QUEENSLAND

—:—

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE AND STOCK

FOR

THE YEAR 1945-46

1946.

QUEENSLAND.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE AND STOCK

FOR

THE YEAR 1945-46.

PRESENTED TO PARLIAMENT BY COMMAND.

BRISBANE:
BY AUTHORITY: A. H. TUCKER, GOVERNMENT PRINTER.

A. 37—1946.

CONTENTS.

REPORT OF THE DEPARTMENT OF AGRICULTURE AND STOCK FOR THE YEAR 1945-46.

TO THE HONOURABLE THE SECRETARY FOR AGRICULTURE AND STOCK.

SIR.—I have the honour to submit herewith the Annual Report of the Department of Agriculture and Stock for the year ended 30th June, 1946.

SEASONAL CONDITIONS.

Aggregate district rainfalls in July, 1945, were well above normal, mainly as a result of widespread mid-month falls generated by an out-of-season tropical air movement. The best served regions were the Central Interior, Central Highlands to the Central Coast and the South Coast. Central coastal pastoral and agricultural areas needed the rain to counteract previous dry conditions. Central pastoral country received most benefit from this visitation, but in the dry Lower West and along the southern interior border the rains were patchy and stock losses followed the resultant cold weather. Good seasonal prospects were maintained in the farming and dairying districts in the south-eastern portion of the State. In August most of the Maranoa and Darling Downs, parts of the Warrego, Moreton and South Coast districts received over-average rains. Over the rest of the State, however, normally dry August conditions prevailed. Early thunderstorm rains were recorded in September, with hail in places. Some fairly useful to over-average falls occurred in the Central Coast and South Coast areas, while the Central Highlands and parts of the Darling Downs also profited. Over the rest of the State little or no rain was recorded. Rains in October were over-average in several districts, but in most inland pastoral areas it was the third under-average rainfall month in succession. November is normally a period of fairly general thunderstorms, but only a comparatively small area benefited and the last of the 1945 spring months was exceptionally dry over the greater part of the State. In December a series of useful rains in the North-west resulted in an aggregate over-average 3- to 6-inch distribution south from Burketown and Normanton to Urandangie and Cloncurry, with some lighter falls south-east to Winton. Storm rains generally were variable in volume, occurrence and location, and pastoral districts were in need of seasonal monsoonal soakings.

January rains, particularly during the second and third weeks, gave practically a State-wide distribution of useful to copious over-average aggregates. The rainfall over the drier inland pastoral areas was opportune, but further relief was needed to offset the past series of adverse seasons. Heavy downpours in many districts caused widespread flooding in river basins, with consequent transport difficulties and delays. Central and tropical coast streams and Carpentaria river systems, especially the Flinders, were swollen by torrential head-water falls. In the Central and South-west areas river beds overflowed with the run off from heavy showers in the Upper West and Central Interior. Both inland and coastal river systems were in strong flow, reaching flood heights in some localities. February rainfalls were over wet seasonal averages in the coastal country in the Far North and were substantial in all other farming districts, except the Burnett, the Downs and Maranoa, where registrations were generally well below the average. The South-western pastoral country was still abnormally dry. The only districts showing over-average rain totals in March were in the Far North Coast, Central Coast and South Coast. Heavy flood rains in these sectors were the outcome of two cyclones. Both distributions missed the Port Curtis district and an unusually protracted dry spell continued in that part of the State. The greater part of inland Queensland was abnormally dry for March and many districts, especially in parts of the West and in the Central-west, reported no rain. Apart from the dry sections in the Port Curtis and adjacent inland areas, agricultural and pastoral conditions were generally good in the South-eastern quarter. Under cyclonic influences, extensive high to record flooding occurred in all coastal streams between Rockhampton and Cooktown back to the adjacent highlands and East Carpentaria. Widespread damage, soil erosion and protracted transport delays occurred. There was some loss of life and the town of Home Hill was out of communication for some days. The Burdekin River was flooded from all catchments to record heights. Townsville and Mackay also suffered considerable flood damage. Along the coast from 12 to over 20 inches were common rain gaugings. On the Upper Ross River, 30 miles from Townsville, a fall of 26 inches in 21 hours was reported (12 inches between 3 a.m. and 5 a.m. on 3rd March). In the Moreton district flooding, also from cyclonic influences, was more local, as rains eased in time to prevent general stream rises, as occurred in the Northern Rivers District of New South Wales. Heavy two-day falls (24th-25th) included many 10 to 15 inch gaugings. Remarkable rain registrations during this southern visitation included: Bald Knob nearly 19 inches, Maleny nearly 16 inches, Mt. Tamborine nearly 18 inches and Springbrook just over 25 inches, of which 25 inches fell in 26 hours (four-day total, 3,667 points). In contrast, April was generally dry throughout the State, except in the southern coastal belt and parts of the Darling Downs and Maranoa which benefited from the effects of an offshore cyclone during the first week. Stations in the Western, Central, South-west and Carpentaria Divisions reported no rain, and following on the dry summer months of February and March, the rainless April left the winter outlook very bleak in those pastoral regions. Low rainfall totals in the canegrowing districts presaged a decrease in the season's sugar yield. The dry spell continued in the Port Curtis Division and the Burnett, Dawson and Callide Valleys where rain was urgently needed. In the first week of the month, however, contrasting conditions were experienced in the Mary, Stanley and Brisbane River basins where local flooding occurred under the influence of an offshore cyclonic disturbance. The run-off from moderate rains on the Downs and Maranoa caused light freshes in streams in those areas,

the Balonne at St. George and Surat rising to 8½ feet. The May rainfall was well below average over the whole State. Moderate to heavy showers gave local relief in northern canefields, but further substantial falls were needed to maintain crop growth. Pastoral districts again reported no rain with the stock feed position becoming increasingly serious. Continued lack of rain in the Burnett, Callide and Dawson Valleys and around Port Curtis affected gravely crop prospects and dairy output. During June rainless conditions continued throughout the greater part of the State. In many farming districts hard frosts added to the seriousness of the present seasonal outlook. In the grain growing areas there has been no rain to germinate early-sown wheat, and the waiting time for successful late planting is rapidly diminishing.

Plant Industry.

Departmental reorganization to provide for more extensive advisory and research services, and which was discussed in detail in my last report, became effective during the period under review. The year generally was one of substantial progress and under the new divisional formation the ground was cleared for further advancement.

Regional experiment stations are in process of establishment in important agricultural centres. At the old-established station at Biloela activities are being extended further into the field of general agriculture, and it is planned to include facilities for work in animal husbandry, particularly dairying and pig raising. The departmental property at the Hermitage, near Warwick, has been reopened and there attention will be given to problems of wheat, grain sorghum and maize production. Methods of soil conservation and pasture management will also be investigated. All these lines of inquiry should be of great value to farmers of the Darling Downs and neighbouring districts. Problems of dairying, piggery management and lamb raising will likewise be studied at this station. At Nambour, a horticultural experiment station has been established, at which problems of fruit production are under investigation. In the Far North, the departmental property at Kairi, too, will become a centre for experimental work, particularly on maize, lucerne and pastures. There attention will also be given to animal husbandry and other matters of especial interest to the farmers of the Atherton Tableland and contiguous districts.

Crops new to Queensland agriculture are under investigation. The Director of Agriculture is at present on a mission to the United States of America and Canada inquiring into various aspects of primary industry, giving special attention to soy bean varieties, their characteristics and cultivation. It is probable that as a result of this mission the soy bean will eventually become an important factor in our agricultural economy.

Work at the Bureau of Tropical Agriculture, South Johnstone, has continued along lines laid down in previous years, particular attention being given to grasses and legumes of potential importance to the dairying and pastoral industries. Plans have been prepared for resuming horticultural investigations at Kamerunga, near Cairns.

General agricultural experimental work was continued in consonance with the design discussed in my last annual report. It included a wide range of varietal trials, fertilizer experiments and the laying out of observation plots in respect of tobacco, oats, grain sorghums, potatoes, cowpea, peanut, linseed, sunflowers and other crops. A comprehensive series of cotton experiments was continued at the Biloela Regional Experiment Station. Departmental plant breeders concentrated on work in wheat, oats, cotton and grain sorghum—the cereal section of the work being carried out at Kincora, Roma and Biloela; the grain sorghum work at Biloela and Kingaroy; and the cotton work in the cotton-growing districts, as well as at Biloela.

Horticultural experimental and plant breeding operations also received attention in the course of the general research activities of the Department. Weed pest problems likewise were investigated. Other experimental work included investigations into transport and storage problems of fruit and vegetables.

Entomological inquiries were directed largely to the possibilities of D.D.T. and other new insecticides for pest control. Plant pathological and botanical investigations proceeded more or less along the same lines as in the previous year and somewhat on the same scale.

Considerable attention also was given to soil surveys and to soil and water problems, including the causes and methods of prevention and control of erosion.

These and other developments are obviously of great value to the primary producers of Queensland, to whom results will become progressively available through a strengthened extension service.

Farmers are realising more and more the benefits to be derived from the application of scientific methods, especially in respect of plant breeding and protection and the maintenance of soil fertility. The Department is collaborating with the producers in finding the answers to rural problems and the practical results already achieved have accelerated progress in primary industry and, consequently, added to the general prosperity of the State.

Sugar.—Final sugar production figures will not be available before the middle of October. The estimate supplied by the Sugar Board is 644,287 tons of 94 n.t. sugar. Based on this estimate, the 1945 production exceeded that of 1944 by less than 1,000 tons. The quantity of cane harvested was 4,551,982 tons. Consequently, 7·06 tons of cane were required to produce one ton of 94 n.t. sugar; this is only the third occasion in the past fifteen years on which more than 7 tons of cane have been required. The c.c.s. value of the cane was the second lowest recorded in this period and this is obviously the main contributing factor.

The average price for sugar was £20 6s. 1d. (subject to slight adjustment when the quantity produced is accurately known), compared with £19 16s. 1d. in 1944. The total value for the crop was thus a shade over £13,000,000.

The 1946 crop will yield a much smaller tonnage than that of 1945. Because of the prolonged drought in all districts and the serious frosts in the southern and central areas the estimated tonnages have fallen continuously over the past six months. At present, it is doubtful whether 500,000 tons of sugar will be obtained.

Animal Industry.

Conditions in some of the pastoral districts of the State occasioned considerable anxiety, because of continuous dry weather. In what has hitherto been regarded as comparatively safe country, particularly in the South-west, flock numbers were seriously depleted.

A cold, dry winter has affected fat lamb production adversely to some extent, although there has been a noticeable improvement in quality.

Flock numbers aggregated approximately 19 million sheep, as compared with about 22 million in the previous year. Wool appraisements totalled 591,492 bales. The farmers' wool scheme functioned successfully throughout the 1945-46 season. On growers' behalf, 646 bales were prepared, for which satisfactory prices were obtained.

There is evidence of a strong desire on the part of pastoralists to apply modern methods of animal husbandry in flock and herd management. Field officers have concentrated on the lessening of preventable economic loss. Advice on drought feeding of stock has been readily available wherever it has been practicable to feed.

The latest available figures show the approximate number of the principal classes of livestock in the State as at 31st March, 1946, to be (figures for the previous year are in parentheses) :—Horses, 367,357 (380,670) ; cattle, 6,538,067 (6,621,499) ; sheep, 18,943,762 (21,267,601) ; and swine, 415,411 (438,088).

Through the animal health stations and the veterinary and field staffs, work on animal disease and pest problems has been continued extensively and effectively. Measures for disease and pest control are discussed in detail in the report of the Acting Director of the Division of Animal Industry.

Dairying.

The butter output for the year was 101,242,498 lb. compared with 95,005,539 lb. in the previous year; its estimated value was £7,493,436, as against £6,498,289 in 1944-45. Grading results were :—Choice, 549,357 boxes (36·53 per cent.); first, 835,026 boxes (55·52 per cent.) ; second, 103,325 boxes (6·87 per cent.) ; and pastry, 16,223 boxes (1.08 per cent.).

Cheese production amounted to 26,931,781 lb., valued at approximately £1,362,619, as compared with 23,001,555 lb. and £1,109,975 in 1944-45. respectively. Cheese graded officially by Commonwealth and State officers totalled 18,308,514 lb. Results were: Choice and first grade, 12,863,746 lb.; second, 5,176,916 lb.; third, 267,849 lb.

Despite wartime difficulties, cheese quality has shown a marked improvement in recent years. Grading percentages for 1945-46 were: Choice and first, 70·27 per cent.; second, 28·28 per cent.; and third, 1·45 per cent.

An adequate and safe supply of pasteurized milk is becoming available in an increasing number of towns throughout the State, but it is considered that the consumption of fresh milk is much lower than it should be and nutritional authorities stress the importance of greater volume in liquid milk distribution.

A drought relief scheme financed conjointly by the Commonwealth and State Governments was approved and is being administered by the Department in the direction of assisting farmers in drought-stricken districts by monetary grants where farm income was below the equivalent of 75 per cent. of the income for 1943-44.

The dairy research laboratories at Brisbane, Hamilton and Toowoomba were busily engaged, throughout the year, in addition to routine investigations, on quality control of dairy products, chemical and engineering investigations and surveys, the training of field officers at short-term dairy schools and general extension work.

Marketing.

Proposals for placing the wheat industry stabilization plan—a wartime expedient—on a permanent basis have been considered by the Federal and State Government's and wheatgrowers' representatives. In its last session, the Commonwealth Parliament passed the *Wheat Stabilization Act,* 1946, and the *Wheat Export Act,* 1946. It now remains for the State Parliament to agree to complementary legislation to complete the plan, which constitutionally must rest chiefly on State law. Under this Commonwealth-wide stabilization plan the structure erected during the war will be preserved, provision being made for acreage control and for guaranteed prices for an initial period of five years. Queensland has sought to retain its wheat marketing organisation intact as an integral part of the plan and in particular to maintain our system of grain classification and quality premiums, also of hail insurance.

The year's operations of the commodity boards constituted under the provisions of the *Primary Producers Organisation and Marketing Acts* and related legislation are reviewed fully in the report of the Director of the Division of Marketing.

Publications.

An extensive departmental information service was maintained throughout the year. The value of the *Queensland Agricultural Journal* is widely recognized and its circulation has increased; while the *Queensland Journal of Agricultural Science* has now an established place in agricultural science literature.

Divisional Reports.

The work of the Department during the past year is reviewed in detail in the annexed reports of the Director of the Division of Plant Industry, the Acting Director of the Division of Animal Industry, the Director of the Division of Dairying, the Director of the Division of Marketing, and the Editor of Publications.

I am, Sir,

Yours faithfully,

Richd P. N. Shorb

Under Secretary, Department of Agriculture and Stock.

REPORT OF THE DIRECTOR, DIVISION OF PLANT INDUSTRY.

The activities of the Division of Plant Industry during 1945-46, with the exception of the work of the Bureau of Sugar Experiment Stations, are reviewed in this report. The activities of the Bureau of Sugar Experiment Stations are reviewed elsewhere by the Director of the Bureau, as required by *The Sugar Experiment Stations Acts*, 1900-41.

Staff.

The demobilisation of officers who were serving in the Armed Forces has now been practically completed, and, in this respect, the Division is more or less back to its pre-war strength. Several losses, however, have been experienced during the past twelve months, including the loss by death of Mr. W. G. McKechnie, Chemist, and Mr. W. J. Ross, Senior Adviser in Horticulture at Rockhampton, both of whom had a long period of service with the Department.

The Government Botanist returned to departmental duty in December, after an absence of almost six months, during which he was engaged on a forestry resources survey in the British Solomon Islands on behalf of the High Commissioner of the Western Pacific. During May, however, another senior officer—Mr. C. J. McKeon—went abroad, his assignment being an inquiry into soy bean growing in the United States of America. The Assistant Botanist is also absent from the State at present, having been seconded for a period of several months to participate in an agricultural and pastoral survey of certain sections of the Northern Territory, which is being carried out by the Council for Scientific and Industrial Research on behalf of the North Australia Development Commission.

There was a change in the Government representation on the Banana Industry Protection Board during 1945-46, the Director, Division of Plant Industry—who had been a member of the Board since its inception—being replaced thereon by Mr. J. H. Simmonds. The other Government representative is Dr. W. A. T. Summerville, who also acts as chairman.

Regional Experiment Stations.

Three centres in the State have been selected as regional experiment stations, these being at Biloela, Hermitage, and Kairi, thus making provision for work in Central, South-eastern, and North Queensland.

Biloela was established in 1924 as the Cotton Research Station, designed primarily to provide facilities for the investigation of problems facing cotton growers in the Callide and Dawson Valleys and elsewhere in Queensland. The scope of the experiments laid down at this centre, however, has been steadily expanded in recent years to include work on crops other than cotton, and it is now quite appropriately called the Biloela Regional Experiment Station. This property comprises 417 acres, most of which has already been included in the experimental area. During 1945-46, a large-scale programme of cotton experimental work was handled on this station, and a very considerable amount of time was devoted to grain sorghums by the plant-breeding staff, which also interested itself in cereals, working, in the latter case, in association with plant breeders in the south-eastern portion of the State. Another important set of problems handled at this centre during the year under review included soil moisture and nitrification studies of importance not only in cotton-growing but in cropping programmes in general.

Work on preparing the Hermitage property—which is situated a few miles outside Warwick—to serve as a regional experiment station has been under way during the past twelve months. Land was prepared for a winter programme, including the testing of a large range of varieties and strains of wheat and oats, a wheat varietal trial, and wheat seed multiplication. At the time of writing this report, however, the seasonal conditions are such that it will be impracticable to carry out this programme in 1946. Other areas are in course of preparation for experimental sowings, during the summer months, of grain sorghum, maize, soy bean, canning bean, and other summer-growing crops. Fertilizer experimental work on lucerne is included also in the programme to be implemented on this 433-acre property. Furthermore, plans are being prepared for the establishment of a comprehensive experimental programme dealing with soil conservation and gully control and reclamation at the Hermitage.

All arrangements were made for the Army to vacate the old State Farm at Kairi—which has been selected as the third Regional Experiment Station in Queensland—at the end of the year under review, and preliminary plans are under consideration for the utilisation of this 493-acre property. Certain of the buildings which were erected on it by the Army, including two large sets of poultry pens, have been acquired by the State Government.

Branch Experiment Stations.

An important development during the 1945-46 departmental year was the purchase of a 113-acre property, in the vicinity of Nambour, to serve as a horticultural experiment station. In making this purchase, the Government selected an area on which conditions are favourable for work on pineapples, bananas, and citrus, and a considerable number of other fruit crops, as well as for the investigation of various vegetable production problems. This new station is being prepared for experimental work which the Department hopes to carry out on an increasingly large scale in the immediate future. It has continued along the lines laid down in Experiment Station.

Work at the Bureau of Tropical Agriculture has been designated the Maroochy Horticultural previous years, particular attention being given at this centre to grasses and legumes of potential importance to animal industry.

The Army has now vacated the departmental property at Kamerunga, and plans have been prepared for resuming horticultural work at this centre to serve some of the requirements of the far north. It is conveniently situated close to Cairns and is under the immediate supervision of the horticulturist located at that centre.

Equipment of Regional and Other Experiment Stations.

When the reorganisation of the Department of Agriculture and Stock received approval in December, 1944, the only departmental property which was in a position to function as a regional experiment station was the one located at Biloela. The Hermitage was then quite devoid of equipment and Kairi was still occupied by the Australian Military Forces, in addition to which it also possessed no farming equipment. One of the first essential steps to enable the latter two properties to function as regional experiment stations was, therefore, the acquisition of the necessary tractors, ploughs, &c. Fortunately, the Department has been able to purchase, from the Commonwealth Disposals Commission, a good range of tractors, ploughs, pumps, irrigation equipment, and a great variety of other farming implements, as well as a number of horses. The bulk of these purchases will be used at Kairi and the Hermitage, but various items have also been acquired on behalf of Biloela, the Bureau of Tropical Agriculture, Nambour, and Kamerunga.

Seasonal Conditions.

The seasonal conditions prevailing in the 1945-46 departmental year, in general, were unsatisfactory, particularly in so far as the second half of the year is concerned. Some districts in North Queensland experienced very heavy falls of rain during the summer months, resulting in serious flooding on the Burdekin Delta and in the Bowen district. Furthermore, temperatures reached unusually low levels in the winter months of 1946, and frequent severe frosts occurred in many parts of the State. The position was aggravated by the fact that the rainfall during the autumn and early winter months of this year was at an extremely low level practically throughout the whole of Queensland. These adverse conditions are reflected in the yields of various crops and in the prospects of crops due for sowing at the time of writing this report. Comments on actual yields will be found in the reports covering the activities of the Agriculture and Horticulture Branches.

Agricultural Experimental Work.

The agricultural experimental programme was maintained more or less on the same footing as in 1944-45. It included a wide range of varietal trials, fertilizer experiments, and observation plots on various crops, including tobacco, oats, grain sorghums, potatoes, cowpeas, soy beans, peanuts, linseed, and sunflowers. These projects were handled by the staff of the Agriculture Branch both at field centres and in Brisbane, and are discussed in some detail in Mr. Atherton's report. As usual, the work at the Biloela Regional Experiment Station included a comprehensive series of experiments on cotton, which are referred to in the report submitted by the Specialist Adviser, Experiment Stations and Cotton Specialist.

Agricultural Plant Breeding Work.

The agricultural plant breeders again concentrated on work in wheat, oats, cotton and grain sorghums, the cereal part of the programme being carried out at Kincora, Roma, and Biloela, the grain sorghum work at Biloela and Kingaroy, and the cotton work in the cotton-growing districts as well as on the Regional Experiment Station at Biloela. Plant breeding assignments are long-range projects, generally requiring years of painstaking work before yielding results which are reflected in the farmer's bank pass book. When they are obtained, however, they produce an improvement in the level of yield or quality, or preferably in both, in which all growers can participate without individual effort other than that required in the purchase of the seed of the improved variety or strain. Thus a successful plant breeder can play a most important part in adding to the prosperity of a rural community and, in this respect, Queensland can furnish a striking example in the case of the departmental wheat breeding programme. In 1945, Queensland-bred varieties accounted for 80 per cent. of the acreage sown to wheat for grain in this State. The story of progress in plant breeding, however, is not confined to wheat—the crop on which early efforts were concentrated—for substantial advances have been made over the years in the case of cotton, a crop the produce of which can find a large local market. The grain sorghum crop is one which has received attention more recently, but its future place in the agriculture of Queensland is so promising as to warrant the increased amount of time that is now being devoted to it.

Transport and Storage Problems in Fruits and Vegetables.

Fruit and vegetable growers in Queensland each year suffer serious losses of their produce, both in transit and in storage, and in the recent departmental reorganisation provision therefore was made for devoting an increased amount of attention to the investigation of the manner in which such losses might be reduced appreciably. The Department accordingly participated in the handling of experimental consignments of fruits and vegetables from South-eastern Queensland to North Queensland in which ice was used in the standard type of refrigerated wagon for the maintenance of low temperatures in transit. The incidence of wastage in pineapples forwarded to southern markets, which is sometimes at a regrettably high level, was also the subject of investigation. Another pineapple problem to which attention was devoted during the year under review was the cold storage of the fruit prior to canning.

Horticultural Experimental Work.

Field experimental work on vegetables included varietal trials with beans and cabbages both at Stanthorpe and in the Redlands district, and with tomatoes at Stanthorpe. Pineapples, citrus, papaws, deciduous fruits, and grapes were all represented in the year's experimental programme, an account of which will be found in the report of the Director of Horticulture.

