | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | ... | 230 | $\ldots$ |  |
| ${ }_{\text {Oroydon }}^{\text {Etheridge }}$...... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | -..924 | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... 2 | $\ldots$ | ... | ... | $\ldots$ | ... | ... | $\ldots$ |  | $\ldots$ | ... | ... |
| Etheriage Hughenden | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots{ }^{924}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... ${ }^{2}$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | $\ldots$ | 800 | $\cdots$ | ... | $\ldots$ |
|  | $\ldots$ | $\ldots$ | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | .... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ |
| Richmond ... ... ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |  | … |  | $\ldots$ |  |
| Total Carpentaria ... | ... | ... | ... | ... | 924 | ... | ... | ... | 2 | 7 | $\ldots$ | ... | ... | ... | ... | ... | ... | 800 | 230 | ... | 150 |
| Central-western Division. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ${ }_{\text {Coulia }}^{\text {Camooweal }}$. ${ }^{\text {an }}$... ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ |
| Diamantina ... ... | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ |
| Isisford -.. ... ... | ... | ... | ... | ... | $\ldots$ | ... | ... | $\ldots$ | ... | $\ldots$ | ... | ... | ... | ... | ... | ... | ... | ... | ... | .... | $\ldots$ |
|  | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | $\ldots$ | ... | ... | ... | ... | $\ldots$ | ... | ... | $\ldots$ | $\ldots$ | ... |
| Winton ... ... ... | $\ldots$ | .... | $\ldots$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | $\ldots$ | ... | $\ldots$ | $\ldots$ | ... | ... | $\ldots$ | ... | ... | ... | ... | ... | ... | $\ldots$ |
| Total Central-western... | ... | ... | ... |  | ... | $\ldots$ | ... | $\ldots$ | ... | ... | ... | ... | $\ldots$ |  | ... | $\ldots$ | $\ldots$ | ... |  | ... | ... |



Table No．LXVII．
Showing the Total Extent of Land under Cultivation and the Area under each Description of Crop in Queensland－Return for Ten Years．

|  | ＇sривчэхо риъ suәр．ъэ เәपұо |  | －s．．．19 |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | ＇sodov |  <br>  |
|  | －sбохр хөчэо |  | ＇вя．วจ |  － |
|  |  |  | －sอ．эจ |  <br>  |
|  |  |  | ＇80．วV |  |
|  |  |  | ＇se．9．${ }^{\text {V }}$ |  |
|  |  | rav ［8701 | ${ }^{\text {seas }}$ V | せ |
|  |  |  |  | \％ |
|  | 产 | $\underset{\text { 'Baxy }}{\text { [B7OL }}$ |  |  <br>  |
|  |  | ．8up．reeg | ＊＊อ．0V |  <br>  |
| ＇doyo ato nolldigosac hova gaana vaty | ＇sөๆdввuи！ |  | ＇so．วจ |  <br>  |
|  | ＇รвивитя |  | ＇sองәу |  <br>  |
|  | $\stackrel{\dot{4}}{\frac{1}{5}}$ |  | ＇sesp ${ }^{\text {V }}$ |  |
|  |  | －¢uıreg | ＇se．ร》 |  |
|  |  рив өтаәәпт |  | ＇sองว ${ }^{\text {\％}}$ |  <br>  |
|  |  |  | ＇8อ．9จ |  <br>  |
|  |  | － bary ［870 | －sanj ${ }^{\text {V }}$ |  |
|  | 8 |  | －saxov |  |
|  | －оговqо⿱二⿺卜丿 |  | －såх |  |
|  | ＇q0алмой |  | ＇sorov |  |
|  |  |  | ＇צе．гу |  <br>  |
|  |  | peqisnaio | ＇sesp ${ }^{\text {d }}$ |  <br>  |
|  | 育88 | －вәар ${ }_{\text {Iฉ7근 }}$ | ： 52.10 V |  |
|  |  | －\％аивәа | －soxว |  |
|  | pus sụ̣ydunt |  | sonov |  |
|  |  | чәөмя | ＇se．ov |  |
|  |  |  | －8．．9\％ |  <br>  |
|  |  | ＇өo！¢ | － sax $^{\text {V }}$ |  |
|  |  | ${ }^{\bullet} \boldsymbol{\wedge} \boldsymbol{\chi}$｜ | ${ }^{\text {sexp }} \mathrm{V}$ |  |
|  |  | 断 | 80．0．${ }^{\text {P }}$ |  |
|  |  | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ | ＇sอлоү |  |
|  |  |  | －ร90\％${ }^{\text {P }}$ |  |
|  |  | \％ | －รวขว |  |
|  |  |  | －soxว\％ |  <br>  |
|  |  |  | ＇sexoy |  <br>  |
|  |  |  | －sax）${ }^{\text {V }}$ |  연（ixigision ixiti |
|  |  |  | －sอวจจ |  |
| 気 |  |  |  |  |


Table No. Lxix.
Showing Average Produce per acre of Principal Crops in Queensland-Return for Ten Years.



Table No. LXXI.
Return Showing the Total Extent of Land Cultivated for Hay, Together with the Yreld of Hay, and the Average Yield per Acre in each of the Several Petty Sessions Districts of the State during the Year 1922.


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 1922.

Table No. Lxxiif.
Retuen Showing Average Yield per Acre of Crops in each Division of the State for the Year 1922.


Table No. LXXIV.
Return Showing the Area, Yield, and Value of Crops for the Year 1922.


By Authority: Antiony James Cummeng, Government Printer, Brisbane.
Price 4s.]



[^0]:    No. 1817 from Currumbin, bananas affected by "Bunchy Top."
    No. 1818 from Currumbin, on same block, bananas apparently healthy.
    No. 1819 from Currumbin, bananas affected by "Bunchy Top."
    No. 1820 from Currumbin, on same plantation, bananas healthy.
    No. 1821 from Nerang, bananas in excellent condition.

[^1]:    ＊Estimated 3＇st December， 1922.

[^2]:    V.B.-Eeturns recelved trom Inspectors of Slaughter-houses for 1922 account for 51,739 swine killed, producing $\mathbf{4 , 4 5 2 , 4 8 1} \mathbf{l b}$. of fresh pork in addition to the above. In a few instances it is possible that some o 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.

[^3]:    