Horticultural Plant Breeding Work.

During the year under review work was continued on the tomato breeding project in the Redlands district and on papaws at Nambour. Circumstances permitted an intensification of the pineapple plant selection work, and a considerable amount of time was devoted to ascertaining tree performances in citrus with a view to the selection of desirable types for propagation purposes.

Pasture Experimental Work.

Pasture experimental work has again been conducted on a reduced scale during the last twelve months, but the importance of such work has not been overlooked. Accordingly, in planning the activities of the Hermitage Regional Experiment Station and in extending the range of projects at Biloela, arrangements have been made for undertaking a considerable amount of work on pasture problems. Furthermore, when the time comes for preparing a detailed programme for the utilization of the facilities at Kairi—which was about to be vacated by the Army at the end of June—pasture investigational work will be featured extensively in the projects submitted for consideration. Provision would thus be made for such work on departmentally controlled properties at suitable centres in agricultural and dairying districts in North, Central, and South Queensland, in addition to the pasture experimental programme which has been the main project at the Bureau of Tropical Agriculture for several years. At the latter centre on the Johnstone River the pasture investigational work, of course, is designed to meet the requirements of the heavy rainfall belt of coastal North Queensland on which, so far, sugar-cane growing has completely outstripped all other branches of primary production.

Experiments in which grasses and legumes are involved and with which grazing trials must be associated, normally necessitate work being carried on over a considerable number of years before sound conclusions can be arrived at. It was for this reason that most of the pasture experimental work was suspended during the war years in favour of concentration on short-term problems of immediate urgency. With the return to more or less normal conditions of staffing and transport, however, it is hoped that the next few years will witness a steady build up in the amount of attention given to pasture problems and that the Department's regional experiment stations will play an important part in that development.

Weed Pest Problems.

Early in the war years, a committee—known as the Queensland State Weeds Co-ordination Committee—was established as an advisory body whose function was to review the status of weed problems in Queensland and to suggest the manner in which, in its opinion, responsibility for the investigational work required could best be allocated between the Federal and State authorities interested in such problems. The Council for Scientific and Industrial Research, the Department of Public Lands, and the Department of Agriculture and Stock were represented on this committee, of which the Director of this Division was chairman. The intervention of Japan in the war in 1941, however, precluded any increase in the amount of time devoted to the investigation of weed control, and indeed work thereon had to be drastically curtailed. The committee now hopes, however, that it will be practicable to give more attention to such problems than has been the case during recent years, and it accordingly met in Brisbane in May to review the position in the light of present conditions.

Here reference might be made to the fact that, contrary to a belief which is rather widespread, this Department does not administer any Acts dealing with the control of noxious weeds. The Department of Public Lands handles several noxious weeds which have been gazetted under *The Land Acts*. These are:—All species of prickly pear, Noogoora burr, galvanised burr, Bathurst burr, desert poison bush, Zamia, and African box thorn. All other noxious weeds are dealt with through *The Local Government Acts* which are handled by the Local Government Branch of the Department of Public Works. The Department of Agriculture and Stock, however, is interested in the investigation of control measures, particularly in the case of weeds infesting cultivation and dairying paddocks.

Entomological Investigations.

Once again the entomological investigational programme was concerned largely with the possibilities of D.D.T. and other new insecticides for the control of plant pests. The much publicised D.D.T. showed distinct promise when employed against the larger horned citrus bug, bronze orange bug, banana thrips, tomato and cotton jassids, corn ear worm on cotton, tobacco leaf-miner, cabbage moth, and bean fly. Actually, the progress made in testing this new insecticde in the field in the previous year was sufficiently satisfactory to warrant the publication—in the October issue of *The Queensland Agricultural Journal*—of provisional recommendations for its use against several important plant pests. A discussion of results obtained with it against the pests just specified, since the publication of these recommendations, will be found in the report of the Senior Entomologist.

Plant Pathological Investigations.

The staffing position in the Plant Pathology Section of the Science Branch showed a material improvement late in the departmental year but the improvement will not be reflected in results recorded in this annual report. In fact, the work of the Section during 1945-46 proceeded more or less along the same lines as in the previous year and somewhat on the same scale. As will be seen, however, from the report submitted by Mr. Simmonds, work was stepped up on papaw, passion fruit, and banana diseases towards the end of the departmental year.

Botanical Investigations.

The Government Botanist's report on the work of the Botany Section of the Science Branch shows that it participated in weed pest and poison plant investigations, in addition to carrying on the great volume of identification and advisory work which it handles, from year to year, on behalf of other sections and branches of this and other Departments and on behalf of the general public.

Soils and Waters Investigations.

Officers of the Plant Nutrition Section of the Chemical Laboratory have devoted a very considerable amount of time to soil survey work in connection with War Service Land Settlement schemes, this work being carried out in co-operation with the staff of the Agriculture and Horticulture Branches. Individual farmers and graziers have also been furnished with the results of a large number of analyses of soils and waters. Work with the latter class of samples has increased very markedly as a result of the extremely dry conditions which have prevailed during recent months.

Soil Erosion.

The importance of studying means whereby soil erosion may be checked has been recognised in the planning of the work to be undertaken at the Hermitage Regional Experiment Station. Undoubtedly, there is a steadily growing appreciation of the magnitude of the menace constituted by this insidious source of loss of rural capital, which can become particularly serious when the soil is exposed to the climatic conditions prevailing in Queensland. The field staffs of the Agriculture and Horticulture Branches acordingly have been called on, in a steadily increasing measure, for advice regarding soil conservation. Mention should also be made of the fact that an Australian committee—designated the Standing Committee on Soil Conservation—has recently been constituted as an advisory body dealing with this subject, and that the Department is represented thereon.

Advisory Work.

Once again reference must be made to the great volume of advisory work which is handled by all branches of the Division of Plant Industry. This important service is maintained partly by personal contact—represented by visits to farms, orchards, and grazing properties and by office interviews—and partly by correspondence. Advice to primary producers is also furnished through the medium of radio talks. Furthermore, the monthly journal published by the Department plays a valuable part in acquainting producers with departmental views on the multiplicity of problems with which they are faced.

Publications.

Many articles of an advisory nature, dealing with a wide range of plant industry problems, were prepared by officers of the Division and were published in *The Queensland Agricultural Journal*. In addition to these contributions, a number of articles of a much more technical nature, discussing the results of departmental investigational work, appeared in *The Queensland Journal of Agricultural Science*.

ROBERT VEITCH,
Director, Division of Plant Industry.

(1) REPORT OF THE ASSISTANT DIRECTOR OF AGRICULTURE.

The May to July period of 1945 provided some of the best winter rains experienced for many years past. These rains were of immense value to all winter sown crops and pastures, and to a heavy sowing of wheat for grain. Mild dry conditions prevailed generally during August, followed by valuable relief rains in September, sufficient to assure continued favourable development in the wheat crops. The excellent seasonal conditions continued through until the end of the year, some districts receiving heavy falls of rain during the thunderstorm period in November. Wheat harvesting commenced during late October, and, together with the harvesting of oats and barley, was concluded successfully in December, the crops suffering very little weather damage.

All summer crops, including maize, sorghums, peanuts, canning beans, and fodder crops, were established under ideal conditions in the southern districts. In the central and far northern districts a somewhat dry spring with late thunderstorms delayed summer plantings until December and January. Widespread rains occurred throughout the State during January and February, with some particularly heavy falls in North Queensland districts. Heavy rains in North Queensland early in March extended to Bowen and caused serious flooding, particularly in the Burdekin Delta. Later in the month heavy rains were accompanied by flooding in many coastal districts from Bundaberg to the New South Wales border, but the Central district, based on Rockhampton, received no useful rain after February The heavy seasonal rains in northern districts terminated abruptly during early April and only very light scattered falls were recorded subsequently. Some crop damage was caused by cyclonic winds and excessive rains, but generally summer crops returned satisfactory yields, more especially where such crops were established early in the season.

Crop Production.

Wheat.—The 1945-46 wheat crop was exceptionally good; nearly 400,000 acres were sown for grain and over 8,000,000 bushels were harvested, the average yield being over 20 bushels per acre. Varieties bred by the departmental wheat breeder continued to play an important part in the industry and accounted for 80 per cent. of the acreage sown for grain. The 1945-46 Central Queensland wheat crop was very small despite the fact that the acreage sown was almost doubled. Unfortunately, the continued dry weather experienced since April, 1946, has precluded the sowing of practically all of the 1946-47 crop, and at time of writing it is feared that this crop will be almost a complete failure throughout the State.

Maize.—Adverse seasonal conditions in the Kingaroy district resulted in only half the yearly average crop being harvested. In the Central district only occasional early plantings gave feed crops, whilst the late plantings proved a complete failure.

On the Atherton Tableland the crop appears to be one of the smallest on record and is not expected to exceed 13,000 tons. Late planting, followed by the onset of a very heavy "wet" season before the crop was established, caused

heavy leaching of soil nitrates with the result that many crops remained yellow and stunted. In order to utilise available grain supplies for stock food in North Queensland as equitably as possible, a system of rationing was introduced, which, together with the subsidy scheme for essential users of maize grain, was supervised by departmental officers.

Grain Sorghums.—Throughout the Darling Downs a large area was again sown to grain sorghums. The early planted crop suffered the effects of dry conditions during October and November, 1945, but those crops which did come through this period gave satisfactory returns. The later sown crops, comprising a much larger area, gave some very good yields, up to 38 bags per acre being obtained in the Pittsworth district.

With the higher ceiling price of 4s. 6d. per bushel, farmers generally are well satisfied. It is expected that, owing to the disastrous effect of the drought on the wheat crop, a very large area will be sown to grain sorghum during the 1946-47 season. A large proportion of the grain sorghum grown on the Darling Downs comes from indifferent seed, or seed which is not true to type, and this circumstance causes considerable losses of grain each year. The difficulty has been accentuated by a shortage of reliable seed in the past, but, as indicated elsewhere in this report, the Agriculture Branch has taken steps to stimulate pure seed production, so the position should improve.

In the Central district some thousands of acres were planted, but generally yields were the lightest for many years.

Potatoes.—The contract system again operated in potato growing; growers in South Queensland were required by the Australian Potato Controller to reduce their plantings by 25 per cent., and growers in North Queensland by 50 per cent. for the autumn plantings. This was considered necessary, as there was no longer a demand to meet military requirements. During the current season, as was the case last year, planting was delayed by late arrival of seed. The bulk of the seed requirements did not arrive until the last few days of May and planting was consequently extended well in to June.

Cotton.—The occurrence of good rains in October in most of the cotton-growing districts south of Mackay provided favourable conditions for early planting of the bulk of the intended cotton areas. Contrary to past experiences, the occurrence of early rains did not stimulate further orders for cotton seed. The combination of a scarcity of labour and the non-competitive price of cotton compared with values ruling for food crops which could be produced in the cotton-growing districts influenced farmers to restrict cotton-growing. Consequently the total acreage planted showed but slight improvement over the previous season. The climatic conditions were irregular during the first half of the growing season, but by February good soaking rains were required in all districts. However, none fell after January, and therefore growth ceased and widespread shedding of top crops occurred.

The weather conditions during the harvesting period were favourable for clean picking and most farmers obtained satisfactory grades.

Where cotton was planted early on seed-beds which had been prepared out of grassland ploughed in late summer, better yields were obtained than on either early-ploughed old cultivations or late-ploughed grassland. It is becoming increasingly clear that planting cotton early on late-summer-ploughed grassland markedly improves the prospects of producing satisfactory yields of this crop. The yields obtained with supplementary irrigation applied correctly also gave clear-cut evidence of the value of this form of cotton-growing—especially if cheap sources of power are available.

The results obtained from the several varieties were comparable with those obtained last season, though Rowden 40-6-F.3—designated as lot 70 in Queensland—showed somewhat greater promise in several districts.

Peanuts.—In the Kingaroy district over 25,000 acres—a record area—were planted to peanuts. Yields were severely reduced by dry weather experienced in the late summer months, and though the total yield for the district will be a record the yield per acre will be well below average. The Peanut Board aims at an acreage approximating 50,000 next season, and in order to cope with the increased acreage it is proposed to duplicate the existing storage facilities.

Whilst this increased acreage may supply the target in accordance with Australian market requirements, such an expansion could intensify an unsatisfactory development which has already taken place. This is a tendency to plant too great a percentage of the total area of the farms to peanuts with resultant loss in fertility and the aggravation of soil erosion problems.

An increased acreage was planted on the Atherton Tableland, but adverse weather conditions greatly reduced the yield. In the Central district an excellent crop resulted, some growers averaging 50 bags per acre.

Canning Beans.—Very satisfactory returns were obtained from canning beans in both the Kingaroy and Warwick districts. Bean cutters and harvesting machinery have been hired to growers in the Yangan-Tannymorel area.

Production in Queensland only reaches 50 per cent. of the Australian requirements, and from this it would appear that there is ample scope for expansion of the industry.

Tobacco.—In the Mareeba-Dimbulah district tobacco plantings were generally late, except where irrigation was available. Rainfall was limited to the first two months after planting out in the field, but despite this fact both quality and yield showed an improvement over those of the previous season's leaf. A total of 1,158 acres was sown to the crop in this district—472 under irrigation and 686 for dry farming. Tobacco leaf appraisals were held in Mareeba for the first time this year. This action was taken by the Commonwealth Government and the Australian Tobacco Board at the request of the Central Executive of the Tobacco Growers' Association.

An increased area was planted in the Inglewood district, bringing the total area under tobacco in south-western Queensland to 767 acres. This increase in acreage in the Inglewood district, should it continue, will place a

heavy drain on the available water supply in Macintyre Brook. Useful rains relieved the position this year and there was no necessity to impose restrictions on pumping.

A severe outbreak of blue mould occurred in seed-beds just prior to the planting out stage. When the necessary precautionary measures of using benzol treatment as a control against this disease were not carried out, heavy losses of seedlings occurred, and many growers had to recommence seed-bed work. A further outbreak of blue mould occurred in the field during mid-December. On heavily infected crops, cutting back of the whole crop was necessary, whilst in others heavy priming, up to more than half the plant, had to be done. Both methods proved effective and advantageous, as crops were fair to good, although light in body and texture.

In the Miriam Vale district there was a revival of interest in tobacco production, and a splendid crop showing excellent colour and leaf of good body and texture was produced.

Broom Millet.—Returns from the broom millet crop to individual farmers in the Rockhampton district were very satisfactory, but the lack of experienced labour in the handling of the crop apears to be a factor limiting the expansion of this industry.

Wheat and Oat Breeding.

Wheat.—Breeding plots were established at Kincora and Roma, where 189 varieties and strains were sown in observation plots. A further plot comprising duplicate blocks of the same 189 varieties and strains was established at the Regional Experiment Station, Biloela. This plot was brought through to maturity and brief observations were made on earliness, lodging and general development, in addition to stem rust and leaf rust reactions.

A good comparison of resistance and susceptibility to Queensland strains of stem rust is afforded by the two check varieties, Charter and Eureka. All Charter rows, both at Biloela and Kincora, were completely free from stem rust, while neighbouring rows of susceptible varieties were often heavily infected; Eureka stems, on the other hand, were uniformly rusted. Charter was not immune to leaf rust, but it proved superior to Eureka in this respect also. Both of these New South Wales varieties are recorded as resistant to certain strains of rust in that State; it is interesting to find that one is highly resisfant under Queensland conditions while the other has proved very susceptible. A comparison of Florence (bulk planting), Charter and Eureka from the Biloela plot, is furnished below:—

Variety.	Stem Rust.*	Leaf Rust.*
Florence	3·5	4·0
Charter	..	0·9
Eureka	3·3	3·9

* Maximum possible surface cover 6.

Examination of the main rust tables shows that few of the named Queensland varieties show a high degree of resistance to either stem or leaf rust, though some, e.g. Three Seas and Seafoam, are definitely superior in stem rust reaction to most of the older varieties. Some of the newer introductions from southern States, such as Charter, Fedweb, and Hofed, appear to be nearly immune to stem rust, but may show a medium reaction to leaf rust. Some varieties in the latter category may be quite unsuited to Queensland conditions, but Charter at least appears to be a good agronomic variety, and may find a useful place in Queensland wheat culture.

Most of the hybrid families included in this year's test show a majority of strains with a high degree of resistance to stem rust, and moderate (or better) resistance to leaf rust. Virtually all of these families owe their rust resistance to such well-tested parents as the Kenya strains and Hope, in addition to some newer introductions which have more recently been incorporated in the breeding programme.

As many of the newer rust-resistant strains have shown their ability to yield satisfactorily (even under the droughtier conditions at Biloela), it may be stated that this selection of progenies from departmental wheat-breeding nurseries shows a marked improvement over a similar series tested at Biloela in 1942, and indicates that excellent progress has been made in the development of rust-resistant strains. It has also been recorded that many of the rust-resistant progenies possess good agronomic characters and yield potentialities; little is known of the grain quality at this stage. It is essential, therefore, that the most promising strains should be subjected to careful field testing for yield and grain quality, in order that the best may be finally selected and liberated as new varieties.

Oats.—For many years past the work of the Department in connection with this crop has been confined chiefly to the testing of named varieties, and much valuable information has been obtained. Though many new and promising varieties have been produced in Australia and distributed amongst farmers, it is considered that if a census of the varieties was taken it would show that in Queensland, as in the southern States, the Algerian variety still retains pride of place as the most popular oat in cultivation. Suitable as this variety is under normal conditions, there are seasons when its value for grazing is greatly reduced through rust incidence.

With a view to evolving a variety having the desirable qualities of Algerian oats and including also a worthwhile resistance to rust, breeding operations were commenced in 1939. Of the many crosses made in that season only one, Bond x Victoria, has been retained. In 1940 the composite cross Bond x Victoria x Hajira was made. During the past season a number of selections from this composite cross was sown at Kincora and provided some very interesting and possibly valuable material. From this material 100 selections were made and have been sown during the season at Moggill.

Named varieties which have been shown for a number of years past to be of the greatest promise in regard to freedom from rust are Victoria x Richland, Klein, and Fulghum x Victoria, their degree of resistance being in the order mentioned.

Sorghum Breeding.

Experimental plots planned for the 1945-46 season included a main breeding plot, varietal trials, a vicinism trial, pure seed increase plots, and large scale farmers' increase plots on two outside farms.

Sorghum midge was again present in pest proportions at different periods during the season, but in no place did it cause the same loss as in the progeny plots of last season. A dust containing 1 per cent. D.D.T., applied at weekly intervals, provided satisfactory partial control in experimental plots.

A subsidiary varietal trial was planted, the main object of this test being to compare the protein analysis of five varieties with that of the same varieties in the main varietal trial and in the progeny plot. The five varieties planted were Kalo, Wheatland, Hegari, Schrock and Ajax. Good growth was maintained up to the first week in February, but at this time unevenness began to show up throughout the plot, some sections beginning to wilt badly under somewhat droughty conditions. The two Wheatland plots held out well till maturity, and were the most impressive under the conditions. One of the Kalo plots was badly located with respect to moisture and wilted early, while the other under better conditions returned a much better yield. The response of Ajax was surprising, as this normally late-maturing variety came into head at the same time as Kalo and only a few days after Wheatland, withstood the dry conditions quite well, and produced a useful yield. Hegari was affected in the opposite manner, its maturity being so delayed that heading was almost completely inhibited by the water shortage. Schrock, which is normally a late-maturing variety, was similarly handicapped. The analyses for protein indicated that the highest percentage occurred in Schrock (16·7 per cent.), the next in Hegari, and then Kalo, Ajax, and Wheatland in that order.

An additional trial located at the Biloela Regional Experiment Station was a strain trial designed to determine differences where possible between six strains of Wheatland and six of Kalo. The twelve strains were randomised in each of six blocks and results established the fact that one Kalo strain (12-1) was definitely taller than the other five, while another (10-1) showed a fairly consistent tendency to be later maturing than the remainder. No consistent differences separated the standard Kalo (mass selected pure seed increase) and the remaining strains 6-1, 7-1, and 7-2. Of the Wheatland-type strains, one (10-3) differed from the standard in possessing awned panicles and more highly coloured grain. A second (14-1-1-1) was quite distinct from the others in having a longer top internode and peduncle; this difference was quite distinctive, but in most blocks this strain did not impress as the equal of the others in yielding ability. Of the remaining four strains, 11-7 and 11-8 appeared to have a slight advantage over the other two. Later generations of these two strains from the progeny plot have since been bulked individually as premier Wheatland strains W.1 and W.2 respectively.

Twelve new introductions from Kansas, United States of America, were received; eight were grain sorghums, and four saccharine sorghums. Six represented varieties which had previously been tested at the Biloela Station, and of which selected material is still retained within the departmental breeding stocks. The other six—viz., Finney Milo, Westland, Midland, Cody, Norkan, and Leoti x Atlas—provided entirely new material, all being grain sorghums except the Leoti x Atlas.

In the case of some of the more promising varieties, individual selections were retained for inclusion in next season's progeny plot, and in addition small bulks from each of the twelve varieties were stored against possible future use.

Pedigree material carried during the past few seasons has been sorted out into (1) those types which are now in commercial use, or show the most immediate promise of reaching this stage, and (2) those which, though showing no present likelihood of becoming farm varieties in Queensland, are still worth retaining as portion of a comprehensive varietal collection. The former have been retained in the annual pedigree selection programme, while the latter have been stored as small bulks with the object of replanting them once in every four or five years to maintain seed supplies.

The progeny plot this year comprised material from but a limited number of original varieties. It included 126 progeny rows originating from the following varieties:—Kalo, Dwarf Kalo, Double Dwarf Kalo, Early Kalo, Wheatland, Open Wheatland, Kafir x Milo, Betty, Hegari, Ajax, Feterita, Blackhulls, Weskan, Schrock, White African, Sugardrip, and Saccaline.

No new crosses were made for breeding purposes during the current season, nor were any F_1s grown from 1945 crosses. The hybrid progeny block contained 116 rows, planted adjacent to the main progeny block. The planting comprised F_3 and F_4 rows of seven crosses and F_2 rows of four back crosses. Within the group of Shallu crosses and back crosses there was ample material with the very open panicle type of the Shallu parent, but in few cases was this character combined with low plant height. The original crosses have been successful in quite a number of instances in combining a Shallu type head with fairly uniform mid-tall structure, but to date it has not been possible to isolate good short strains with this characteristic. Further dwarf selections were made from segregating rows, and this material will go into F_4 and F_5 next season. If suitable dwarf selections are not finally recoverable, consideration will be given to crossing the best mid-tall selections back to a dwarf parent again. Some attractive rows, well within the height range for mechanical harvesting, were found in each of the other crosses, but notably within Wheatland x Betty, Kalo x Day Milo, and Day Milo x Schrock. A few of the progenies from the last cross were surprisingly uniform for F_3 material, and combined the shortness and earliness of Day Milo with the leafiness and prolificacy of Schrock. Heads were mainly of the Schrock type , but were frequently more open than either parent.

Further studies of anthesis, pollination, and vicinism in sorghums were made during the season.

Cotton Breeding.

Although seasonal conditions curtailed some aspects of the extensive programme of cotton improvement that was carried out at several centres, satisfactory results, as a whole, were obtained. Details of the cotton breeding work are presented elsewhere by the Specialist Adviser, Experiment Stations, and Cotton Specialist, under whose direction the work was conducted.

Seed Selection.

Wheat.—As in previous years, and in conjunction with experimental work, assistance was given to the State Wheat Board in the inspection of crops in the field for seed purposes. The scheme has much to commend it, as it ensures supplies of good seed wheat being available to growers. Growers themselves are co-operating, in that they are roguing their crops before inspection is made.

Propagation plots of the following new crossbred wheats were continued in the principal wheat-growing districts: Florence x College 3813 and Three Seas x Florence x Kenya 6041. Actual yield figures obtained from the various plots of these two new crossbred wheats were as follows:—

Florence x College (3813) at Bongeen—35 bushels per acre (total 62 bushels); at Dalby—29 bushels per acre (total 87 bushels); at Yarrala—37 bushels per acre (total 102 bushels).

Three Seas x Florence x Kenya (6041) at Dalby—30 bushels per acre (total 192 bushels); at Yarrala—31 bushels per acre (total 54 bushels).

The whole of the resultant seed from these plots was acquired by the State Wheat Board, and in co-operation with the manager (Mr. C. C. McKeon) further arrangements are being made for the raising of these varieties this season if conditions permit.

Arrangements were made to plant, under field conditions the following new crossbred wheats: Kenya Governor x Pusa x Flora; Kenya 6041 x Pusa x Flora 3202; Seafoam x Hope x Pusa x Flora x Hope x Seafoam. In addition thirteen new crossbred wheat selections showing promise as grazing or hay wheats were sent for further observation on their behaviour and also for seed increase to the Biloela Regional Experiment Station.

Oats.—Seed propagation plots were designed to determine the most suitable variety for general cultivation and increase seed supplies. Three varieties were used; viz. Fulghum x Victoria, Victoria x Richland and Klein.

Maize.—Pure seed selection and improvement work was again supervised this year in the Mary Valley district. Both field and barn selections were made of five standard varieties.

Grain Sorghums.—Pure seed selections and testing work was continued in the Kingaroy and Darling Downs districts.

A pure increase plot of Kalo was planted at Biloela, and though development was very patchy, 11 bags of seed have been cleaned and winnowed ready for use. An increase plot of a mass selection from Open Wheatland progenies planted at Biloela to provide seed for coastal farmers failed because of drought.

Small plots of Hegari and Early Kalo were planted for the production of smaller quantities of pure seed under bag, a selected strain of each variety being used. At harvest 29 lb. of Hegari seed and 3½ lb. of Early Kalo seed were obtained. In addition to these pure seed lots, open-pollinated heads were harvested from the middle row of each plot to provide near-pure seed for varietal trials and other tests. From these heads were threshed 20 lb. of Hegari and 26 lb. of Early Kalo.

Two other seed increase plots were entrusted to farmers. Minor contamination occurred on both farms, and some rather arduous roguing was called for during the pre-heading and early heading stages. Both crops, however, were successful (averaging approximately 30 bushels per acre in spite of the dry season) and were harvested with considerable care. Although neither of these increases can be classed as genetically-pure seed, they should be a considerable improvement over the commercial grades commonly sold as seed.

Soy Beans.—Propagation plots consisting of 128 and 114 varieties and strains were tested at Kingaroy and Moggill, respectively. A considerable number of new varieties was included in these trials, and many gave promising results. Selections within varieties and strains have been made, and these, together with other new material, will be tested under field conditions. Smaller propagation plots were established in the Darling Downs, Rockhampton and Atherton Tableland districts.

Tobacco.—Pure seed increase plots were established in the Rockhampton district and the required seed supplies obtained. The problems associated with tobacco seed production have been investigated and two improvements have been adopted.

Linseed.—The following ten varieties were planted under field conditions to determine the most suitable varieties, and also for seed increase purposes:—Abyssinian, Ameliore, Bolley Golden, Ghahrah, Malabrigo, Morocco, Punjab, Rio, Walsh and 53-1. Those varieties which showed a definite susceptibility to rust have been eliminated, and further testing under field conditions of the remaining varieties will be continued.

Field Experiments.

Oats.—An experiment was arranged to illustrate the comparative suitability of five different varieties for grazing. The trial comprised two replications of each variety, each plot being 3 acres in extent, designed in narrow blocks to facilitate grazing management. The varieties used were:—Victoria x Richland, Victoria x Fulghum, Klein, Belar and Algerian, and the plots were sown in April, 1946. Excellent germination resulted, but after sowing no further rains were recorded, and, as the drought continued, this Darling Downs experiment was finally abandoned.

Potatoes.—Two fertilizer trials were established in the Lower Burdekin district. Both experiments were similar in details, but were located on different farms to indicate suitable levels of nitrogen, phosphorus and potash for each soil type.

A variety and spacing trial including Bismarck, Carman, Brownell, Manhattan, Factor and Katahdin, spaced at 9, 11, and 13 inches, was established to compare the varieties and to determine a suitable spacing rate under Burdekin conditions.

Eight strains of the variety Up-to-date, originally virus-free, were planted to obtain seed supplies, and to compare the strains under experimental conditions on the Burdekin. Unfortunately, leaf roll incidence became very high and the strain was discarded as virus-free seed.

Small sample lots of several new varieties—approximating 5 lb. of each—were received from the Council for Scientific and Industrial Research for trial plantings at Ayr. Although germination of these varieties was somewhat irregular, the yields of each will be recorded and all seed will be forwarded to the Atherton Tableland for further propagation during the spring.

Soy Beans.—Small observation trials embracing a number of the most promising varieties were established in the Atherton, Mareeba, Mackay, Rockhampton, Bundaberg, Darling Downs, Kingaroy and Brisbane districts. Much useful information as to the behaviour of the varieties under a wide range of soil and climatic conditions has been obtained, and further and more extensive trials are contemplated during the coming season.

Tobacco.—The nematode control and soil improvement trial located in the Mareeba district has been continued and will conclude two complete three-year rotations during the 1946-47 season. The object of the experiment is to endeavour to control the nematode population and at the same time improve light sandy tobacco soils by the growing of nematode resistant legumes in the crop rotation. Soil renovation trials have been established in the Miriam Vale district, where it is hoped to maintain soil fertility in the tobacco soils by the use of a grass cover and perennial legumes in a crop rotation.

Peas.—Peas sown at Moggill included two culinary types, one field type, and eleven selections from the F_3 segregation of the varieties Daisy and Mackay. Three of the latter—dwarf types—show considerable promise.

Cowpeas.—The further testing of cowpeas for immunity to nematode attack was continued at the Roma State Farm Reservation. Some selections, besides showing a definite resistance to nematodes, appear also to have considerable immunity from bean fly infestation. A further plot to test nematode resistance was established in the Mareeba district and here also some useful material has been secured. A seed increase plot of two promising hay varieties obtained through the Council for Scientific and Industrial Research was established in the Rockhampton district.

Sunflowers.—Two introduced varieties of giant sunflowers, viz., Mannonite and Sunrise, received through the Commonwealth Seed Committee, were grown under observation in the Darling Downs and Warwick districts. Despite somewhat adverse conditions during the growing period, the behaviour of both varieties was such as to warrant further trial.

Peanuts.—Peanut experimental work in the Kingaroy district included plant to row trials and increase of plant selections of both the Red Spanish and Virginia Bunch varieties. Seed treatment plots and leaf spot control experiments were conducted in co-operation with the Science Branch. There was a small scale trial to determine the possibility of harvesting peanuts direct from the field and storing in cribs for curing before threshing. Forced air circulation appears necessary, and should this prove a practical possibility complete mechanisation of harvesting may be possible.

Sudan Grass.—Pure seed plots were established by growers in the Darling Downs, Kingaroy and Chinchilla districts. The areas are under departmental supervision, and the farmers are being encouraged to extend them.

Sweet Potatoes.—Propagation plots have been established in the Rockhampton, Mackay and Atherton districts. It is hoped to preserve the better table varieties for cultivation, and the following are included:—Louisiana No. 7, Porto Morado, Nancy Gold, Porto Rico Bunch, Porto Rico 1, Nancy Hall, Alton Downs, Abundance, Yellow Jersey, Rosella, No. 3 Seedling, White Maltese, Sandhills Red, Brook's Gem, Triumph, Southern Queen, Rose Queen, Yellow Strasburg, and Porto Rico.

Grasses.—The grass plots at Toowoomba and Rockhampton have been further extended and material made available to farmers for planting. In the Mackay and Bundaberg districts a number of small plots have been established on individual farms.

General.

The silo moulds which are loaned by the Department to farmers for the construction of underground circular pit silos and overhead silos have been in almost constant use throughout the year. This indicates an increasing appreciation by farmers, particularly in the Fassifern, Bundaberg, and Mackay districts, of the value of fodder conservation as it applies to silage on the farm.

The Department is fully aware of the seriousness of soil erosion and departmental officers have assisted many farmers in their endeavours to practise effective measures of control.

Until the early part of 1946 District War Agricultural Committee activities occupied a great deal of the attention of the field staff, but experimental work is now being resumed on an ever-expanding scale. Further, with the cessation of hostilities most of the field staff has returned, and the coming year should bring a resumption of all activities which have had to be curtailed during recent years.

Bureau of Tropical Agriculture.

The activities of the Bureau of Tropical Agriculture have been confined principally to the laying down of pastures for grazing trials, the introduction of pasture and legume species and their further development for seed increase purposes.

Weather conditions throughout the summer have been very erratic. Two cyclones were experienced which did considerable damage to vegetation and caused severe flooding. Following the period of the cyclonic disturbances, conditions remained extremely dry.

Pastures.—Four legumes have proved promising for inclusion in association with the principal pasture grasses of the district. Palatability trials consisting of (1) six legumes (*Stylosanthes gracilis, Calopogonium mucunoides, Centrosema pubescens, Pueraria phaseoloides, Desmodium heterophyllum* and *Dolichos hosei*), and (2) five grass-legume mixtures (*Panicum maximum* var. *coloratum* with *Centrosema pubescens*, molasses grass with *Calopogonium mucunoides*, Guinea grass with *Stylosanthes gracilis*, molasses grass with *Pueraria phaseoloides*, and Guinea Grass with *Pueraria phaseoloides*) have been established.

The more promising tropical pasture plants have been established in larger blocks for seed increase purposes. One area is devoted to legumes and another to grasses. The legumes are: *Centrosema pubescens, Pueraria phaseoloides, Pueraria hirsuta, Glycine javanica, Calopogonium mucunoides, Desmodium heterophyllum, Desmodium scorpiurus* and *Desmodium canum.* The grasses are: *Panicum maximum* var. *coloratum, Brachiaria subquadripara, Digitaria milanjiana* and *Urochloa pullulans.* Quite a number of grasses have been procured from the Council for Scientific and Industrial Research's field station at Fitzroyvale and established in the plant introduction garden.

The cleared area at Utchee Creek has been fenced and as a result the grasses now appear to be recovering from the effects of the selective grazing which occurred when the area was open to stock. A further ten acres on the more sloping portion of this property has been marked off for clearing. The study of the behaviour of molasses grass under various rates of stocking will be conducted here.

Potatoes.—Four strains of virus-free potatoes were planted but the crop was dug prematurely owing to infection with bacterial wilt. Sufficient good seed was obtained to continue the trial on the Atherton Tableland.

Sweet Potatoes.—Thirty varieties of sweet potatoes have been maintained throughout the year, and many cuttings have been distributed. Of all the varieties, New Jersey has given the best yield to date—24 tons per acre. It is also one of the best table varieties.

Velvet Beans.—Ten strains of velvet beans were planted during the summer. All germinated well and gave a good cover of green material. Some seed was harvested. Large-scale plots will be established through the orchard this season in order to determine the relative merits of each strain.

General.—A quarter-acre plot of tea has been maintained at the Bureau. This has been pruned regularly in order to keep the plants in check.

Two acres of Durum maize have been planted in order to keep this strain pure and to maintain seed supplies.

A small area of upland rice was planted earlier in the year, but continued dry weather has necessitated frequent waterings. The plants are making good progress.

D. O. ATHERTON,
Assistant Director of Agriculture.

---

(2) REPORT OF THE DIRECTOR OF HORTICULTURE.

During the year horticultural crops generally have suffered from extremes of climate, having passed through periods of cyclonic disturbances accompanied by torrential rain and through periods of severe drought, coupled, during recent months, with abnormally low temperatures.

In these circumstances, fluctuations of supplies to markets have been inevitable, but returns to growers have remained high virtually throughout the year. Whilst the adverse climatic conditions have increased production costs, on the whole producers throughout the State have been on a very firm basis but the value of irrigation has rarely, if ever, been more apparent. These climatic conditions have exerted a very considerable influence on the activities of the departmental staff, and particularly have made work on research projects difficult, at times precluding the possibility of worthwhile positive results.

With the cessation of hostilities, moves have been made towards expanding the production of many Queensland horticultural crops. During the war there was a natural disinclination to undertake normal expansion, and in addition to the move to make up leeway thus occurring, there has been an inevitable movement for ex-servicemen to transfer from other industries to horticulture. This entry of new men into the industry has rendered it necessary to survey the present status of all leading horticultural crops. However, it has been realised that, if expansion is to take place on a sound basis, cognisance has to be taken of the conditions in other States as well as in this. This has been realised by all States and the Commonwealth, and for the purpose of giving full consideration to the many aspects involved a series of conferences was held at which there was free exchange of information and attempts at combined planning based on all the information available. In certain cases it was found that there was insufficient accurate information to allow of immediate sound planning, and in these instances field surveys have been undertaken. In this connection a citrus survey has been completed and a survey of the State's major tropical fruit crops, other than bananas, is now in progress.

A survey of the general position of horticulture discloses that fruit and vegetable growing have made very considerable progress over the past ten years, with the notable exception of bananas. In the case of this crop, the acreage dropped very markedly over that period but during recent years it has shown an increase, most marked in the last twelve months. During the period under review banana acreage has increased by approximately 25 per cent. but is still well below its previous peak.

During the war many orchardists and the great majority of truck crop producers improved their implement position very considerably, particularly by obtaining tractors; e.g., in the Stanthorpe district over the past two years there have been approximately ninety new tractors put into orchards, and when all orders now placed are fulfilled the number will reach one hundred and fifty. This is a very good sign and providing they are correctly used should lead to larger and cheaper production. However, one note of warning should be sounded and that is that the over use of cultivation implements can be infinitely more harmful than their under employment. Many soils can have their structures very quickly shattered when worked too frequently or at the wrong degree of soil moisture content. It is one of the research and extension staffs' primary problems and duties to teach the farmer this phase of soil management. It is not too much to say that many orchardists appear to think that the plough and artificial fertilizers can be a substitute for organic matter in the soil. They could make no greater error and if the productivity of the soil is to be maintained Queensland farmers will have to concentrate more and more on the addition of organic materials, particularly by the use of cover crops, to the soil. It is pleasing

to be able to report, however, that over the past two or three years the area under cover crops has increased very considerably. Whilst it is realised that the solution lies in the addition of organic matter to the soil, much work has still to be done to determine the most efficient means of achieving the desired objective. The problem is relatively simple in districts where irrigation facilities exist, but under dry farming conditions, with frequent occurrence of spring droughts, it is not always merely a matter of planting some desirable species of plant. To be effective as a cover in Queensland plants must be able to get away early in the spring so that, in the first place, they will be a corrective in the all important matter of soil erosion when the torrential early summer storms make their presence felt. With slow germinating seeds and plants that require high soil moisture content to enable them to become established, far too frequently failure results, and the Department, therefore, is concentrating on searching for suitable cover plants which will overcome these deficiencies.

Whilst in every branch of the horticultural industry there are many highly efficient farmers, even in those which have a very high standard, such as pineapple and vegetable production, the absolute necessity of building up or maintaining soil organic matter is not always fully recognised. It cannot be over emphasised, and this together with related soil management problems is the basis of much of the investigational and extension work of the Horticulture Branch.

Transport and Storage Problems.

Some idea of the loss which is incurred by growers sending in faulty consignments can be obtained when it is known that this year a total of 52,236 lots of fruit and vegetables were in such a condition that they could not be sold after arrival at the Brisbane markets. The chief cause of trouble is the forwarding of overripe or immature lots. Bad packing, resulting in excessive bruising, is also far too commonly encountered, whilst faulty grading, amounting often to "topping," frequently results in condemnations.

With respect to certifications for dumping of produce or condemnations, departmental advisers have made personal contact with as many offending growers as possible for the purpose of tuition. In addition to this, a further effort to overcome these troubles has been made by conducting packing classes at schools in the Stanthorpe and near North Coast areas. These classes, arranged in conjunction with the Department of Public Instruction, have been very successfully handled, and it is believed that they will serve a very useful purpose in the interests of both producers and consumers.

Apart from losses such as these, which can be very easily eliminated or at least reduced to negligible proportions, there is a much bigger loss suffered by the inability to have produce transported and marketed in the most efficient way. This loss is due to two causes, the first being absence of facilities and the second lack of knowledge; the former is for the most part largely attributable to the latter. To overcome the disabilities which thus react on both producers and consumers much research work must be done and the urgency of the work is recognised. Under the immediate direction of Dr. S. A. Trout, Assistant Director of Horticulture, a start has been made to cope with these problems, work which represents a new avenue for this Department. The following are the principal transport and storage problems upon which work has been carried out during the twelve months now ended:—

Storage of Pineapples Prior to Canning.—This work was undertaken in conjunction with the Committee of Direction of Fruit Marketing. The problem of pineapple storage before canning arises because at the peak of the season it is difficult for canneries to cope with available supplies. As only one storage room was available a temperature of 45 deg. F. was used and pineapples without tops were stored after grading into three maturity classes. Samples of each maturity class were removed for canning after various periods of storage and the effect on yield and quality was determined. There was no evidence of low temperature breakdown, but after three weeks' storage there was an improvement in palatability of the least mature lot and a deterioration in the most mature samples. A storage period of two weeks appeared to have no effect on the yield or quality of the canned product, but a longer storage period resulted in lower yields.

Wastage in Pineapples.—A survey of the nature and extent of wastage in Queensland pineapples forwarded to Sydney was made in the summer months. Considerable wastage from water blister and yeasty rot occurred in the market but more particularly during retail distribution. The incidence of wastage is sporadic and appears to be associated with prevailing conditions at harvesting. The conditions during wholesale and retail distribution are only a contributing factor in that warmer temperatures accelerate the onset of wastage. Examinations were made of a large number of commercial consignments at Darling Harbour and in the market both on arrival and after a holding period of one week.

In addition, experimental consignments embracing a number of treatments were forwarded for observations of condition on arrival and after a holding period corresponding to the time they would take to reach the consumer. The incidence of wastage varied from 0 to 40 per cent., according to treatment and growing conditions, the greatest wastage occurring in fruit from very dirty packing sheds. Wastage in fruit which had been cut was significantly less than in fruit which had been snapped, while there were indications that wastage had been reduced by holding the fruit overnight before packing and also by careful handling. These treatments also resulted in less bruising of the fruit. There was a considerable variation in wastage between individual cases of a particular treatment but this cannot be explained until knowledge is available regarding the effect of growing conditions and cultural treatments on storage behaviour.

Rail Transport.—The methods under which fruit and vegetables are being transported to Brisbane market are being investigated and wastage assessed during wholesale and retail distribution. Flesh temperatures have been recorded in a number of consignments arriving from other States in refrigerated wagons and appropriate Departments advised when consignments have been arriving in faulty condition.

Tests have been carried out on a standard refrigerated truck used for the carriage of meat and butter to determine its suitability for fruit and vegetables. The heat leakage was determined with temperature recording instruments in an empty truck and also in a truck loaded with a mixed consignment of fruit and vegetables carried from Applethorpe to Townsville and from Brisbane to Mt. Isa. The experiments were carried out in conjunction with the Railway Department, the Committee of Direction of Fruit Marketing and a panel of agents. The load was pre-cooled before loading into an iced truck, which was re-iced every 24 hours and was superintended throughout by two departmental officers.

Careful attention was given to stacking and loading in order to provide as much air circulation as possible and though the consignments arrived in very satisfactory condition their subsequent life at atmospheric temperatures was relatively short. There was also a gradual rise in the temperature of the load during transit and considerable differences in temperature between the top and bottom of the stack.

Air Transport.—Contact has been established with air transport interests regarding the possibility of air transport for highly perishable products to more distant markets. At present freight charges are the limiting factor to commercial development, but considerable quantities of strawberries are being air-freighted successfully to southern capital cities.

Maroochy Experiment Station.

Towards the end of 1945 the Department secured an area of land of some 113 acres, situated within about two miles of Nambour, for the purpose of setting up an experiment station on which to conduct research work on tropical and sub-tropical fruits. This represents a most important stage in the development of horticultural work in this State. While growers have on the whole been very co-operative there are some phases of departmental work which call for total or partial destruction of the product or perhaps for considerably reduced production on a particular area of land and it is not feasible to carry out adequate-sized trials of such a nature, virtually at the expense of a private individual. With the provision of departmentally owned land it will be practicable to undertake work falling into these categories and it is anticipated that advances in certain directions will now be much more rapid than could otherwise have been the case. The development of such a station as this calls for a large measure of long-range planning. Considerable progress has been made in clearing and preparing land for pineapples, citrus, ginger, and avocadoes, whilst much work had also to be done on the construction of farm roads and in cleaning up.

Kamerunga Experiment Station.

Just prior to the war a small portion of the old Kamerunga State Farm was taken over for work on horticultural crops, but during the war the area was occupied by the Army and all departmental activity had, therefore, to be stopped. Immediately the area was vacated by the Army, however, work was again commenced on a number of horticultural projects, paying particular attention to questions involving soil management. The actual crops upon which work is being done are bananas, papaws, and mangoes.

Vegetable Production and Problems.

The importance of maintaining vegetable production on a high standard and a large scale has probably never before been so apparent as during the last few years, and the value of the industry to the State may be gauged from the fact that tomatoes alone are worth considerably more than £250,000 each year.

Whilst the adverse weather conditions have reduced production appreciably there have rarely been any prolonged periods of inadequate supplies. Prices have remained high but it is not correct to assume that retail prices bear a close direct relation to the volume of production. Metropolitan areas have maintained their production level, but Stanthorpe was adversely affected by dry weather and a drop in yield resulted. Floods caused loss and great inconvenience in Bowen and other northern areas, but, fortunately, the devastation occurred sufficiently early in the year to enable replanting to be done and it is anticipated that the total crop from the affected areas will not be greatly below normal. Unfortunately, there will be something of a shortening up of the season which may lead to temporary gluts in both Brisbane and southern markets. The dry winter has been rather disastrous to bean supplies, particularly from the near North Coast, and present indications are that the crop from that particular area will not be greater than 40 per cent. of normal.

With respect to research work, the greatest amount of time has been devoted to the problems associated with tomato production. The Department was unfortunate in losing the services of Mr. Cottrell-Dormer, but a re-arrangement of duties has enabled the breeding work to be carried on on an only slightly reduced scale. From a large number of crosses some seven strains have been selected as being of promise as high yielding and disease resistant. The most promising crosses at the present time are those which contain a percentage of Grosse Lisse blood, whilst some of the crosses having Chalk's Early Jewel as a parent, though yielding excellent fruit, show susceptibility to wilt.

In addition to this breeding work, tests have been conducted on seven other varieties which showed promise of being of value in the Stanthorpe district. In the first year Sioux, an early maturing variety, and Valiant, a late maturer, have given most encouraging results.

Soil treatment work carried out at Stanthorpe was interfered with to a very great degree by flooding followed by drought conditions, and it cannot be claimed that any advance has been made except in confirmation of previously ascertained facts.

Trials of a number of varieties of beans were also conducted, but none proved superior to standard certified Brown Beauty. A possible exception may be found in the case of Asgrow Blue Lake, which gave an increase of 240 bags per acre over the yield of Brown Beauty, but this variety suffers from the disability that it has a scrambling habit which makes harvesting both slow and difficult. It has excellent eating quality and sold very well on the Brisbane markets.

Bean variety trials were carried out in the Redlands district also with seven other varieties. None of these, however, equalled Brown Beauty

in yield, and it is apparent that for the present at least the Brown Beauty variety will continue to be the standard for almost all districts.

Cabbage varieties were also tested, in both Stanthorpe and Redland Bay, and selections have been made of superior strains within the following varieties:—Succession, Late Flat Dutch and Copenhagen Market.

Acknowledgment has to be made of the assistance of the Division of Plant Industry of the Council for Scientific and Industrial Research, which supplied much valuable seed material.

Pineapple Investigational Work.

Field investigation of pineapples has continued on two lines, the first being the testing of various fertilizer mixtures and the second the production of desirable types of planting material. Investigation of the various mixtures has led to the conclusion that 10-6-10 mixture is superior to both 8-6-10 and 8-6-16 and in view of the cost of the last mentioned this is not recommended.

With respect to the pineapple selection work, the opening up of the Maroochy Experiment Station has allowed the initiation of work designed to make a supply of superior material available to growers. This project calls for the planting up of approximately five acres of selected material each year for the next five years. This is a big undertaking and it is pleasing to report that the first year's work is well in hand. The adverse weather conditions during the last four months of the period under review have materially affected growth, but it is anticipated that this will ultimately result only in the loss of time and not of material.

Citrus Production and Investigational Work.

Production figures for citrus have been well maintained, but adverse weather severely affected some of the areas in North Queensland.

The large-scale experiment plot at Gayndah designed to elucidate facts concerning the nutrition of citrus has been carried on, but so far no big differences are showing up between treatments, though, of course, it is obvious that trees starved of nitrogen suffer considerably. The present season's crop will not be harvested until after the completion of this financial year, but it is proposed to carry out certain analyses of this fruit to determine whether or not the various fertilizers have exerted any differential influence on the composition of the fruit.

Considerable attention has been devoted to a number of problems of citrus growers, particularly one which occurs in grape fruit and which appears to be a trace element deficiency trouble.

The provision of first-class citrus trees has been given priority of consideration. To this end a wide search has been made for desirable types and records of the tree performance with respect to cropping and general health are being taken now. In addition to this 60,000 buds from selected trees have been supplied to nurserymen. Some difficulty has been encountered in obtaining suitable seed for the production of first-class root stocks, but it appears that all obstacles have been overcome and that first-class seed can now be obtained at reasonable prices.

Papaw Breeding Work.

Papaw progeny plots at Nambour have suffered very severely from both cyclone and drought, but a sufficient number of trees have maintained their health and vigour to ensure adequate seed supplies for the next generation of trees which it is planned shall be planted on the Maroochy Horticultural Experiment Station next summer. Several of the strains produced by the officer in charge of this important work continue to show great promise and whilst it will take some years to fix the strains and make seed supplies available to growers it is felt that this work constitutes a very worthwhile contribution to the future of the papaw industry.

Banana Production and Problems.

During the year under review the acreage under bananas in this State increased by about 25 per cent. to 12,804. This is below the peak acreage, but in assessing its meaning it must be borne in mind that the acreage under this crop in New South Wales has increased so considerably that the total acreage under bananas in the two States is now greater than ever before. With the improved marketing facilities being brought into effect by the Committee of Direction of Fruit Marketing, it is felt that the produce can be marketed at sufficiently remunerative prices to growers, but at the same time it is obvious that the safe limit of production of this crop is being approached.

Bunchy top has been prevalent throughout the year and it requires the utmost vigilance on the part of the field inspectors to prevent it devastating several of the more important areas. The fact that its spread further north has not been more rapid can be attributed largely to the efforts of the inspectors, but under certain climatic conditions it would be very difficult indeed to hold this menace in check and the whole position is being closely watched. A special investigation disclosed that the position generally is reasonably satisfactory at present. The Banana Industry Protection Board has given much consideration to the situation and the planting policy has been framed so as to make movement of suckers in the Quarantine Area somewhat more restricted.

Owing to its susceptibility to bunchy top and its rather poor carrying characteristics, the Cavendish variety is losing a certain amount of favour with many growers. It is felt that this is justified, but at the same time it cannot be claimed that at present it can be replaced by a markedly superior variety.

Deciduous Fruit Investigational Work.

Deciduous fruit crops this year were particularly heavy and quality on the whole was very good. A certain proportion of mis-shapen apples, however, was in evidence. The cause of this was not apparent. In some cases the abnormalities were undoubtedly due to hail but in many instances the trouble appeared to be more physiological in nature and probably connected with a deficiency of a minor element. These physiological troubles are very difficult to investigate in the Stanthorpe district because of their spasmodic occurrence, it being common experience that such troubles may show up one year and then be entirely absent, or nearly so, for several years following. In general, orchardists of the Granite Belt apply the necessary

correctives such as copper and zinc when it is apparent that these materials are required, but in other cases, such as when boron deficiency occurs, the position is much more obscure and growers have no means of knowing they will require a corrective sufficiently far in advance to make its application worth while. Fortunately such troubles as come under this latter category are of comparatively minor economic importance to the district as a whole, but individual orchardists sometimes suffer very severe losses. It would appear that the only practical solution is for growers to work on a "safety first" principle and where they suspect such troubles as boron deficiency may occur to take action without waiting for absolute certainty.

With respect to the nutrition of the deciduous fruit trees in the Stanthorpe district, it was pointed out last year that the basic trouble appears to be lack of nitrogen and this view is still held. As was also pointed out the problem is not solved merely by the application of nitrogenous fertilizers for there are still questions of the soil being is such condition that the trees may absorb the required amount, not only of this element, but of the other plant foods in commensurate amounts. That is to say, the problem is one not of simple nutrition of the tree but of soil management and the basis of soil management in this district must always be retention of soil moisture. In the past there has been a general feeling that soil moisture retention and adequate tillage are practically identical but evidence to date does not support this and it is obvious that not only will tillage alone not achieve the desired object but, under certain conditions, may have a reverse effect. In these circumstances investigating methods of preventing erosion, control of leaching, and addition of organic matter to the soil is looked upon as being of major importance.

Grape Experimental Work.

The use of borax on grapes to overcome the "hen and chickens" trouble has been very widely adopted by growers in the Stanthorpe district, and it is now felt that losses due to this trouble can be kept at a minimum at a very small cost to growers.

A new step was taken in the investigational work concerning grapes with the laying down of a pruning experiment at Stanthorpe. Results of the first season's work indicate that long pruning methods give superior results to more drastic ones. However, as the vines carry reserves of food from one season to the next no clear cut answer can be expected from the first season's crop, and it is proposed to continue this work during the coming grape season.

In addition to this pruning work steps have been taken towards the laying down of trials of phylloxera-resistant stocks. Material has been obtained from southern States and is at present being held in quarantine at the Nambour Field Station. After having been grown there sufficiently long to ensure that it carries no infection it will be transferred to a leased area of land in the Stanthorpe district. The grape variety trial carried out at Charters Towers was concluded during the departmental year. The varieties Chaouch, White Wax, Gros Colman and Servant produced well but bitter rot caused heavy loss of Chaouch. Birds continue to be a nuisance and caused notable losses of both Gros Colman and Servant in these trials.

Maturity and Grade Standards.

In some instances the standards of maturity now laid down are not entirely satisfactory and work has been initiated in an effort to improve the position. The chief difficulty is not in determining when fruit is mature but in defining the stage in terms suitable for quick reference by grower, markets inspector and public. The products with which the Department is chiefly concerned at present are apples, beans and papaws. In the case of citrus, work has proceeded sufficiently far to enable the gazettal of new regulations which take flavour as well as acidity into account. Another aspect of this work to which time has been devoted is the determination of adequate sampling and as the result of this work the size of sample taken has been appreciably increased.

Exports and Imports.

The following figures of the principal fruit and vegetable exports to southern States show that on the whole production of these crops has been well up to standard. Once again tomato exports call for particular mention. The number of cases of tomatoes is actually slightly more than last year, whilst pineapples are appreciably higher.

The figures for pumpkins show a considerable drop, but last year was a very abnormal year and the 379,000 bags exported during 1945-46 are actually considerably above normal year figures.

Exports to Southern States.

Crop.	1944–45.	1945–46.
Pineapples	672,257 cases	713,113 cases
Bananas	41,791 cases	119,806 cases
Citrus	10,087 cases	92,029 cases
Fruit (Miscellaneous)	195,475 cases	236,416 cases
Tomatoes	715,559 cases	734,546 cases
Vegetables (Miscellaneous) ..	211,256 bags	295,013 bags
Potatoes	64,935 bags	81,622 bags
Pumpkins	1,185,998 bags	379,387 bags
Cucumbers ..	87,107 cases	107,379 cases

The increase in the exports of bananas is due very largely to the increase in production.

Fruit and Vegetable Imports.

Crop.	1944–45.	1945–46.
Fruit (Miscellaneous)	1,729,249 cases	1,120,569 cases
Vegetables (Miscellaneous) ..	92,632 bags	69,551 bags
Potatoes	768,330 bags	442,565 bags
Onions	132,207 bags	120,232 bags

It will be noted that in all cases there has been a decline in the amount of these products which have been imported into the State. This is due to increased production in Queensland, the removal of service personnel from the State, and to a small extent transport difficulties which have prevented free movement on a number of occasions.

Fruit trade with the Far East was resumed during the year but owing to difficulties of shipping only one consignment consisting of 2,000 cases of Granny Smith apples was despatched to Singapore.

W. A. T. SUMMERVILLE,
Director of Horticulture.

---

(3) REPORT OF THE SPECIALIST ADVISER, EXPERIMENT STATIONS, AND COTTON SPECIALIST.

The climatic conditions experienced, with the exception of the Central Burnett, were favourable for moderately satisfactory cotton production where suitable cultural methods were practised. The results obtained in breeding blocks and strain multiplication plots at various centres—work which was conducted in co-operation with officers of the Agriculture Branch—furthered the progress being achieved in developing thoroughly suitable strains of the varieties grown commercially in this State. Likewise progress was made in the programme of investigations being conducted at the Biloela Regional Experiment Station. The more outstanding features of the operations conducted at this centre relating to cotton improvement are presented under the heading of cotton-breeding, while the investigations—other than cotton and grain sorghum breeding—conducted there are summarised under the heading of Biloela Regional Experiment Station. Operations were also commenced at the Hermitage Regional Experiment Station near Warwick, on the eastern Darling Downs, where it is proposed to conduct a comprehensive programme of investigations relating to soil conservation, cropping rotations, soil fertility and structure studies, plant breeding activities in various crops grown in the general district, pasture development and animal husbandry problems in dairying, sheep and pig raising. Owing to field operations not being commenced at this centre until mid-summer, it was only possible to prepare seed-beds for the planting of winter grown crops. A programme was designed for such crops which embraced the testing of a large range of varieties and strains of oats and wheat, and field peas, the establishment of breeding blocks of oats and wheat, and seed multiplication plots of advanced strains of wheat, field peas and flax evolved in the plant breeding programme conducted by this Department.

Due to lack of planting rains this programme was severely disarranged, only a limited area of the more important breeding work being started with the aid of supplementary watering. It was possible, however, to carry out contour surveying of the station, design the experimental areas and initiate terracing and other soil conservation measures as well as do developmental work required in establishing a new station.

Cotton Breeding.

Substantial progress was again achieved in the work of improving Miller—the leading variety grown in the Central district—the work being centred at the Biloela Regional Experiment Station. The mass selected Lot 42 of this variety reported upon in the previous season was further multiplied to the point where comprehensive testing of this stock can be carried out under commercial conditions. The problem of increasing the lint percentage of Miller was also advanced a further stage, several progenies in the breeding block devoted to this project maintaining a very satisfactory standard of both production and uniformity of characters, while a substantial increase of seed of the parent stock of these progenies—which is known as MIB. 43-9—was obtained for further multiplication and comprehensive testing of this strain on the various soil types of the district.

Satisfactory progress was again achieved in furthering the development of a jassid resistant strain or strains out of Miller, and by hybridization of this and other varieties commercially grown in this State with varieties that are jassid resistant but which have no other qualifications under Queensland conditions. Resistant strains developed from Miller are now available for commercial distribution while new strains from the same source are now under test which give promise of producing longer lint than the first releases, combined with good yielding ability and a high degree of jassid resistance. Several very promising Miller hybrids are also under test which give promise of out-yielding the straight selections of Miller, combined with good uniformity of plant type, fibre of suitable quality, and good lint percentage. New hybrids between a jassid resistant type and Lone Star, New Mexico Acala and Triumph also showed a high degree of jassid resistance but are not yet fixed in plant type and other characters.

Improvement work in the New Mexico Acala variety was again handicapped through lack of suitable co-operators with typical soil for this variety under isolated conditions. Sufficient seed was obtained, however, of an increase of a previous mass selection out of a progeny block, to provide the foundation of a good replacement stock for commercial distribution.

Although the main breeding block of the Lone Star variety, which is located with an excellent co-operator in the Mundubbera district, had a satisfactory start, later extremely dry conditions greatly curtailed plant growth. Yields were thus very light, only a few bolls per plant being matured. The quality of the lint of the best progenies was surprisingly good, however, and five progenies were retained for further testing. Four more advanced progenies in the increase plot stage performed so well under the extreme conditions that they will be multiplied for commercial testing in districts where Lone Star is an important variety. In addition, about 100 new single plant selections were taken for laboratory examination to provide material for future testing under the progeny block system. Lot 25, the strain of Lone Star mentioned in the last annual report, again performed satisfactorily and will, therefore, be multiplied as rapidly as possible to replace the older commercial stocks of this variety. A newer strain of Lone Star (LG.34.39-4-1), which is characterized by very large bolls containing fibre of good uniformity and strength, yielded very satisfactorily for the conditions experienced and will be multiplied in the coming season for extensive testing against Lot 25 and the commercial stocks. Altogether, considerable progress has been achieved in improving this variety during the last three seasons.

Very promising results were obtained in the breeding programme carried out in the Triumph variety. The original importation of the parent stock of the present strains, which was known as the Oklahoma Triumph variety, was of a very mixed type, hence it was possible to isolate several strains of a widely diverse habit of growth ranging from very slender open plants to coarse vigorous growing types. Several strains with the more open habit of growth have been developed and tested extensively in the hope of evolving a thoroughly suitable cotton for the very fertile alluvial soils in the better rainfall areas of the main cotton growing districts. Unfortunately, all of these strains, except OS. 39-1 and OG. 39-7, have failed to produce satisfactory fibre during seasons experiencing very dry conditions from mid-season onwards. The main breeding block of OS. 39-1 is located in the Marburg district and following the first release of this strain it has been further improved to the point where one very promising progeny has reached the general multiplication stage for comprehensive testing of its suitability to replace the commercial stock of this strain. Several of the less advanced progenies of this strain appear to have even greater promise and exhibited a high degree of uniformity of plant type and fibre characters in this season's trials. Unfortunately, it has not been possible to isolate a type from this otherwise satisfactory strain that has a sufficiently open habit of growth to make it thoroughly suitable for the most fertile soils when grown either with or without supplementary irrigation. Accordingly its distribution will be restricted to the less fertile alluvials and the fertile lower slopes where it is well suited for producing heavy yields. The quest for more open types has therefore been centred in several other strains, of which OS. 39-4 and OG. 39-7 have given the most promise of yielding a suitable type. The former performed well in the Upper Burnett last season, but there was clear-cut evidence that the very dry conditions during the second half of this season seriously affected the quality of the fibre of this strain, only a few re-selections being obtained for further trial. On the other hand, several progenies in the breeding block of OG. 39-7, which was located at Gayndah, performed in a very satisfactory manner and if similar results are obtained in the coming season it would appear that a suitable strain can be developed out of this stock for the very fertile alluvial soils of the districts south of Central Queensland. Further satisfactory results were obtained in the Triumph OS. 39-2 strain, which is being developed for use under rain-grown conditions, on soils where a moderately rapid fruiting variety with considerable drought resistance is required. Several progenies of this strain have been evolved which have a very large boll compared with most strains of Triumph, and appear to be suitable for producing strong fibre of good character even under adverse conditions. The best of these were retained for multiplication and further testing preparatory to releasing the best one for commercial distribution, as a cotton of this type is required in several districts. A large number of re-selections was also taken from the most superior progenies for testing in further progeny blocks. The results, as a whole, appear to indicate that several very suitable strains of Triumph will soon be available to meet the requirements for this type of cotton.

No breeding work was conducted in the Qualla variety this season. A very satisfactory strain is available for the poorer sandy forest soils, and efforts in this variety in the coming season will therefore be confined to testing its suitability over a range of districts, to widen its distribution and increase its production.

The Rowden 40-6-F.3 variety, which was favourably reported upon in the last annual report, has again given very satisfactory results, yields per acre up to 1,500 lb. of seed cotton with 1 inch fibre of good quality having been obtained with it under only moderately favourable conditions. Accordingly it will be distributed more extensively next season to test its suitability for most of the main cotton-growing districts, prior to establishing a breeding centre for it.

Biloela Regional Experiment Station.

The climatic conditions experienced during the first half of the season under review were moderately favourable for the growth and maturation of the winter crops sown in the autumn of 1945 and the growth of crops planted in the spring and early summer of the 1945-46 season. The rainfall of January, while totalling above the mean for this month during the previous life of the Station, was largely of a torrential type accompanied by much run-off into low areas. A deficiency of subsoil moisture existed, therefore, at the end of January which was not relieved, as a total of only 1.72 inches of rain was received for the rest of the season to the 30th June. Crop growth was thus adversely affected during the second half of the season; and it was also not possible to carry out the normal planting programme of rain-grown winter cereal crops.

A total of 20.10 inches of rain was received for the 12 months ended 30th June, compared with 23.11 inches in the previous 12 months and a mean of 27.69 inches for the 23 years in which the experiment station has been established. The total deficiency of over 12 inches of rainfall for the last two crop years undoubtedly placed a high premium on efficient penetration of the rains received in 1945-46. Unfortunately 55.7 per cent. of the total rainfall occurred at a rate over .4 inches per hour, with 44.8 per cent. of the season's total occurring at the average rate of 2.02 inches per hour—thus resulting in much run-off occurring after the seed-beds were consolidated.

Although the seasonal conditions prevented implementation of the full programme of investigations planned, it was possible to carry out a comprehensive set of experiments which yielded data that will contribute to the solution of the problems being studied at this centre. A total of 218.5 acres of cultivations and fallows was utilized in the experiments conducted in cotton, grain sorghum, wheat, maize, cowpeas and Rhodes grass. The following brief summaries present the most outstanding features of the investigations in each crop.

Cotton.—A total of 61.5 acres of cotton was required for the investigations in this crop. The main areas were planted in October, when a week of showery weather yielded good planting rains. Dry weather prevailed from then

until the first week of December, when further good rains were received. During the interval crop growth was satisfactory, with the dry weather resulting in the development of a deeply penetrating tap root which stood the plants in good stead for the rest of the season. The early December rains stimulated a somewhat vegetative type of plant growth, especially in the earlier plantings on the old cultivations, with the result that during the dry conditions which mostly prevailed for the rest of the month the plants of this type rapidly used the moisture of the upper soils with a consequent checking of plant growth accompanied by shedding of lower leaves and a reduction in flowering. The January rainfall relieved the situation somewhat, but owing to the torrential nature of most of the rain experienced no lasting benefit was obtained, with the result that very little late crop was developed. A surprisingly good average yield was obtained, however, considering the conditions under which the experiments were produced, the 51.5 acres of dry-farmed cotton which embraced a wide range of experiments yielding an average of 399 lb. seed cotton per acre.

Once again the advisability of growing cotton in rotation with grassland was well demonstrated. The cropping programme did not allow of planting cotton on a cultivation which was less than five years from the virgin grassland condition. Several areas in each of the first, second and third years of cultivation following three years' growth of Rhodes grass were under cotton, however, the average yields being respectively 687, 648 and 245 lb. seed cotton per acre, with the comparable areas cropped continuously to cotton averaging approximately 350 lb. per acre. Soil studies conducted in this investigation verified previous findings that the nitrate-nitrogen content of the soil cropped continuously to cotton is outstandingly greater than where cotton is being grown on land in the first two seasons of cultivation following three years' growth of Rhodes grass. As these latter cultivations are more permeable than the old cotton cultivations, better penetration of storm rains is obtained, especially in a season of the type just completed. The resultant greater supply of moisture and lesser amounts of nitrates provide a better balance of plant nutrients for cotton growing after grassland than it is normally possible to obtain in the old cultivations even where cotton follows a fodder crop such as Sudan grass. The soil investigations also confirmed previous findings that there is less nitrate-nitrogen available for the cotton plants in the second year of cultivation following Rhodes grass of four or more years of establishment than where Rhodes grass of lesser establishment is ploughed for cotton.

The value of ample moisture during the critical stages of growth of the cotton plant was once more demonstrated by the results obtained in the investigations conducted to ascertain the merits of growing cotton with supplementary irrigation. As previous experiments had indicated that the Miller variety was well suited for growing with supplementary irrigation on the soils of the irrigation area on the experiment station, it was used in the irrigation investigations, which were confined to studies relating to determining the merits of supplementary spray irrigation, times and amounts of application of spray irrigation, and the effect of cropping rotations. A pre-planting irrigation of 3 inches per acre applied at the rate of slightly over an inch per hour, and two further similar applications at critical stages in the growth of the crop—making a total of 9 inches per acre—plus 20.10 inches of rainfall for the crop year, produced an average yield of 1,898 lb. seed cotton per acre, compared with an average of 813 lb. per acre under only rain grown conditions. The difference of 1,085 lb. seed cotton per acre approximates the results obtained in the previous five seasons. Indications were also obtained that it may be advisable to apply a pre-planting application of at least 3 inches per acre during September on a roughly prepared seed-bed and then either to await good planting rains or, failing their occurrence by the proper planting time, to apply a further inch of supplementary irrigation preparatory to harrowing and then planting. The advantages obtainable by this method are as follows:—(*a*) greater penetration of the irrigation water occurs than where 4 inches are applied at one time, especially if there is any slope in the land, (*b*) a good rain may be experienced at the proper time to plant, thus eliminating a second pre-planting irrigation, (*c*) the early applied irrigation makes the soil more suitable for obtaining a good depth of penetration of either a planting rain or the second pre-planting irrigation, and (*d*) the irrigation area can be planted much faster where planting is effected after either a planting rain or an inch application of supplementary irrigation. The results obtained in the investigations into the effect of cropping rotations, while informative, require confirmation before conclusions can be drawn.

Sorghums.—A total area of 15.5 acres was planted to sorghums, consisting of breeding blocks of selections and hybrids, seed increase plots of several varieties, a varietal trial for studies relating to the protein content of some of the more extensively grown varieties and a bulk area for grain production of Kalo, the standard variety for the experiment station. The yields on the whole were poor, mainly due to the fact that the rains were too light just after planting, which retarded plant development at first and then later the complete absence of beneficial rains for the latter part of the growing season restricted the development of the heads. As a consequence the size of most heads that matured was much smaller than normal, while many failed to reach maturity. The details of the results obtained in the investigations, which were under the personal supervision of the Senior Plant Breeder, are included in the report of the Assistant Director of Agriculture.

Wheat.—A total area of 10 acres of the Warput variety of wheat was grown for hay production, and as a result of above normal rainfall in July yields of from 2 to 2½ tons of dry hay of good quality were obtained. Undoubtedly more wheat for hay should be grown on the average farm in the district, for it has generally been possible on the experiment station to produce satisfactory yields of hay of good quality which with Rhodes grass hay has provided an excellent reserve of feed for the dry periods of the season. Strain trials of a wide range of wheats were also grown under the supervision of the Senior Plant Breeder, for the

plant breeder responsible for the wheat breeding programme. Details of this work appear in the report of the Assistant Director of Agriculture.

Maize.—A trial of a range of maize hybrids was carried out for the Instructor in Plant Breeding of the Queensland Agricultural High School and College, who is responsible for the breeding operations connected with the development of maize hybrids. This work was under the supervision of the plant breeder at the experiment station but unfortunately, in common with all plantings made in January, the subsequent dry weather restricted plant growth and practically no grain was produced.

Cowpeas.—Thirteen acres were planted to cowpeas but the adverse conditions restricted plant development to such an extent that an unsatisfactory cover was obtained.

Rhodes Grass.—An area of 57 acres was under Rhodes grass and once again this grass demonstrated its suitability for incorporation in the cropping rotations under rain-grown conditions. Confirmation was again obtained of the merits of allowing Rhodes grass pasture in good condition to make sufficient regrowth during the late summer and autumn to provide enough canopy to protect the young growth around the base of the plants from frosts. Analyses of samples collected in August, 1945, of the green growth at the base of the Rhodes grass plants, and young wheat plants in adjacent areas, indicated once again the satisfactory feeding value of the young growth of the Rhodes grass during winter.

In view of the excellent yields of both pasturage and hay that are obtainable under rain-grown conditions in the warmer periods of the year from Rhodes grass pastures in good condition, preliminary investigations were initiated this season to ascertain the suitability of this grass for use in irrigated winter pastures. After mowing the growth of hay produced under rain conditions to the middle of February, an experiment was initiated in which the regrowth obtainable with rain was compared to the regrowth produced with supplementary irrigation in which three spray applications were made when required, a total of 10.5 inches being applied by the middle of May. Cuts made early in March and again in early May yielded gains of slightly over 1 ton at each cutting in favour of the irrigated areas. During the exceptionally cold early winter further growth was restricted by repeated frosts so that no other cuttings were possible. There was a greenish tinge amongst the leafage at the base of the plants in the areas that had been irrigated in May, however, which could not be seen in the non-irrigated areas. It is possible, therefore, that under more normal late autumn and early winter temperatures sufficient regrowth would have been obtained after the May cuttings in the irrigated areas in time to have protected the young growth usually produced at the base of the plants during the rest of the winter when ample moisture is present. Analyses of the grass mown in April indicated that the samples from the irrigated areas had a slightly higher content of crude protein and P_2O_5 but less CaO than the samples from the non-irrigated areas. The investigations will therefore be continued.

Soil Investigations.

The value of determining the soil moisture and nitrate-nitrogen contents of the sites of experiments at regular periods during the growth of the crops investigated was once more amply demonstrated this season. The rainfall, as a whole, could not be considered as being favourable for obtaining good yields of cotton, yet surprisingly good results were obtained in many of the experiments. A comprehensive volume of soil moisture and nitrate-nitrogen determinations indicated that, in the case of experiments producing good yields, a better balance of moisture and nitrates existed than where less satisfactory results were obtained. The determinations indicated that, where either grassland had been ploughed in late summer of the previous season or where cotton was being grown in the first two or three seasons following grassland, the permeable nature of the soils allowed of good penetration of the winter and planting rains, the soils being mostly wet to a depth of approximately 20 to 22 inches. Where cotton followed wheat, however, the soil was moist to only 7 to 8 inches at planting time. The better supply of subsoil moisture enabled the crops to make steady progress accompanied by the development of a good tap root system during subsequent dry periods. The rains in December replenished the moisture that had been utilised by the crops, but the January rains were most inefficient in many experiments, a 4-inch storm penetrating only a maximum of 12 inches in the cotton experiments.

The value of a good grass cover to retard run-off was well illustrated in one series of plots where the above rain storm penetrated only 6 inches in an old cotton cultivation on a slight slope of heavy clay soil, 7 inches in an adjacent new cotton cultivation after three years of Rhodes grass, and 17 inches in an accompanying area of standing Rhodes grass. Undoubtedly more cultivations on the upper slopes of many farms should be put under a cropping rotation whereby grassland will be available to absorb more of the summer rainfall and thus prevent the amount of run-off with the accompanying soil loss that occurs whenever severe thunderstorms are experienced on annually cropped areas.

In the soil moisture investigations conducted in the irrigation experiments, the value of a moist subsoil to a good depth, to increase the depth of penetration of subsequent rainfall, was illustrated. It was ascertained that, where the subsoil was moistened by the pre-planting irrigations to a depth of 35 inches instead of 30 inches, a subsequent 3-inch spray application before the plants had utilised much of the moisture in the upper layers of soil penetrated to 51 inches in the areas previously wet to 35 inches, as compared with 47 inches in the "30-inch" plots. Later in the season when the cotton plants had largely exhausted the water in the upper 12 inches of soil, a 3-inch application of spray irrigation penetrated only 15 inches and 4·3 inches only to 20 inches. As the irrigations were applied at a steady rate of slightly over 1 inch per hour, it can be appreciated how little benefit is generally obtained by row crops experiencing 3 to 4 inch thunderstorms falling at rates upwards of 2 inches per hour.

W. G. WELLS,
Specialist Adviser, Experiment Stations,
and Cotton Specialist.

(4) REPORT OF THE OFFICER-IN-CHARGE, SCIENCE BRANCH.

Herewith are presented the Annual Reports for the Entomology, Plant Pathology and Botany Sections of the Science Branch. These have been prepared by the heads of the respective sections.

J. H. SIMMONDS,
Officer-in-Charge, Science Branch.

(A) REPORT OF THE ENTOMOLOGY SECTION.

During the year 1945-46, a great deal of time was necessarily given to determining the place which D.D.T. may occupy in pest control practice in Queensland. The experimental work is briefly summarised in this report for those insects which required investigation in the field. Most of these are familiar to farmers and orchardists and some, such as the larger horned citrus bug and the potato tuber moth, occurred in outbreaks of more than normal severity.

Codling Moth.—The wastage in the apple crop which can be attributed to codling moth, *Cydia pomonella* L., has been less than is normally expected. However, the general level of infestation was sufficient to permit the establishment of experiments designed to test new lures which might be used in the spray advisory service maintained by this Department, and to determine the efficiency of sprays containing D.D.T. or Gammexane for the control of the pest.

Two lure formulæ of American origin were prepared from oil of sassafras and oil of mace and compared with the standard wine lure at present used by growers at Stanthorpe. The three lures were used according to standard practice and recharged at fortnightly intervals. All indicated the trends in moth activity throughout the season with sufficient precision to service the spray timing programme. Both of the aromatic oil lures, however, caught a greater number of moths than the wine lure and may be more efficient in late summer when populations are relatively low.

Codling moth sprays were compared in an experimental area at Applethorpe which included the varieties Jonathan and Winesap. A lead arsenate calyx spray was applied to all plots and cover sprays were later used when required by the existing spray timing service. The cover sprays were oil-nicotine sulphate, lead arsenate-oil, D.D.T. in clear and mayonnaise emulsions and Gammexane in a mayonnaise emulsion. Gammexane sprays at the concentrations used (0·013 per cent. and 0·026 per cent.) proved almost valueless, the fruit injured by codling moth being approximately 26 per cent. of the early maturing Jonathans and 44 per cent. of the later maturing Winesaps. Sprays containing 0·1 per cent. D.D.T. controlled the pest as well as the insecticides at present recommended to growers.

D.D.T. preparations have, however, incidental effects which must, for the time being, restrict their use in deciduous orchards. Red mite, *Bryobia praetiosa* Koch., became extremely abundant on trees treated with D.D.T. and caused premature leaf fall, while another species, *Tetranychus urticae* Koch., which is not normally encountered on deciduous fruits, was also common. D.D.T. also aggravated the woolly aphid, *Eriosoma lanigerum* Hausm., position on apples and the current season's growth suffered severely. Presumably, the insecticide has an adverse effect on the introduced parasite, *Aphelinus mali* Hald., which attacks and almost completely controls this pest during summer and autumn.

Pin Hole Borer of Deciduous Fruit Trees.—Insects belonging to the more important wood feeding groups are seldom encountered in deciduous fruit orchards unless the trees have suffered from some climatic or other mishap. During the past two years, however, a small *Xyleborid* beetle has attracted attention in a number of orchards, where it may have been responsible for the death of apple, plum, and other fruit trees. The initial outbreak occurred at Fletcher, but the pest is now known to be widely distributed through the Granite Belt. The first obvious symptom of infestation is the sudden collapse of the foliage on a single limb or the whole tree. Once trees show this symptom, the borers are well established in the host plant.

The beetle concerned, which is as yet unnamed, is of the pin hole borer type. The brood chambers, containing the immature stages of the insect, lies well within the wood. Though the number of burrows leading through the bark to the brood chambers may be considerable, it is probable that the injury is aggravated by some disease organism which is introduced to the tree, for dark brown lesions extend a considerable distance along the trunk or limb from each brood chamber. The principal losses to date have occurred in apples and plums, but the problem is of such dimensions that life history and control studies are being initiated.

Fruit Fly.—Though only a limited amount of time could be assigned to the study of the Queensland fruit fly, *Strumeta tryoni* Frogg., some progress can be reported. Fruit fly lure traps have been regularly serviced during the past two years in three orchards and the data obtained from them has clarified some concepts of fruit fly behaviour. In the Gayndah district, where the pest causes damage to the citrus crop each year, the insects collected from the lure traps gave an indication of both the fruit fly populations in the orchard and the incidence of the several species at different periods of the year.

The conclusions arrived at suggest that control measures designed to eliminate breeding in the orchard should give reasonable control of the pest and that lures can be used as a guide to the application of bait sprays. When regularly serviced, lures draw attention to fruit fly activity throughout the season and thus indicate when more frequent and more liberal bait spray applications are required.

Though the effect of D.D.T. sprays on fruit fly populations in the orchard has not yet been investigated in detail, some relevant information was obtained from codling moth and larger horned citrus bug studies at Applethorpe and Gayndah respectively. In experiments designed to control these pests, dead fruit flies were commonly encountered underneath D.D.T. treated trees and the damage caused by fruit flies was apparently less than that on the untreated trees. The validity of the observation in citrus in confirmed by the fact that orchard populations of

fruit flies, as indicated by lures, showed a marked drop after each application of the spray. At least two weeks elapsed before migrant flies restored populations to pre-treatment levels.

Larger Horned Citrus Bug.—Under normal conditions, the larger horned citrus bug, *Biprorulus bibax* Bredd., invades citrus orchards in sub-coastal districts during the spring and early summer months. Control measures are designed to keep populations in check until migration is completed in January, when a final fumigation is carried out to eradicate populations then in the orchard. During the current season, early summer migrants were few in numbers and little trouble was expected after the January fumigation. However, the pest behaved abnormally and orchards were still being invaded during February and March, when conditions were unfavourable for fumigation. Losses in the lemon crop, which is of course the favoured host of this pest, were heavy in some orchards. During the outbreak, the value of D.D.T. in controlling the pest was investigated at Gayndah. Sprays and dusts containing D.D.T. were compared in three experiments, the results from which indicate that 1 per cent. and 2 per cent. dusts are of little value. On the other hand, sprays containing 0.1 per cent. and 0.2 per cent. D.D.T. proved lethal to the insect and may be expected to give reasonable control of it.

Bronze Orange Bug.—Present recommendations for the control of the bronze orange bug, *Rhoecocoris sulciventris* Stal., require the application of resin-caustic soda-fish oil or derris sprays during autumn, or winter when the bugs are not conspicuous on citrus trees. Many orchardists are therefore caught unawares by the appearance of both nymphal and adult stages during spring and early summer, when the spray is not particularly effective. Earlier work on related pests had already indicated that sprays containing D.D.T. might be of value for the control of shield bugs, and experimental work was therefore initiated during November in a heavily infested orchard at Tamborine Mountain, where recurrent outbreaks of the pest have occurred during the past three years.

Dusts and sprays containing D.D.T. were applied in October and the conclusions were based on the number of dead and dying bugs found on the ground 48 hours after treatment. Excellent kills were obtained from sprays containing 0·1 per cent. and 0·2 per cent. D.D.T., but the dusts proved relatively inefficient. Sprays containing 0·026 per cent. Gammexane were comparable with those containing 0·1 per cent. D.D.T. in this experiment.

The Macadamia Nut Flower-eating Caterpillar.—The development of the Macadamia nut industry in southern Queensland has, for some years, been hampered by the incidence of a flower-eating caterpillar, *Homoesoma vagella* Zell., which feeds in the blossom and interferes with the normal setting of the fruit. The eggs are laid on the flowers spikes and the larvae emerging from them burrow into the buds, which are partly or wholly destroyed. Several larvæ may occur on a single spike. On completing their development, the larvæ may pupate among the flowers but more commonly they descend to the ground and pupate in surface debris underneath the tree. Growers are paying more attention to insecticidal methods of controlling the pest, at least in the variety *ternifolia*, the flowering period of which extends over approximately six weeks. In order to clarify treatment schedules for the control of this insect, sprays were applied at 14-day intervals from the commencement of flowering in an orchard at Nerang where the pest was active. The data obtained from this experiment showed that the pest can be efficiently controlled provided treatments continue for six weeks. The results obtained with lead arsenate and D.D.T. sprays were similar.

Banana Rust Thrips.—Normally, serious outbreaks of the banana rust thrips, *Scirtothrips signipennis* Bagn., are preceded by a gradual increase in activity over a period of two or three years and present indications are that an outbreak of major importance is pending. A few plantations were infested in 1944-45, but last year most plantations in southern Queensland carried rusty fruit in autumn. Control measures for the pest were worked out some time ago, but cultural practices have changed somewhat and these are not now wholly applicable to modern requirements. In the first place, the low-growing Cavendish variety has in part been superseded by the much taller variety, Mons Marie, and the bunch covers used in controlling thrips are not easily fitted to the latter. The need for an efficient dust which can be applied to the uncovered bunch during the summer months when infestation reaches its height is therefore obvious.

Exploratory studies on the use of insecticidal dusts for the control of this pest in North Queensland indicate that the application of a 2 per cent. D.D.T. dust is followed by a gradual decline in thrips populations, which remain low for a period of at least two weeks. An 0·5 per cent. Gammexane dust may be even more effective. If these results are confirmed on a plantation scale during the coming season, the grower may find it much easier to produce clean fruit in years when the banana rust thrips is active.

Potato Tuber Moth.—The potato tuber moth, *Gnorimoschema operculella* Gn., continues to attract attention as a pest of the spring potato crop in Queensland. In 1945, many non-irrigated crops in southern Queensland were completely destroyed. Where irrigation facilities were available, haulm damage was not of any great importance though the wastage below ground was excessive in some parts of the State. Marketing difficulties were consequently of some moment, for bagged potatoes deteriorated rapidly in storage when protective dust treatments were not applied. Some method of controlling this pest in the field is therefore required to eliminate haulm damage and, perhaps more important still, to reduce tuber infestation prior to harvesting. Earlier observations had indicated that D.D.T. sprays are lethal to larvæ mining in the leaves. An experiment was therefore arranged at Ayr in a late planted crop of Brownells to test the merits of treatments with D.D.T. and derris during the four weeks prior to harvesting. The crop matured in a period of considerable moth activity and neither weekly nor fortnightly treatment schedules reduced the tuber wastage to non-commercial levels. Plants in plots treated with D.D.T. sprays and dusts remained much

greener than those in the remainder of the experimental area, but the significance of the phenomenon is uncertain, for the experiment was terminated by a severe outbreak of target spot.

In the tobacco crop, this insect is usually referred to as the tobacco leaf-miner, and in North Queensland it is a major pest both in the seed-bed and in the field. If weather conditions are unfavourable young plants may be killed outright, but more usually the injured leaves, if not discarded by the grower, are of inferior quality. In an experiment near Mareeba, the value of routine treatments after transplanting with sprays and dusts containing either D.D.T. or Gammexane was investigated. After the field programme had been under way for approximately one month modifications had to be introduced into the treatment schedule owing to the plant injury caused by sprays and dusts containing Gammexane. The plants showed marked stunting, tip injury and leaf abnormalities not unlike those characteristic of "frenching." The effects of the several treatments on the pest were assessed in terms of the damage to the leaves. Sprays containing 0.1 per cent. and 0.2 per cent. D.D.T. were efficient when applied at fortnightly intervals from transplanting, and dusts containing 1 per cent. and 2 per cent. D.D.T. also gave good control of the pest. The protective effects of D.D.T. treatments lasted for approximately one month after applications ceased, *i.e.*, eight weeks from transplanting, when the danger of serious injury had passed. Routine applications of insecticides containing D.D.T. may therefore be expected to become standard practice in tobacco-growing areas where this pest presents a hazard to the grower each year.

Sorghum Midge.—A field experiment was established at Biloela to test the utility of 1 per cent. and 2 per cent. D.D.T. dusts applied to grain sorghums at the commencement of flowering, in order to protect the crop from the sorghum midge, *Contarinia sorghicola* Coq. Stress conditions during late summer interfered with normal heading and the yield data proved of little value. Some information was, however, obtained from the area by marking the heads emerging at any one period and using these to compare treatment effects. The results confirm the previous year's work, for midge emergence from heads on dusted rows was considerably less than that in heads from the control rows. No differences were recorded between rows treated with 1 per cent. and 2 per cent. D.D.T. dusts at the inception of flowering.

It has generally been assumed that the sorghum midge lays its eggs in the heads after the spikelets open, but this assumption has recently been queried by plant breeders working on the crop. The position was checked by enclosing spikelets in bags before and after the extrusion of the stamens. Large numbers of midges were bred from both sets of material and it follows therefore that any insecticide used for the control of the midge will need to be applied earlier than was formerly thought necessary.

White Grubs.—Normally, white grub activity in pastures is associated with red volcanic soils. During the past two years, however, a major outbreak of these insects has occurred in the Brigalow-Chinchilla-Jandowae district, where both Rhodes grass and native pastures on heavy black or greyish-black loams were infested. Dead areas appear in the pasture and these extend until most of the paddock becomes useless. Objectionable weeds, such as roley-poley, very often take possession of the bare areas. In March, larvae in various stages of development were present in the soil and the implied overlapping of generations indicates a lengthy life cycle for the insect, which is apparently a Dynastid beetle. Fortunately, the topography of the area is such that cultural operations can be carried out on many farms, using cropping practices comparable to those on the Darling Downs. These will sometimes entail a change in existing methods of land utilisation.

Yellow-winged Locust.—The yellow-winged locust, *Gastrimargus musicus* Fabr., has again attracted attention in Central Queensland. Egg-beds established in the autumn of 1945 gave rise to hopper bands in September and October, but these caused little actual loss to the farming community. Later in the season, however, when the spring generation reached maturity, adult swarms invaded the cropping areas and caused considerable damage to maize and some other crops. Egg-beds were again established in autumn, and some of these later showed signs of parasitism by the wasp *Scelio bipartitus* Kief.

Exploratory work has been carried out with D.D.T. and Gammexane in order to test their possible value against the pest. A 2 per cent. D.D.T. dust gave an 80 per cent. kill of the hoppers when rates of application were in the vicinity of 34 lb. per acre. Egg-bed treatment during hopper emergence may also have some value, for the insects can acquire a lethal dose of the insecticide before they reach their feeding grounds. In small scale tests against the older hoppers, bran baits containing 0·065 per cent. Gammexane as the toxic constituent proved superior to the standard arsenic pentoxide bait.

Corn Ear Worm.—Experimental work on measures for the control of corn ear worm, *Heliothis armigera* Hb., was initiated in cotton planted at the Biloela Regional Experiment Station in the Callide Valley. At no time during the growing period was the pest very active and insecticidal treatments were limited to a single outbreak in January. Larval populations did not reach high proportions but marked reductions in square losses were obtained in plots treated with D.D.T. sprays, D.D.T. dusts and lead arsenate dusts, the D.D.T. treatments being the more efficient. The outbreak was followed by stress conditions throughout the whole of the cotton-growing belt and significant differences in the final yields were not obtained.

Earlier observations in cotton have indicated that the moths of this insect are highly selective in their choice of host plants and it seems probable that the incidence of corn ear worm attacks on the tomato crop would vary according to the cultural system used. This thesis was tested by making regular egg counts at weekly intervals in adjacent plantings on each of four cultural systems known respectively as trellis, stake, cradle and bush. The relevant observations were made during the spring months in the Rockhampton district, where the number of eggs laid reached the high mean value of 20

per terminal in early October. The period of active egg-laying extended over approximately eight weeks and it follows therefore that the marked cyclic behaviour of the pest in cotton areas during summer is not duplicated on the coast during spring. The number of eggs laid on bush tomatoes greatly exceeded that on trellised, staked or cradle-grown plants. The data confirms an earlier observation that the fruit wastage caused by the insect is particularly heavy on bush-grown crops.

Cabbage Moth.—During winter and spring of 1945, cabbage crops were again subjected to heavy attacks by the cabbage moth, *Plutella maculipennis* Curt., in spite of the widespread destruction of the larvæ by entomogenous fungi. Two experiments were completed during the year, one of which was designed primarily to determine the efficiency of the derris-nicotine dusts commonly used by vegetable growers to control mixed populations of the cabbage moth and the cabbage aphid, *Brevicoryne brassicæ* L. The diluent in these dusts is usually hydrated lime, which activates the nicotine sulphate. As hydrated lime may lessen the value of derris, comparisons were sought between derris dusts and dusts containing derris plus nicotine with various diluents, the derris being maintained in all dusts at the same concentration. The final results indicated that straight derris dusts were more efficient for the control of cabbage moth than derris-nicotine dusts with the same derris content. There is little need for such a combined dust in ordinary commercial practice and growers would achieve their purposes better by applying a straight nicotine dust if, and when, the aphid position warrants so doing.

Insecticides containing D.D.T. or Gammexane were studied in a crop of cabbages at Cleveland. The conclusions obtained from the experiment indicate that the more important commercial emulsions are of equal value per unit of D.D.T. while distinctions between impregnated and pan-mill dusts are of negligible importance to the farmer. Two applications of sprays containing 0·1 per cent. D.D.T. and three applications of dusts containing 2 per cent. D.D.T. gave good control of both the cabbage moth and the centre grub, *Oebia undalis* F., during the growing period. Gammexane sprays and dusts were much less efficient.

Bean Fly.—Sprays containing nicotine sulphate and white oil normally give satisfactory control of the bean fly, *Agromyza phaseoli* Coq., when properly used on a rigid timing schedule. When this insect is very active, however, incorrect timing of the sprays may have serious consequences. Exploratory work during 1944-45 indicated that D.D.T. sprays and dusts might prove at least as efficient and probably easier to use than nicotine sulphate-white oil sprays for the control of this pest.

A field trial designed to check these observations was carried out at Sunnybank during the summer of 1945-46. The experiment allowed comparisons between D.D.T. sprays, D.D.T. dusts and nicotine sulphate–white oil sprays applied on 3-4-3-4-3-day and 3-7-7-day timing schedules. During the growing period, injury ratings were made from time to time, and shortly before the crop was harvested data were also obtained on plant survival, and plant height. Plant survival was lower in the control than in the treated plots and marked differences were recorded in the stem injury ratings between the two timing schedules. It appears that if pest populations are high a 2 per cent. D.D.T. dust can be expected to give better results than nicotine sulphate–white oil sprays, when applied on a 3-4-3-4-3-day schedule. Sprays containing 0·1 per cent. D.D.T. showed a greater residual effect than the D.D.T. dusts and a 3-7-7-day treatment schedule proved efficient in the experiment. Such a timing schedule for D.D.T. sprays may be risky if germination is irregular, for larvae developing from eggs laid between the first and second spray applications may be able to reach the vulnerable base of the stem. For the time being, therefore, it seems preferable to apply D.D.T. sprays on a 3-4-7-7-day basis. This schedule has been used on a number of occasions since the completion of the experimental work, with satisfactory results.

Forestry Pests.—White grubs, *Rhopaea magnicornis* Blkb., continue to cause some damage in forest nurseries at Yarraman and elsewhere where hoop pine seedlings are grown on an extensive scale, and investigations have therefore been resumed on the problem. Beetle flights were studied during the spring and it is now known that the same insect may take part in flights on successive days and that beetles taking part in diurnal flights after one rain group seldom survive to take part in another at a later date.

Lead arsenate is frequently used in soil dressings in order to proof lawns from white grub attacks. The application of this control method to forestry nursery practice has been held up by the lack of adequate data on the possible ill-effect of the insecticide on the growth of hoop pine seedlings. Some information has recently been obtained on this point and it now appears that hoop pine seedlings are much more tolerant to arsenicals in the soil than had formerly been supposed. Seed-bed experiments were established at Yarraman, Benarkin and Googa to determine the effect which lead arsenate applications might have on white grub infestation. Rates of application ranged up to 50 lb. per 1,000 sq. ft., the insecticide being mixed with sawdust before being dug into the soil. The work has been in progress for approximately two years and the available data indicate that even the lowest level used, *viz.*, 10 lb. lead arsenate per 1,000 sq. ft. of seed-bed, gives almost complete immunity from white grub attacks during the period in which the seedlings are maintained in the beds. At the higher concentrations of lead arsenate, weed growth in the beds was checked and fewer weedings were required than in the untreated beds. This method of protecting various nurseries from white grub attacks should be quite practicable at least where the soil types are similar to those in the experimental work.

Miscellaneous Records.—The passion vine mite, *Tenuipalpus californicus* Banks., is now established in most coastal and some sub-coastal orchards; severe outbreaks occurred at Gayndah and Rockhampton. The citrus gall wasp, *Eurytoma fellis* Gir., is more common than for many years past; the almost complete destruction of young trees in some recently established orchards on the North Coast has been noted. Leaf-eating larvae of the moth, *Margaronia*

tolumnalis Walk., injured fig trees at Sunnybank; it is many years since this pest last attracted attention. The armoured scale, *Howardia biclavis* Comst., caused some damage in moderately infested custard apple orchards at Cleveland; it is more commonly encountered on some ornamentals such as privet. The indigenous Halticid beetle, *Phyllotreta australis* Blkb., was numerous on turnips at Charters Towers and caused typical leaf injury. Larvae of the potato flea beetle, *Xenidia picticornis* Blkb., were observed in potatoes at Home Hill; this is the first record of the immature stages outside southern Queensland. Soy beans were infested during late summer by larvae of the yellow peach moth, *Dichocrocis punctiferalis* Gn.; pod damage and stem burrows were characteristic. A relatively dry spring was associated with severe outbreaks of the leaf hopper, *Empoasca terra-reginae* Paoli., in solanaceous crops in southern agricultural areas. The Scarab beetle, *Orthonius batesi* Oll., caused some damage to wheat in the Nobby district; the last recorded outbreak occurred in 1915. Cicadas belonging to the genus *Melampsalta* were so numerous in the Beaudesert district that egg-laying punctures killed well grown Eucalypts in the area. The San José Scale, *Aspidiotus perniciosus* Comst., is recorded as heavily infesting white gum trees in Central Queensland. The brown cutworm, *Euxoa radians* Gn., attacked hoop pine seedlings in a forest nursery at Nanango in December; the seed leaves and shoots were eaten, sometimes to below ground level.

J. HAROLD SMITH,
Senior Entomologist.

(B) REPORT OF THE PLANT PATHOLOGY SECTION.

For the first half of the year under review, four out of the seven members of the plant pathology staff were still absent on war service, and it is only recently that the normal position was resumed with the return of the last of these officers. The activities of the section will be discussed under the main headings of fruit, field crops, vegetables and miscellaneous.

Fruit.—In the Stanthorpe district attention has been given to certain obscure disorders of apples which may be related to root disease, though the exact cause is still uncertain. Armillaria root rot is causing concern to growers of stone fruits as it appears to be on the increase.

The pathological aspects of the rot following the wood borer in apple trees is being investigated. This rot greatly accentuates the borer damage, but as yet the organism responsible has not been determined.

Grey mould rot of grapes takes a yearly toll of the more susceptible varieties. Owing to the absence of knowledge of fungicides which may be safely employed on mature fruits, an experiment has been planned for the coming season to test out a number of likely materials.

Following the unusually heavy losses from water blister in the past summer crop, an investigation was carried out into the field conditions likely to have been responsible. It was found that in practically every case investigated growers who had sustained losses had neglected to carry out the simple rules for plantation hygiene laid down for the control of this disease.

Investigations regarding diseases affecting the papaw and passion vine have largely been in abeyance during the war years. However, they have now been taken up again and particular attention is being paid to dieback and yellow crinkle of papaw and woodiness of the passion vine. Many field observations have already been made and an extensive series of laboratory and glasshouse experiments is planned for the spring and summer months. An officer has been given the opportunity of studying virus technique at the Canberra laboratories of the Council for Scientific and Industrial Research in order to facilitate this work.

As a result of the increase in popularity of the Lady Finger banana an attempt is being made to more effectively check the spread of Panama disease, to which this variety is subject. A comprehensive survey is in progress to determine from which localities disease-free planting material may be obtained.

Field Crops.—A form of foot rot has been responsible for white heads and general unthriftiness in patches of wheat in the Bongeen and adjacent districts for the past few seasons. As it appeared likely that the pathogenicity of the organism concerned was linked with soil conditions, an exploratory trial has been laid down to determine the effect of applications of various minor elements on the incidence of the disease.

The peanut crop in the Kingaroy district has been receiving attention from a pathologist for some years now, with the result that the disease position is fairly well understood. Two further experiments were carried out during the year. In one of these two non-mercurial dusts were tested against two standard mercury dusts for seed treatment. The results were in favour of the mercurials and justified the present use of "Ceresan" and "Agrosan."

In the second experiment, two copper sprays and two dusts were employed to see if the amount of leaf spot control obtained by any of these would economically affect yield. The plots have been harvested but final yield results are not yet available.

There has been a number of complaints from peanut growers of crown rot in their crops. However, observations have shown that with the present system of seed disinfection losses from this disease are not serious unless there has been a failure to comply with the proper cultural requirements of the crop.

A very serious form of root rot due to the fungus *Sclerotium rolfsii* occurred in one crop of peanuts planted on soil not typical of the main peanut growing area. This occurrence has fortunately not been duplicated.

In the Lockyer Valley the wilt disease which has caused considerable losses in potatoes in previous years was not greatly in evidence. The reason for this may have been meteorological, though no marked climatic difference can be said to have occurred. An experiment was laid down to ascertain the effect of various cover crops in the development of wilt in potatoes during the following autumn. Owing to the exceptionally adverse planting conditions for the latter crop no results of value could be obtained.

The onion crop in the Lockyer experienced the heaviest attack of downy mildew that this district has experienced for some time. All the

earlier crops were severely hit, resulting in the production of small bulbs. In addition the seed crop in many instances was markedly reduced.

Vegetables.—In response to many requests and due to the fact that mosaic is of considerable consequence in tomatoes, two demonstration plots were carried through in the Redlands district with the object of showing that mosaic could be excluded from a pruned tomato crop by paying strict attention to the recommended precautions.

The control of target spot in tomato seedbeds is not always satisfactory when using copper sprays only. Consequently an experiment has been designed to test the possibility of supplementing the effect of the usual copper spray on the plants with a chemical treatment of the soil as well. It is hoped by this means to eliminate some of the collar rot which is a bad feature of this disease. Results of the trial are not yet available.

Lettuce stunt has been further investigated. Evidence now favours a mycological origin for this disease, and field and plot trials are being laid down to test this hypothesis.

Carrots have been subject to losses of up to 40 per cent. from crown rot produced by soil-frequenting fungi of the genus *Rhizoctonia*. Two plots were accordingly laid down to test the efficiency of chemical treatment of the soil in checking this trouble. So far conditions have proved unsuited to the development of the disease and the experiment may have to be repeated before the information will be available.

The question of the phytocidal effect of various sprays and spray combinations is one which frequently requires an answer. A technique is being developed whereby it will be a relatively simple matter to compare the phytocidal properties of two or more sprays.

Miscellaneous.—A plot set out to ascertain the effect of ginger "seed" treatment with mercuric chloride and a commercial organic mercury compound was harvested in September. It was shown that where seed is carefully selected on the farm and handled with care, seed treatment is not warranted. This conclusion might not apply where seed has to be bagged and trucked some distance, when bruising and breaking of the seed pieces might be considerable.

The work involved in providing the appropriate cultures of nitrogen-fixing bacteria for the legume inoculation service has increased in volume and additional laboratory assistance has had to be provided. The number of cultures supplied over the twelve months under review was 1,420, an increase of 50 per cent. over the previous year's total.

The Forest Pathologist has been associated with supplying advice on the suitability of land for new plantation sites. The possibility of using needle analysis rather than that of soil in estimating phosphate requirements is being investigated. More recently attention has been directed to developing methods of propagating *Pinus taeda* and *P. caribaea* vegetatively as part of a plan to ensure that nursery stock will represent first class planting material of known potentiality. Both grafting and the striking of cuttings are involved in this work.

J. H. SIMMONDS,
Officer in Charge, Science Branch.

(c) Report of the Botany Section.

As in previous years, most of the time of the section was taken up in determining specimens and reporting on weeds, grasses, fodder plants, &c., for farmers and pastoralists. Since the end of the war, with more labour available, many town and shire councils and other public bodies have started on tree planting and general beautification schemes and much advice has been sought on suitable trees and shrubs and their propagation and care. The usual large number of poisonous and suspected plants has been received for report, and where these were deemed of more than local interest information was supplied to the country press. Towards the end of the year, as drought got a tighter grip of the country, much information was sought on fodder trees, both native and cultivated. As a result of this, a survey has been undertaken of fodder trees of the south-west, an investigation in which the Division of Animal Industry and the Agricultural Chemist are co-operating.

Weeds.—The spread of St. Barnaby's Thistle (*Centaurea solstitialis*) caused some anxiety on the Darling Downs and in the Burnett district, and at the request of several shires the plant was declared a noxious weed throughout the State by the appropriate authority. A pamphlet dealing with the weed was prepared for the Director of Local Government for distribution to all local authorities in Queensland.

Following heavy summer rains, a visit was paid to the Darling Downs and to the Lockyer district to collect specimens of weeds for the departmental collections and to obtain material for the much enlarged weeds section of the proposed new edition of Volume I of the Queensland Agricultural and Pastoral Handbook.

Poisonous Plants.—At the school of instruction for advisers in sheep and wool and stock inspectors in the principal sheep raising areas of the State, a session was devoted to the principal poisonous plants of these areas. This was followed by a visit by an assistant botanist to Central Queensland to obtain field pictures and notes for the preparation of a booklet on the subject. The material has now been completed and will appear as a series of articles in *The Queensland Agricultural Journal*.

The Commonwealth Council for Scientific and Industrial Research has been occupied in a survey of the medicinal and poisonous plants of the State, an undertaking in which the Section has co-operated considerably. Members of the Section have accompanied the Council's officers in the field on several occasions, to the mutual advantage of both parties.

Herbarium.—The employment of part-time labour from university under-graduates and departmental cadets enabled a good deal of accumulated material to be placed away in the herbarium cabinets. Exotic grasses were also re-arranged according to more modern ideas of classification and in consequence the specimens are much more readily accessible.

Exchanges of specimens with kindred institutions were largely held up during the war years, and requests for material have now been received from American, British and Contin-

ental herbaria. A number of specimens has been despatched to the Royal Botanic Gardens, Kew, England, and the Arnold Arboretum (Harvard University), Boston, U.S.A. Material of special groups has been sent to and received from the government herbaria at Sydney and Melbourne.

Systematic work on the collections continues to be done. Much material was received during the war years from New Guinea in connection with forestry and milling operations of the Army. Quick determinations and reports were given at the time, but the material is now being more critically examined as time permits. It has already formed the basis of a paper describing a new genus of large timber trees and a monograph of another. Other papers are in the course of preparation. The Cyperaceae (sedges) of the three Archbold Expeditions to New Guinea were received for critical examination and report, and two papers on these have been submitted for publication; others will follow.

From 1st July to 15th December, the Government Botanist was on loan to the Government of the British Solomon Islands to take part in a timber survey of the territory. Many specimens were gathered and more have since been received from the Forester continuing the survey. The examination of these has occupied much of the time available for such work.

Botanic Museum.—Additions to the Botanic Museum have not been numerous, though several specimens of fruits, barks, and woods, of some interest have been added.

C. T. WHITE,
Government Botanist.

---

(5) REPORT OF THE AGRICULTURAL CHEMIST AND BIO-CHEMIST.

Subdivision of the chemical laboratory intc four sections was recorded in the 1944-45 annual report. Each section has been strengthened by the return of service personnel until the total is almost that of pre-war staffing.

General Analytical Section.

Some measure of relaxation from war time control of pest destroyers, veterinary medicines and feeding concentrates has allowed increasing numbers of these commodities to appear on the market, and new drugs developed during the war are available. The analysis of agricultural materials of this nature is not always simple. Methods have to be tested before a procedure can be adopted. Frequently systems of analysis applicable to single ingredients require considerable modification when a mixture is under investigation. Substitutes for pyrethrum extracts and derris preparations, D.D.T. and other halogenated derivatives, new anthelminths and weedicides are finding their way into common use. The testing of these commodities to ensure conformity with prescribed standards is done by the General Analytical Section. Regular examination of dipping mixtures, various fodder analyses and portions of the work associated with inter-Section investigations, such as that into fluorosis, complete the duties of the Section.

Bio-chemistry.

In addition to routine examination of specimens, officers in this group have been occupied by the following livestock disorders endemic to certain areas of the State:—

(1) For many years a peculiar scouring disease of cattle on a small area of the Atherton Tableland has engaged the attention of veterinarians. During 1945 the Bio-chemist was able to visit the area in company with the local veterinary officer. Field evidence suggested strong possibility of teart—a scouring disease of cattle, long known in parts of Somerset and Devon. The responsible factor is excess of molybdic acid in the pasture. It is difficult to draw a sharp line of demarcation between molybdate excess and copper deficiency—in fact, copper therapy is the answer to teart. Since copper studies would have involved the slaughter of stock, the molybdate theory was tested first. Repeated analyses of soils and pastures at bimonthly intervals made the "excess" theory less and less attractive, while low copper figures for soil and pastures encouraged the "deficiency" hypothesis, but nothing definite can yet be said.

Enzootic haematuria has broken out in several localities and it is hoped to obtain co-operation from officers of the Division of Animal Industry in this interesting anabranch of the above-mentioned problem.

(2) Nutritional bovine edema appeared in several parts of the State. The clinical aspects of the trouble are well known in Queensland and the histories of previous outbreaks have been tabulated by veterinary officers.

During the later months of 1945 and the early portion of 1946, biochemical data were systematically accumulated. Body fluids from affected stock kept under both pen and field conditions were examined. A high degree of correlation between blood picture and recovery rate was recorded. The outbreaks were inconveniently located and not of sufficient duration to enable all necessary information to be obtained, but useful leads have been established. A constant feature was the low serum proteins. Adopting the classical theory of Starling a case can be developed for abnormally low intake of protein of poor biological quality. Experiments to gain more information on this point have been devised by officers of the Divisions of Plant Industry and Animal Industry in collaboration.

(3) A problem assuming major importance in the wool industry of Queensland is copper deficiency. Over many years copper deficiency in fruit-growing areas of the State has been known. The suspicion that livestock in these areas suffer also is now confirmed and proof that relatively large tracts of pastoral country are affected has been obtained. Though the protective dose of copper is minute, it must be continuously administered and the best methods for doing this have yet to be determined. These will vary with watering facilities, herd and flock management, distribution and degree of the disability. The problem is being tackled in co-operation with the Sheep and Wool Branch.

Biophysics.

Because of the long-term nature of any programme aiming at the resolution of the more intricate poisonous principles in plants, Australia has only a modest achievement to record in this field.

During the war, when supplies of strategic drugs became unavailable, many were either synthesised or the sources of raw material developed. Strychnine was virtually unprocurable and dingo and rabbit numbers increased. The Chemical Laboratory began investigations with the object of discovering what substitute poisons might be prepared either in pure form or as crude extracts from plants. The most difficult part of the programme lay in devising apparatus for testing responses to administration. It was only towards the end of the war that this problem was mastered. One of the staff with radar training and experience returned from active service and in close co-operation with the appropriate engineering section of the Postmaster-General's Department, a unit was built which is now recording normal data from test animals. These are prerequisites to the work projected.

The co-operation of the Postmaster-General's Department is gratefully acknowledged. The help afforded by Professor D. H. K. Lee, Department of Physiology, University of Queensland, in providing numerous facilities, is also recorded. Use of the unit for research in human physiology has resulted in additions being incorporated by Professor Lee and the whole installation will prove a valuable aid whenever bioelectric recording with a high degree of accuracy is required.

Toxicology.

Poison cases in livestock continue to be unnecessarily numerous. The melancholy story of "death due to careless disposal of arsenic" again accounted for most of the work of the Toxicology Section. So many users of this poison seem unable to appreciate the permanency of arsenic. Land affected by the effluent from a cattle dipping vat (.2 per cent. arsenious oxide) has been shown to grow grass with toxic levels of arsenic after twenty years from the initial soil contamination.

It might not be out of place to issue a warning to persons submitting "arsenic" specimens. When it is possible for moulds to develop in the presence of arsenic, the risk of poisonous vapours being developed is very real. Several times during the year stomach contents submitted reeked with the garlic-like odour of organic derivatives of arsenic. The odour is characteristic and should act as a warning. The destruction of arsenic compounds by fire also calls for a warning. Lethal quantities of volatile material may be inhaled unconsciously.

Drought Feeding.

The severe and widespread drought has involved both cattle and sheep properties. Normally this laboratory is the channel through which most drought feeding advice passes. The quantity and quality of foodstuffs to be fed is reasonably well understood, but the mechanics of drought feeding still remains a closed book to most enquirers. Most of the advisory work devolves upon an officer who has gained considerable experience in this special branch of animal husbandry.

During the past year the number of waters examined for potability to stock has kept two men almost entirely occupied. Dwindling supplies of palatable waters have beeen eked out by adding controlled quantities of unsuitable waters—the amounts being determined by analysis. This service has been greatly appreciated by producers and at the same time it has given the laboratory much useful data on which future recommendations can be based.

Fluorosis.

In previous reports attention has been drawn to the problem of fluorosis. The laboratory has continued in association with the Division of Animal Industry to plot new areas where clinical examination suggested the presence of affected waters. As a further impetus to the work the laboratory now examines for fluorides all waters submitted for test regarding suitability for livestock. This procedure has enabled a quick cover of the State to be made. It has shown that the seriousness of the position had not been underestimated. It is felt that the more or less stationary level in Queensland sheep numbers is in no small measure due to the very wide distribution of fluorided underground waters. Peaks and troughs above and below the mean may be accounted for by seasonal variations. Official recognition of the investigations has come through the formation of an Inter-departmental Fluoride in Waters Committee with fairly wide terms of reference. It is composed of representatives from the Departments of Public Lands, Health and Home Affairs, and Agriculture and Stock.

One of the most difficult duties falling to officers engaged in this work is that of indicating to graziers what course of action should be taken in regard to affected properties. It is possible, in many cases, to suggest how management might be adjusted so that animals in the most susceptible age groups are watered at the least affected bores, but the absence of local knowledge regarding stock, paddocks and pastures can lead to impracticable or even impossible proposals. Here is a problem the full implications of which are not generally appreciated. Alternate sources of water are at present the only certain answer to the problem. This automatically introduces the whole questions of water trapping and storage, which lie within the provinces of engineers and soil physicists.

Intermittent exposure to fluorided waters may be part of the answer to the economic side of the question. In the present state of knowledge it is not possible to indicate how frequently these watering changes should be made nor is it known to what extent recommendations should vary with different age groups in stock and fluoride levels in water.

Examination of these questions requires more than usual care and until adequate research has been planned and completed the only course to adopt is one of conservatism. Experiments to examine some of these more important angles of management have been commenced.

Laboratory Equipment.

Strenuous attempts have been made to equip the laboratory to a standard becoming its importance. Modern units and new methods of analyses have been introduced wherever they increase speed and accuracy. At present the facilities for most of the regular operations

are satisfactory. It is in the field of special investigation that more apparatus is needed. This is especially true of biophysics and biochemistry. It is only of recent years that provision has been made for work in these fields but the need is now well recognised and the foundations of a separate laboratory are being prepared.

Staff.

The Director, Division of Plant Industry, has adopted a system of quick rotation among head office laboratories of those officers whose main occupation is in the field. This gives outside men an opportunity of learning first hand the type of work performed, the specimens required, and the methods of preparation for submission.

MONTGOMERY WHITE,
Agricultural Chemist and Bio-Chemist.

(5A) REPORT OF THE OFFICER-IN-CHARGE, PLANT NUTRITION SECTION.

Although appointed in charge of this Section as from 1st July, 1945, the writer was unable to take over full-time duties until the end of September. This was due to the necessity of completing certain unfinished investigational work for the Bureau of Sugar Experiment Stations and to a month's absence from the State, attending the Winter School of Soil Science at the Waite Institute, Adelaide.

On the return journey from Adelaide an inspection was made of the irrigated land in the Murray and Murrumbidgee Valley districts, and a visit paid to Dookie Agricultural College in Victoria to observe the methods of erosion control practised there. A joint report by the writer and an officer of the Agriculture Branch on the School and irrigation methods as practised in the southern States was compiled on returning to Queensland and copies distributed to interested departmental officers.

During the past year the work of the section has been confined almost entirely to that on soils, waters, and associated problems.

Soil Surveys.

As a consequence of the various reconnaissance soil surveys conducted by the Bureau of Investigation set up under *The Land and Water Resources Development Act* in connection with closer settlement schemes, and of those carried out by this Department for the Land Administration Board in relation to land settlement plans for returned soldiers, a large number of soil samples has been examined during the year with a view to assessing their actual and potential fertility and mechanical composition.

Forestry Sub-department Work.

Numerous soil samples were analysed for the Forestry Sub-department during the past year; these were mostly sent in as the result of investigational work being carried out by forestry officers. A considerable extension of this type of work is planned, and to cope with the increased volume of soil and plant analyses which will automatically follow such an increase applications have been called for two additional officers for the staff to enable the requisite attention to be devoted to forestry problems.

Soil Samples for Fertility Measurements.

Many samples are received from farmers desirous of knowing the general fertility status of their soils and seeking advice as to the most suitable fertilizer to apply; this service is rendered free of charge. As far as possible, field officers of the Agriculture or Horticulture Branches are asked to report on the field aspect of such problems but, when this is not practicable, detailed instructions for taking soil samples in a specified manner are supplied to growers on request.

Soil and plant analyses have been undertaken at the request of various branches of the Department and several visits paid to outside centres by members of the Section to study the field aspects of particular problems. It is hoped to be able to do more work of this description during the ensuing year.

Water Analyses.

Analyses of waters are carried out free for farmers and graziers to determine the suitability of waters for irrigation or stock. Frequently producers request, in addition to the above, a statement as to the quantities of softening agents required to render the water suitable for washing or other domestic requirements.

During the present dry period, it has been necessary for one analyst to devote his full time, and a second one about three-quarters of his time, to this work, with a consequential increase in the amount of correspondence of an advisory nature.

Investigational Work.

Owing to the necessity for devoting a large proportion of the staff's time to analytical determinations, very little planned investigational work has been practicable during the past year. It was possible, however, to co-operate with the Agriculture Branch in an investigation of irrigable land in the Lockyer district, and a technical paper describing the chemical and mechanical characteristics of the soils from this area is being prepared for joint publication.

It is hoped, in the coming year, to be able to initiate laboratory investigations designed to determine the effect of irrigation waters of known doubtful quality on the chemical and physical properties of soils from the Lockyer district. This work is of immediate importance owing to the extensive use of water for irrigation in this district. Further work on soil fertility problems is planned and arrangements have been made with the Agriculture and Horticulture Branches to submit for laboratory examination representative soil samples from control plots of fertilizer field trials. It is hoped also to carry out soil fertility surveys in selected areas.

C. R. von STIEGLITZ,
Officer-in-Charge, Plant Nutrition Section.

REPORT OF THE ACTING DIRECTOR, DIVISION OF ANIMAL INDUSTRY.

Seasonal.

At the commencement of the year the pastoral areas of the State were suffering from the effects of the severe winter conditions in 1945. Drought continued in the sheep areas of the South-west, but conditions in some districts in Central Queensland were good, and a large body of dry feed was standing in the North-west.

Some substantial falls of rain were recorded in the sheep areas during July, 1945, and these improved the position in the Blackall district. In August, some scattered storms occurred near St. George and at Charleville. By September those areas north of a line joining Augathella and Jundah were generally sound, but south of this line drought still prevailed.

During October further useful rains fell in the Blackall district and west of the Thargomindah-Quilpie road, and in November some narrow storms were recorded at Goondiwindi. In December further storms occurred in Central Queensland, and some scattered falls in the South-west. During January and February very heavy rains were recorded in the North-west and on the coastal cattle country when two cyclones passed along the eastern seaboard. During this time some falls were recorded in the South-west and, while beneficial, were not sufficient to relieve the position as a whole.

March was hot and dry, and the pastoral conditions continued good in the northern and eastern parts of the State. The position in Central Queensland was patchy, and the areas west of Springsure and Emerald and about Barcaldine and Longreach were particularly dry, and at Roma the outlook was serious. Beneficial rains were recorded as far west as Condamine early in April, but the position in the Roma and Charleville districts and in the area between Bollon and Cunnamulla deteriorated still further and is now in a state of absolute drought.

The present winter conditions are the coldest experienced for some years. Heavy losses of both sheep and cattle have been reported. The position has been further aggravated by the impossibility of getting fat cattle off to market, and on many properties these animals have deteriorated considerably in quality. At the close of the year many of the flocks in the South-west, which had experienced drought conditions for the last four consecutive years, are seriously depleted. Despite the unseasonable warm conditions, however, experienced in the North-west during the autumn, a good body of dry feed is still standing.

The Burnett at the close of the year was going through one of the worst droughts on record, and many owners have been obliged to evacuate stock. The Downs has had no worthwhile rain for many weeks, and the outlook now is grave.

Animal Health Stations.

The laboratory building, which was originally erected for and occupied by the veterinary faculty of the University of Queensland, but has since been handed over to the Department and is now occupied by the Yeerongpilly staff, has been renovated and some necessary minor alterations made. The new building is much more convenient and suitable as a diagnostic and research laboratory than the premises hitherto occupied.

YEERONGPILLY.

A total of 190 stud animals (previous year, 216), mostly of beef breeds, were received for tick fever vaccination. Animals prepared as tick fever reservoirs and sold for distribution to graziers in the tick infested belt of the State numbered 73. More than 11,000 doses of blood for tick fever vaccination were despatched. Very many specimens covering a very wide range of disease conditions were received from officers in the field and stockowners for diagnostic examination.

OONOONBA.

At the northern station, which during the war years was more or less occupied by troops of the allied armies, normal activities have been resumed. In the course of the year severe floods caused much damage to the property and completely destroyed the fencing.

Stud cattle numbering 48 were received for vaccination against tick fever. More than 3,000 doses of blood were distributed for the same purpose to stockowners.

The diagnostic work referred to later on in this report was in the main carried out at the two animal health stations.

Disease Control.

CATTLE.

Buffalo Fly.—The buffalo fly continued to extend during the year. Inland it spread during late summer fairly rapidly up the Dawson Valley to reach the Wandoan-Miles area; further west it reached the Injune district, while it was observed on a few properties north-east of Mitchell. How far it will spread towards the south-west corner of the State is conjectural. On the coast it has infiltrated steadily southwards and has reached a point just south of Maryborough. A little to the west it has appeared in the Eidsvold-Mundubbera area, it's southern limit being the northern fringe of the downs country north of Jandowae. It is anticipated that it will move rapidly down the coast during the coming summer and may reach the Brisbane area at any time after good coastal rains have fallen.

The only fixed spraying plants in operation are the two situated on the coastal railway at Bororen and Isis Junction. All cattle coming south to the Brisbane market along this line are sprayed at these two points. As the fly has reached a point south of Isis Junction the spraying plants at these two points will, it is anticipated, be shortly closed down and a portable spray plant placed at Theebine. Hitherto all treatment at the fixed spraying plants have been with a preparation with a basis of a mixture of tar oils. This

preparation while satisfactory is not nearly as effective as D.D.T. With the opening of a new spraying plant at Theebine, D.D.T. will be used exclusively in the treatment of moving cattle.

A considerable amount of work has been done during the year on fly control by the team of Council for Scientific and Industrial Research officers who have been working in North Queensland at Malanda, while some field observations on the use of D.D.T. have been made by our own officers. At Malanda, North Queensland, a new type of buffalo-fly trap has been devised. This trap is a very simple structure. The upper half of the walls and the roof of the trap are made of thick glass. The same type of curtain is provided as in the wire gauze trap originally devised. Instead of special elements to trap the flies, however, the destruction of the parasite is brought about by the application of D.D.T. to the inside of the glass. It has been found that one application of D.D.T. is effective for several weeks, the application being made with an ordinary atomiser using a 4 per cent. emulsion or suspension.

Most owners, however, rely on the use of D.D.T. alone to control fly on their properties. The drug is now available in 20 per cent. concentrations and these can be diluted by the stockowner. With dairy herds treatment can be applied with a hand atomiser or knapsack spray.

Observations in North Queensland show that even in fairly large mobs of cattle the fly can be controlled by the use of the hand atomiser. If the cattle are put through a race and a small quantity of the fluid applied to the sides of the neck and wither—a gallon if carefully applied will do up to 80 head—even the heaviest infestations can be controlled and the fly quickly reduced to something less than pest proportions.

Where dipping for cattle tick is combined with spraying for fly control some owners treat the cattle with D.D.T. in the draining pens after dipping. This can be done quite easily, provided the draining pen is not too large and a knapsack spraying outfit equipped with a fairly long arm is used.

It would seem, on the basis of present experience, that the control of the fly will be based almost exclusively on the use of D.D.T. Stockowners prefer to buy the drug in concentrated solution which they can dilute to their requirements. The trap is not popular, at least at the present time, with stockowners.

Cattle Ticks and Tick Fever.—Tick fever has occurred occasionally and at widely separated points in the infested zone. Anaplasmosis (*A. marginale*) was the cause of the deaths of some cattle in the Beaudesert district. Outbreaks of tick fever caused by the anaplasm are rare in Queensland.

Generally, the tick, because of the dry conditions which have prevailed, has been less active than usual. The situation, however, in respect of what is known as the arsenic-resistant variety of tick is just as serious as it has ever been and some stockowners are obliged to dip cattle throughout the year at intervals of not less than a month during the cold weather with shorter periods—*i.e.*, reduced to 14 days at times between treatments—during the summer. Moreover, great difficulty has been met with occasionally in cleanisng some mobs of catle on the move to non-infested country and weekly treatments have been necessary for a short period before the animals have been cleansed. It would appear that some ticks, especially parasites located on those parts of the body where they may receive some protection by the heavy winter coat of the animals, can complete their parasitic life cycle on the animal, notwithstanding weekly treatments in the arsenical dipping bath.

A considerable amount of work has been done with D.D.T., much of it by officers of the Council for Scientific and Industrial Research working in co-operation with graziers who provided cattle for experimental purposes. Moreover, an advance was made in this work when a leading commercial firm placed at our disposal a form of D.D.T. which could be used as a colloidal suspension in water. Using this particular preparation a dipping vat in Central Queensland was charged and a number of cattle treated in the ordinary way. The "tickicide" effect of the D.D.T. was announced, even when the dilution of D.D.T. was only 0·5 per cent., as equal to that of arsenic under the best conditions.

Although the introduction of a form of D.D.T. which can be used in the field as a water suspension is a marked step forward, there are several important points to be settled before the drug is likely to be employed in tick control on a large scale. For instance, it is not yet known how long the drug will remain stable in a dipping vat. It is essential that it remain at least relatively stable for a reasonably long period, otherwise its cost would become prohibitive. Furthermore, it is necessary that soft water only be used in preparing the watery suspensions, although water softeners may help to a large extent to overcome this difficulty.

Even if the drug is found to rapidly deteriorate in a dipping vat under optimum conditions, it may be possible to use it as a spray on cattle where relatively small quantities of fluid can be prepared at a time and there is not much waste at the end of a day's operation. Some of the power sprays now being employed to treat cattle for ticks, using the ordinary standard arsenical fluid, may be suitable for the use of D.D.T., and this aspect is now under consideration.

Brucellosis.—The disease is very widespread and losses economically are in the aggregate heavy. The great majority of owners do nothing to control it and their attitude is to some extent understandable. Hitherto, the test and slaughter method which has been applied is, in the average commercial herd when badly affected, beyond the financial capacity of most of the stockowners. On the other hand, an initial test of many herds shows either a low incidence or else a negative status. When the former is found, it is in the interests of the owner to use the test and slaughter method; and in respect of the latter, periodic tests should be applied and action taken to isolate and test any introduced cattle.

In the course of the year slightly more than 21,000 agglutination tests were carried out at the two Animal Health Stations. The testing at Yeerongpilly covered 126 herds and 53 of these

were free from positive reactors; of the remainder, 56 were in process of eradication and the rest were heavily infected. At the northern station, specimens were received from some 68 herds, and these showed an overall incidence of 4·5 per cent. Eighteen herds are under test for eradication.

Many herd owners do not recognise that the economic damage involved extends frequently beyond the immediate loss of the calf and the subsequent lactation period. Many cows are affected with sterility for short periods after abortion, and not infrequently the calves of infected mothers born at full term are not as vigorous as those from cows free from the disease.

Strain 19 has not been used in Queensland to control the disease, but as the vaccine is now being widely used both overseas and in Australia a preliminary move is being made to test it on a limited scale in this State.

Tuberculosis.—In my last annual report mention was made of the work which had been commenced of cleaning up tuberculosis in the herds supplying raw milk to the city of Brisbane. During the year this work was extended and all herds were tseted at least once. More than 50 per cent. have been tested twice and a few, which showed a high initial incidence and where short interval testing was necessary, were tested three times. Particulars are as follows:—

——	No.	No. of Cattle.	Reactors.	Percentage Reactors.
Herds tested first time	267	12,873	1,664	12·93
Herds tested second time	165	7,744	360	4·65

It will be observed that while the first complete test showed an incidence of approximately 13 per cent., the second test showed an incidence of only 4·65 per cent. This must be considered satisfactory, because the 165 herds referred to include all those with a high initial incidence, and it is expected that when the remaining herds —about 100—are tested the incidence will show a further reduction.

All the herds referred to supply raw milk to the city of Brisbane and naturally are all concentrated within the city area. Outside this area there are a large number of herds spread over an area from Coolangatta to beyond Caboolture on the coast, and as far inland as the Downs, which supply milk to the various companies in the city which pasteurise and bottle the product before distribution to consumers. A start has been made on the testing of these herds. Staff shortage, the high incidence of the disease in the area selected for the first tests, and the widely scattered farms have prevented this work from being pushed forward as quickly as could be wished. Moreover, complicating factors have arisen in the administration of the Act in that it has been found that some dairies supply only portion of their milk to the city of Brisbane, the remainder being distributed to centres outside the city area. To overcome these difficulties, it has been found necessary to extend the relevant provisions of the Act to these centres.

Particulars of testing to date are as follows:—

——	No.	No. of Cattle.	Reactors.	Percentage Reactors.
Herds tested for first time ..	73	6,546	1,518	23·19
Herds tested for second time ..	40	3,956	290	7·33

It will be observed that the overall incidence at the first test of some of these herds was exceptionally high. This was not surprising because many of the herds in the area selected were known to be badly infected; in fact, the area was chosen for that reason. Short interval testing will have to be practised in many of these herds before the incidence can be reduced to manageable proportions. Incidentally, the figures show the grip which tuberculosis has in some of the dairying areas of the State.

In regard to herds on the Darling Downs and under the control of the Downs Co-operative Association, and which supply milk to the city of Brisbane, an arrangement was made whereby the company concerned would undertake to have the necessary testing done by its own private veterinary practitioner. This has helped to relieve the pressure on the available staff and from the departmental point of view is quite satisfactory. The company has undertaken to have the herds under its control—some 350—tested every 12 months.

In addition to the testing of herds supplying milk to the city of Brisbane, a large number of herds scattered throughout the State are under regular test. Some of these herds supply milk to the provincial towns and some are stud herds of dairy cattle engaged in cream production. Several stud beef herds are under regular test.

A considerable amount of testing has also been done for the Royal National Association. As mentioned in the last report, this association requires that all cattle entered for exhibition must carry a certificate showing they have been recently tested for tuberculosis, unless they originate from a tubercle-free herd, which is one, of course, under regular test. Figures of the cattle tested are not yet available because entries for the Brisbane Show did not close until the first week in July, but it was known that several hundred tests had already been completed,

A considerable amount of tuberculin testing has also been done for farmers who have suffered serious condemnations of pigs for tuberculosis at the abattoirs. In most of these cases, if not in all, infection is brought about by the ingestion of dairy milk containing the tubercle bacillus. In some cases, pig losses have been particularly heavy and the removal of the tuberculous cows from the herd has cleaned up the disease among the swine.

St. George Cattle Disease.—This condition, which acquired its name because it first came under notice in the St. George district, in south-west Queensland, and which was thought to be confined to certain types of country—*i.e.*, red sandy soil of poorer quality covered with coarse grasses, and then only after a prolonged dry spell, is mentioned because what appears to be a similar disease was observed on first-class

black soil mitchell grass country in Central Queensland. It seems likely also that a condition seen in cattle occasionally near Rockhampton is identical in nature.

There is no evidence that the disease is infectious, nor is it likely to be caused by a poisonous plant, though the latter was suspected as a possibility when the disease first came under notice.

Pleuropneumonia Contagiosa.—Outbreaks of the disease, 21 in number, were recorded. During the year outbreaks were under surveillance in the dairying areas near Brisbane. The origin of these outbreaks has not been discovered, but with the traffic in stock which goes on continuously it is not unlikely that contacts with cattle from North Queensland, where the disease is enzootic, were the cause. The complement fixation test is now being used to trace cases which show no symptoms and the number of cattle which fall into this category in any outbreak is very high. Recently, one herd showed 25 reactors, none of which showed clinical evidence of the disease. However, lesions were found in them all when subjected to post-mortem examination.

Vaccine prepared by the Animal Health Division of the Council for Scientific and Industrial Research, was used exclusively to control outbreaks and also prophylactically. More than 270,000 doses were used.

Internal Parasites of Cattle.—The unusually dry conditions prevailing during the early winter has been associated with serious outbreaks of helminths, these being widely scattered and usually more serious than in previous years.

Haemonchus contortus is the most commonly involved parasite, up to 20,000 being noted on a single animal. *Bunostomun phlebotomum* and *Cooperia* spp. have not been uncommon. In one outbreak *Trichostrongylus axei* was a contributory pathogen, and in another *Paramphistomum* sp.

Work on the differentiation of helminth larvae has reached the stage where satisfactory differential counts can be made.

A survey has been commenced to ascertain the relative importance of the various cattle helminths in Central and North Queensland and sets of viscera and faecal samples are being sent to the central laboratory. It is hoped that information of value for the diagnosis of helminthiasis from a faecal examination can be so obtained.

Miscellaneous.—Blackleg has been reported on several occasions and appears to be extending northwards very slowly.

Salmonella infection in calves was reported from the Brisbane area.

Pneumonia in calves, which appears to be contagious, has been reported as being successfully treated with sulpathiozole from both the northern and southern portions of the State.

Mycotic dermatitis has been observed on cattle on the Darling Downs and in the South Burnett. Further information is required as to the importance of this disease.

Vaginitis and accompanying sterility in dairy cattle were reported from two centres.

Arsenical poisoning is the cause of heavy losses occasionally. A severe mortality occurred in the Ingham district where cattle had access to an area which had been sprayed with arsenic to destroy weeds. Deaths after dipping in excessively strong arsenical solutions were also noted in North Queensland.

Poison plants cause much heavier losses than are usually suspected and the following came under notice:—

Poison peach (*Trema aspera*) was the cause of mortalities in the Bundaberg district and on the coast near Brisbane.

Cestrum parquii caused losses in dairy cattle in the Brisbane area and along the north coast.

Lantana spp. was the cause of heavy losses in fat bullocks near Cairns.

Erythropholeum Laboucherii was suspected as the cause of mortalities in travelling cattle near Mount Isa.

Gastrolobium grandiflorum is apparently the cause of many deaths in cattle on some properties in North Queensland, more so probably than originally suspected.

Myoporum acuminatum came under observation as the probable cause of mortalities in the Biggenden district.

The tick, *Amblyomma triguttatum,* was recorded several times from cattle on the Downs, and *Rhipicephalus sanguineus*, the dog tick, was recorded from cattle.

HORSES.

Ataxia.—This condition was referred to in my last annual report. A severe outbreak occurred in the Bundaberg district at the end of the wet season. It seems to be fairly certain now that a condition which occurs in the Bowen district is identical. Some cases also have been observed in the Rockhampton district.

In the recent outbreak at Bundaberg it was observed that quite a number of animals recover (about 33 per cent.). Previous investigations at Bowen suggested a poisonous algae, but this theory was eliminated at Bundaberg.

Another condition seen in horses on farms on the South Coast and referred to in my last annual report was again in evidence this year. The symptoms noted are marked distress when the animal is forced to exert itself, and on post-mortem lung lesions are present.

Parasitic Conditions—Psoroptic otacariasis: Several cases were noted, attention being called to them by a local practitioner. *Psoroptic hippotis* was the causal agent.

Bot flies (*Gastrophilus nasalis* and *G. intestinalis*) have been particularly active.

DOGS AND CATS.

Dogs infested with both stickfast fleas (*Echidnophaga gallinaceae*) and dog fleas (*Ctenocephalides* sp.) were treated with various strengths of D.D.T. All fleas were killed and the animals remained free from the pests for 3 to 5 weeks.

A 2 per cent. suspension of D.D.T. was found to be fatal to cats.

Gammexane as an emulsion of 1 per cent. was tried in the control of dog ticks (*Rhipicephalus sanguineus*). All ticks were killed and the animals remained free for 10 days afterwards.

Gammexane as a 10 per cent. powder in kaolin proved very effective against the dog tick also, an excellent kill being obtained and the animals remaining free for some days afterwards.

Sheep and Wool.

The past year has not been an easy one for the sheep industry. Prolonged drought has seriously depleted flock numbers in the South-west and extremely cold, dry conditions on the Darling Downs during the winter months have retarded fat lamb production. The situation on many properties in the central districts has been precarious throughout the year. The shortage of foodstuffs has made drought feeding on a large scale impracticable.

The industrial dispute which dislocated all meat works had unfortunate repercussions on stock markets and it was impossible to get animals in good condition slaughtered.

Some improvement in the quality of fat lambs has been noticeable and it is obvious that producers are aware of the emphasis the end of the war has placed on quality as against quantity. There is, however, a serious shortage of suitable crossbred ewes as fat lamb mothers.

During the year 591,492 bales of wool were appraised in Queensland. Approximate flock numbers as at 31st March, 1946, stood at 19 million sheep, which compares unfavourably with last year's total of approximately 22 millions.

Staff.—This year has seen a considerable expansion of the sheep and wool branch. The staff has been increased and strengthened to provide for both extension and research activities.

Two graduates in science have been appointed specifically for the purpose of establishing a fleece-testing unit.

The adviser in sheep and wool, previously located in the Central-west, has been promoted to senior adviser and transferred to Dalby.

Three new appointments have been made to the advisory staff, a senior adviser being located at Barcaldine, an adviser has taken up duties at Hughenden, and the latest appointee will be stationed at St. George.

With the ending of the war, two of the officers on active service availed themselves of the opportunity of accepting a University course, whilst the third has resumed duty. One cadet has been appointed to the branch.

Training.—A special school of instruction was conducted at the Animal Health Station in February, 1946. Those officers who will be most actively engaged in extension work in the sheep areas—*i.e.*, advisers in sheep and wool and selected stock inspectors—attended; the subjects dealt with included sheep husbandry, sheep parasite control, drought feeding and animal health and disease. The school was of three weeks duration and included practical demonstrations. Each officer attending was issued with a detailed set of notes prepared especially for use at the school, and additional copies were circulated among all officers in the sheep areas.

During the first three months of 1946, the assistant wool technologist visited the Gordon Institute of Technology, Geelong, the Central Wool Committee's Fleece -Testing Units at Melbourne and Sydney and the Council for Scientific and Industrial Research's McMaster Laboratory in Sydney, all of which are engaged in research work pertaining to wool production and manufacture. This visit proved of great value and much was learned concerning the application and use of improved techniques.

The senior adviser, who was transferred to Dalby, visited New South Wales fat lamb areas to familiarise himself with the more recent advancements in production methods which are being practiced in that State. He also availed himself of the opportunity of seeing several sheep studs of British breeds. It is felt that with the assignment of this officer to the fat lamb producing areas of the State a useful and much needed service will be fulfilled.

Extension Work.—With the decentralisation of staff the extension services of the branch have been strengthened. Seasonal conditions have necessitated making effective a comprehensive programme of field work.

Examination of the returns submitted by field officers shows that they spend more than 80 per cent of their time actually on properties. They have been consulted on all aspects of husbandry and on the planning of improvements. The main objects on which they have concentrated their efforts has been the curtailment of preventable economic loss. Accordingly, their work has centred mainly around parasitic control and the culling of the unproductive sheep.

Control of Internal Parasites of Sheep.—A move has been made to improve the methods used in the control of sheep parasites. Gratifying results have been obtained in that there is now evidence of a strong desire on the part of graziers to avail themselves of the most up-to-date methods and to apply them in the routine management of their flocks.

The information obtained from the epidemiology trials for the control of worm parasites has been applied in the field.

Heavy losses were experienced during 1945 on some properties east and south-east of Hughenden and in this area a considerable amount of extension work has been done. Phenothiazine drenching is carried out as a routine practice against the three common worm parasites of sheep in April and August. In some areas where the worm problem is severe excellent results have been obtained.

Blowfly Control.—All field officers within the Branch have been trained in the correct technique to be used in performing the Mules operation and many demonstrations under field conditions have been given by them on properties on which stock owners are desirous of taking up this method of fly control. Three schools of instruction on blowfly control measures were organized in association with the United Graziers' Association at Bollon, Dirranbandi and Cloncurry and were conducted by the veterinary officer of each district.

The main features of all these demonstrations have been the Mules operation and the adoption of the correct tail length. Standardized recommendations have been made as to the

method of performing the operation, and the length at which it has been recommended that the lambs tail be cut—about ¼ inch below the tip of the vulva. Excellent results have been obtained from the application of the Mules operation and the adoption of such a tail length. The policy followed in demonstrating these methods to graziers on their properties has been highly successful and with the return of normal labour conditions it is thought that many more graziers will adopt these methods.

The Control of the Body Louse (*Bovicola ovis*).—Further efforts have been made to impress on graziers that the control of the body louse is important from the point of view of economic wool production, and considerable interest in louse control has been aroused by the work of the adviser stationed at Hughenden.

Sheep Classing.—Instruction and assistance in the classing of sheep and the selection of rams has been given to graziers by the field advisory staff. Work has been carried out in 31 flocks, a substantial increase over previous years' figures.

Feeding of Sheep.—Efforts have been made to feed sheep during the drought months on some properties, but it has been impracticable to handle the situation satsifactorily because of the shortage of foodstuffs. Protein-rich supplements have been practically unprocurable and grain has been at an extremely high price.

Advice has been given on drought feeding by the extension staff wherever it has been possible to feed. Assistance also has been given to stud masters in planning suitable rations for sheep.

The Farmers' Wool Scheme.—The Farmers' Wool Scheme continued to function successfully throughout the season 1945-46. On behalf of growers 646 bales, 15 butts and 16 bags were prepared. Prices were particularly good, especially in respect of the very mixed wools received for classification. Top lines of AAA M went to 20¼d. and AAA CB X to 19½d.

With the final appraisement which commenced on Monday, 24th June, the 1945-46 season came to an end. This occasion, too, saw the end of appraisement in agreement with the British Government. For the season 1946-47, auction sales will be resumed. There is, however, under agreement with the newly constituted Joint Organisation, a general reserve average price of 18·15 pence per lb., less a contributory charge of 5 per cent., giving a net average return of 17.24 pence per lb. (Australian).

Disease Conditions.

The following are the more important conditions:—

Copper Deficiency.—During field investigations early in the year a type of wool identical with the so-called "steely" wool, seen in the known copper-deficient areas of South Australia, was observed. A joint investigation was commenced with an officer of the Division of Biochemistry and General Nutrition, Council for Scientific and Industrial Research, and the Agricultural Chemist's branch of this Department, and unequivocal proof was obtained of a copper deficiency in large areas of country in the north-west and south-west of Queensland. Present activities aim at surveying the extent of the trouble and devising and applying control measures. A trial is being conducted on a property in the North-west, where sheep suffering from copper deficiency are being drenched regularly with small doses of a copper sulphate solution. An immediate improvement in wool character has been observed.

It has been considered that the supplementation of copper to the diet of the sheep may be brought about by either giving the animals a lick containing copper or by adding copper sulphate to the water. There are practical difficulties in the feeding of a lick because of—

1. Many sheep in Queensland are salt-hungry animals and there is considered to be some danger of chronic copper poisoning through animals over eating.
2. About 25 per cent. of the sheep in almost any flock will not take any supplement.

Whether or not the copper can be given through the water will depend on—

(*a*) The type of water—*i.e.*, surface, artesian or sub-artesian;
(*b*) The composition of the various salts in solution in the water; and
(*c*) The type of watering facilities which exist—*i.e.*, cement or metal troughs and holding tanks.

Post-marking Mortalities in Lambs.—Heavy post-marking mortalities of lambs were reported from North-west Queensland in previous years and with a recurrence of trouble during the winter of 1945 investigations were commenced. Losses were restricted to male animals only and on some properties up to 50 per cent. of the lambs died within a week of castration. The history, symptoms and post-mortem findings suggested an anaerobic infection which was confirmed when *Clostridium septique* was isolated. All mortalities were associated with the use of old-established yards at marking time and a satisfactory prevention of further losses resulted from the use of temporary yards.

Pregnancy Toxaemia.—Several mortalities caused by pregnancy toxaemia were reported from the Roma and Charleville areas. Losses were heavy and because of the drought conditions and the difficulties associated with supplementary feeding the position could not be eased satisfactorily.

Infectious Labial Dermatitis.—Further outbreaks of infectious labial dermatitis occurred in the sheep areas. Vaccination of lambs at marking time would no doubt prevent these outbreaks.

Parasitic Conditions.

Cutaneous Myiasis.—Blowfly activity has been restricted in those areas of the State where it has been extremely dry and hot in summer and cold in winter.

The spring fly wave was rather intense in that part of Central Queensland where conditions were reasonably good and it was reported that on one property many rams were blown on the tip of the scrotum. The spring fly wave on the Darling Downs was rather prolonged, and following the November rains at Goondiwindi considerable fly activity was seen in the district.

Body strike was prevalent in the Stanthorpe district and the usual bad periods of from February to May and August-September were experienced. In addition, trouble was reported

during June when the sheep were struck on the neck folds, apparently as the result of constant wetting when walking through the long grass.

With the extensive application of the Mules operation, facilities have improved for further field observations on the control of crutch strike of sheep. Where correct technique has been adopted in performing the operation, excellent results have been obtained.

Critical examination of lamb-marking methods has not revealed that this work is always done in a way which will give maximum protection to sheep against blowfly attack. The importance of cutting the tail so that a flap of unwoolled skin from the under surface is turned back over the severed stump is not fully realized; and confusion still exists about the optimum length at which to cut the lamb's tail.

Pediculosis.—Practically no further spread of body louse (*Bovicola ovis*) has been reported during the year, though some observations have been made on its occurrence in the marginal areas of the South-west.

Sporadic cases of infection with the foot louse (*Linognathus pedalis*) were reported from properties in the Central district and in the North-west.

Heavy infestations of the sheep ked (*Melophagus ovinus*) were seen in the Stanthorpe district during the latter part of 1945. Attention was focused on the present unsatisfactory position regarding control measures.

Epidemiology Trials.—The epidemiology trials which have been conducted in conjunction with the Council for Scientific and Industrial Research McMaster Laboratory for a number of years, have continued and have yielded useful information. The co-operation of the graziers who have made this work possible is acknowledged with appreciation.

In the most northerly portions of the timbered areas used for sheep grazing—*i.e.*, east of Hughenden—the barber's pole worm (*Haemonchus contortus*) demonstrated its capacity to persist well into the autumn months. Seasonal conditions were abnormally warm in this area during the autumn and winter and further observations are to be made.

Toxological Conditions.

Fluorosis.—Further field observations have been made on the occurrence of, and economic loss caused by, fluorosis in sheep. In certain areas where the ground waters are heavily fluorided, sheep age prematurely because of the destruction of the permanent teeth. On properties in these areas, great difficulty is experienced in maintaining sheep numbers because of the low rate of replacement and the heavy rate of culling because of "broken mouth." In addition, there is little demand by buyers for wethers suffering from fluorosis.

As the critical age at which sheep can be put on to fluorided waters is dependent on the deposition of enamel in the permanent teeth, observations have been made on tooth formation in merinos. The present indications are that by the time the first four permanent incisors (the central and lateral central) are in wear the enamel deposition on the molars is complete, though it is not complete on the corner incisors at this time. This means that if the sheep can be kept off fluorided waters until such time as they are "four tooths" little damage is likely to be done to the molar teeth.

Suspected Poisoning by Weir Vine (Ipomoea calobra).—A clinical study has been carried out on sheep suspected of being poisoned by weir vine. Affected animals showed emaciation, inco-ordination of gait and a peculiar high carriage of the head, with the muzzle elevated and pointing almost vertically to the sky. Heavy losses were reported, some owners stating that they sustained an annual loss of 10 per cent. of their flock.

Wild Parsnip Poisoning (Didiscus glaucifolius).—A heavy stand of the wild parsnip occurred between Charleville and Cunnamulla and west of Cunnamulla and a considerable number of lambs were affected. These animals showed lameness and swelling of the joints of the limbs.

Soda Bush Poisoning (Threlkeldia proceriflorus.—Heavy mortalities in some sheep trucked from Aramac, Central Queensland, developed on arrival at the saleyards at Brisbane. The post-mortem findings were consistent with soda bush poisoning and it was found that the sheep had travelled over a stock route on which there was a heavy stand of this plant.

Humpy Back of Sheep.—Many cases of the so-called "humpy back of sheep" were reported during the later summer months. There is considerable field evidence to suggest that this condition is caused by plants of the family *Malvaceae,* and *Malvastrum spicatum* is under suspicion. Feeding tests with this plant indicated that it could cause symtoms similar to those seen under field conditions.

Research Work.

Climatological Survey.—Considerable difficulty has been experienced in obtaining the necessary equipment for the establishment of the fleece testing unit. This unavoidable delay is unfortunate in that it has curtailed research work on wool production during the past year. Realizing however, the importance of the ecological side of sheep husbandry in the State, a study of the Queensland environment has been commenced. As the development of a single index, as a suitable measure of climatological influences, does not seem practicable, a detailed study has been made of—

(*a*) The variability of rainfall about the average.

(*b*) The length and variability of the influential rainfall period.

(*c*) The relationship of rainfall to evaporation.

In addition, the phase and amplitude of atmospheric temperatures are to be studied and the whole work correlated with the distribution of plant communities and pastoral practice.

Results of this climatological survey have indicated the wide variation there is about the "mean" monthly rainfall as well as the unreliable nature of the wet seasons. The study of the relationship of rainfall to evaporation (which has been calculated from saturation deficits) has indicated the extreme dependence of the northern areas of the State's sheep

country on the summer rains, while the influence of the winter rains in the southern areas has been clearly demonstrated. This work has been carried out in conjunction with Mr. S. L. Everist, of the Government Botanist's staff, who was an R.A.A.F. Meteorological Officer during the war.

Pig Branch.

Prices.—The continuance of the *Pig Meats Acquisition Plan* of the Federal Department of Commerce in a modified form gives a measure of stability to the industry. This modification of the original plan came into operation on the 11th June, 1945, in consequence of the shortage of feeding stuffs, especially grain, throughout Australia and provided for pigs as light as 60 lb. dressed weight to be marketed, the price of such pigs to be 9d. per lb. dressed weight, the same as for heavier weight carcasses. Thus the weight range was fixed for prime first quality pigs dressing from 60 lb. to 200 lb. Under an amended weight and price plan to operate from 1st April, 1946, the price to the producers of pigs dressing 60 lb. to 180 lb. remained unchanged at 9d. per lb. for first, 8½d. per lb. for second and 7d. per lb. for third quality; choppers and overfat carcasses being priced at 6½d. and 5d. per lb., respectively.

The price of carcasses dressing between 180 lb. and 200 lb. weight to be 8d. per lb. for first, 7½d. per lb. for second and 6d. per lb. for third quality. However, because of the difficulty producers had in arranging to get their pigs killed during the meat workers' strike and the unusually large proportion of heavy weight pigs coming forward in consequence, representations were made with the result that the Minister for Agriculture and Commerce agreed to a postponement until 3rd June, 1946, which was again extended to 1st July, 1946, by which time it was expected that marketing arrangements would be back to normal.

Production.

Production figures for the year reveal a decline, which is attributed largely to shortage of grain, protein foods and building materials, while in the latter part of the year drought conditions extended throughout the main pig producing areas of the State, thus bringing about a sharp decline in milk supplies. The meat workers' strike which commenced in March also caused considerable inconvenience and unrest in the industry and, as a result of these unfavourable conditions, numerous farmers sold or are selling their breeding stock for slaughter. Apart from a rush of heavy weight pigs immediately the strike is over, it is anticipated that production will fall still further and some considerable time will elapse before it is again normal.

Correspondence Course.

During the war it had not been possible to give the correspondence course the attention warranted, but, with the increased staff and reorganisation of the branch, this matter has received attention.

The course was initiated on 1st March, 1932, and from that date to 30th June, 1935, 478 student farmers enrolled. From 30th June, 1935, to 1st July, 1940, 712 students enrolled, of whom 301 completed the course; 375 discontinued after completing two or more lessons, leaving 36 active as at 30th June, 1940. For the period 1st July, 1940, to 1st July, 1945, 717 students enrolled, of whom 185 completed the course, 521 did not complete for various reasons mainly because of war service, leaving 47 on roll as at 1st July, 1945.

This shows that from 1st March, 1932, to 1st July, 1946, 1,577 students enrolled in this course, indicating that it is filling a very useful purpose in instructional work among pig raisers and others interested. A further indication that the course is appreciated by the farming community is borne out by the widespread area covered, extending from Thursday Island to the New South Wales border and as far west as Windorah, Winton and Richmond.

Stud Pig Breeding.

Reports indicate that there has been a keen demand for stud pigs throughout the year and breeders at present are making every effort to obtain fresh blood lines in order to maintain and improve the quality of their stock. In this respect, the Royal National Show will enable breeders to compare their animals and provide the opportunity to procure fresh breeding stock.

General.

In the course of the year the Technical Sub-Committee on Pig Production of the Australian Committee on Animal Production held its third meeting in Melbourne and was attended by representatives from all States, many matters of great importance to the pig industry being discussed.

This Department and Queensland producers were represented at a conference between the Meat Industry Advisory Committee and representatives of pig producers held in Sydney when such matters as the pig meats plan, long-term pig meat agreement with the United Kingdom, production trends, feed prices, and grading were on the agenda.

At a meeting of the Australian Stud Pig Breeders' Society held in Melbourne, the alteration of the constitution and rules of the Society so as to include all pig producers within the Commonwealth, was agreed to, and the society is now known as the Australian Stud and Commercial Pig Breeders' Society. It is anticipated that the move will greatly increase the scope of the society's activities with beneficial results to the industry.

Field days, lantern lectures, usually followed by farm visits, were held in various centres, together with inspections of suburban piggeries in the Greater Brisbane area; also a viist to the Northern Tablelands was made with the object of ascertaining the possibilities of expansion of the industry in that area.

Despite present problems of the industry, enquiries from pig raisers seeking advice on various phases of the industry are constantly being received.

Disease Control.

Tuberculosis.—The disease is widespread in pigs. Figures quoted later in this report show that 0.718 per cent. of all pigs slaughtered

throughout the State were condemned for this disease. This represents a very serious loss to the producers.

In cases were heavy condemnations occur, it has been the usual practice in the past to test the dairy herd on the farm of origin. Recently, however, we have in addition tested all the breeding pigs on the property as well, and in some cases the number of infected animals has been found to be extraordinarily high. The site of injection of the tuberculin has been at the base of the ear or, in the case of lop-eared pigs, where the reaction may be difficult to read when this technique is followed, the posterior edge of the ear.

In one outbreak where pigs were fed buttermilk from a factory seven reactors were obtained in a group of 35 tested. In another outbreak where pigs were fed whey from a cheese factory all breeding pigs were negative, but eight reactors were found among the cows maintained on the same farm. Extensive tuberculous lesions were observed in pigs four months of age from one property.

Swine Erysipelas.—No cases of this disease were diagnosed.

Glassers Disease.—This condition is described in the literature under various names—*e.g.*, influenza arthritis, serofibruous arthritis, and peritonitis—and is due to infection by an organism identical with the swine influenza bacillus *Haemophilus suis.* The usual history is that pigs have been bought in a saleyard and sicken and die about a week after purchase. Several outbreaks have come under notice, mostly in pigs about three months old. The symptoms observed are fever, lameness in one or more limbs and marked depression and on post-mortem, an acute arthritis with extensive fibrinous deposits in the pleural and peritoneal cavities. Symptoms and lesions are characteristic.

Swine Paratyphoid.—Swine paratyphoid and contagious pneumonia caused by salmonella organisms are very common, particularly on properties where the owners do considerable dealing in pigs.

Parasites.

Helminths.—A considerable amount of work has been done in relation to the pathogenicity and control of *Ascaris suum.*

Attempts by numerous workers to establish experimental infestations with adult *A. suum* have rarely been successful. A trial carried out was successful in establishing light infestations in four out of five pigs by using continuous daily doses of about 50 eggs. Further trials are contemplated, using larger doses of eggs.

The work carried out in 1945 in the United States of America with sodium fluoride as an anthelmintic led to trials with this drug. Using dose rates of the commercial salt, containing 73 per cent. sodium fluoride, of 0.1 to 0.25 grammes per pound body weight, fed in sufficient food to last for one day, high efficiencies were obtained against ascaris and stomach worms. At these rates the drug was ineffective against whip worms, but the higher dose rates showed some promise against nodule worms. So far, 234 pigs, including some pregnant sows, have been treated in both individual and group tests and toxic effects have been comparatively mild. One pig showed symptoms of acute fluoride poisoning, but beyond temporary and mild vomition, diarrhoea or the passage of soft faeces and occasionally some inappetence, the remaining pigs exhibited no ill effects. The dose rate which seems to combine both efficiency and safety to the best degree is 0.1 gramme per pound body weight, fed for one day in an amount of dry mash equivalent to 1 lb. for every 25 lb. live weight. This work will shortly be submitted for publication.

Lice.—Preliminary tests with a proprietary D.D.T. "colloidal" suspension showed that, when applied at the rate of 2 per cent. D.D.T., all lice are killed and a promising period of protection from reinfestation is obtained.

Poultry Branch.

Production.

During a portion of the year eggs have been rationed to the consumer. This has given rise to the opinion in some quarters that production in the industry over the last twelve months has diminished. Such is not the case. The best measure of production is the quantity of eggs that pass through the Queensland Egg Board channels. Although only a proportion of the producers of the State market eggs through the Board it is an index as to what is happening throughout Queensland. The following table gives the monthly production of 1945-46, as compared with 1944-45. It will be observed that a low estimate is made for June, 1946. Notwithstanding this, supplies for 1945-46 are in excess of the previous year by practically two and one-third million dozen eggs.

Queensland Egg Production.

(Controlled Area Only.)

	1944–45.	1945–46.
	Dozen.	Dozen.
July	555,665	858,061
August	1,187,373	1,669,325
September ..	1,181,498	1,602,556
October	1,144,696	1,812,862
November ..	1,120,339	1,210,803
December ..	607,569	927,834
January	850,629	822,852
February	659,825	901,645
March	536,979	638,881
April	474,001	501,310
May	530,864	518,412
June	571,720	370,197
Totals ..	9,511,163	11,834,738

It will be observed from this table that there is a decline in May and June, 1946, as compared with the corresponding period in 1945. This, it is considered, is largely because of the reduced supplies and quality of poultry foodstuffs available to the industry.

Poultry Food.

There has been an increase in the cost of foodstuffs over the previous year, and poultry foodstuffs have not been in sufficient quantity, or of a quality to maintain a high rate of production. Without a high rate of production economy in production is not possible, as all foodstuffs used by commercial poultry raisers have to be purchased.

The supply of foodstuffs in sight for the second half of this year will not maintain poultry flocks at existing levels. Just how short of requirements the food supply will be is impossible to

estimate, but in the case of wheat (one of the main cereals used for poultry feeding) only five-sevenths of the quantity used during the second half of 1945 will be available for the second half of 1946. During May and June of the period under review protein-rich foods of animal origin were practically unobtainable. This, it is contended, is largely the cause of the fall in production which occurred during these months as compared with 1944-45.

Slaughter of Poultry.

The shortage of material has not permitted enforcement of regulations governing the slaughter of poultry, but there is a vast improvement. Two relatively large slaughtering establishments are being built on modern lines which will make for economy in slaughter, and, at the same time, be as hygienic as it is practicable to have this trade conducted.

Dressed poultry oversea exports totalled 170 tons, equivalent to approximately 95,000 birds. Overseas values permitted of the Australian ceiling price being largely maintained. Although poultry have been exported on a previous occasion from this State as an experiment, this is the first time that the business has been entered into on a commercial basis.

Hatchery Survey.

During the war period, at many hatcheries, there were complaints of poor hatching results. In 1945 the position was worse than in any previous year which caused a survey of the position to be undertaken. In this survey, information was gathered from 38 hatcheries close to Brisbane and from the data obtained it is suggested that the poor hatching resulted from the feed supplied to the parent stock containing an insufficient number of units of both vitamins A and elements of the vitamin B complex.

The economic importance of good hatching is illustrated by the following table compiled from the investigations:—

Average Per Cent. of All Eggs Set.	Classification of Hatching Results.	No. of Hatcheries.	Total Capacity of Hatcheries Per 3 Weeks.	Value of Chicks at £3 Per 100.	Value of Chicks Lost as Compared with Hatcheries Classed as Good.
				£	£
72	Good	17	188,400	4,068	..
59	Medium	12	144,000	2,478	546
45	Poor	9	106,200	1,434	858

A full report of the position was made in the March, 1946, issue of *The Queensland Agricultural Journal*, from which farmers could obtain the necessary information to correct the conditions.

It will be seen from this table that there is no appreciable difference in the loss of weight when birds are in transit than is the case when birds are crated and held on a farm over a similar period.

Poultry Transport Shrinkage.

Poultry arriving in the Brisbane market has, for some years past, been sold on a live-weight basis. Some dissatisfaction among farmers arose from the lower weight received on sale, as compared with the consigning weight. Shrinkage definitely occurs in transit, but there was no evidence of what this shrinkage amounted to under local conditions. Transport facilities have been largely blamed.

With the object of comparing the skrinkage which occurs in transport and the shrinkage which would occur in birds crated and held on a farm over a similar period without feed, a series of tests was undertaken. From the information gathered the following table has been prepared:—

Table showing Length of Journey, Average Loss of Weight per Bird and the Percentage Loss of Weight per Bird.

Distance Travelled.	Time Occupied Travelling.	Average Loss Per Bird.	Percentage Loss Per Bird.
		Ozs.	Per Cent.
47 miles	12 hours	3·2	3·95
106 miles	12 hours	3·0	3·3
221 miles	18 hours	5·99	7·0
Held on farm ..	12 hours	4·19	3·84
Held on farm ..	18 hours	6·87	6·47

The birds held on farm were crated at 6 p.m. after feeding.

Sex Determination of Day-Old Chickens.

During the period under review 17 examinations were conducted for persons who had studied this subject. *The Poultry Industry Act of* 1946 now provides for the issue of first and second class licences. One candidate qualified for a first-class licence and three for second-class licences. A total of 32 persons are now licensed to engage in this work.

Registration of Hatcheries.

Applications for registration or renewal of registration numbering 127 were lodged. Of these, 118 have now been registered, two had to be rejected because an insufficient number of birds were maintained on the property. Five applications are pending.

Hatchery work has entailed during the last half of the financial year much concentrated effort. In servicing hatcheries an important indirect service is extended to thousands of poultry raisers by improving the quality and reducing the incidence of disease in the chickens distributed from these hatcheries. The incubator capacity of the hatcheries which are registered or have been registered in the past is approximately $1\frac{1}{3}$ million eggs. If these machines are only operated four times during the year they would be a means of distributing throughout the State more than three million chickens.

Disease Control.

Officers of the Branch take the opportunity to advise farmers direct on cases during farm inspections. Farmers do not report all instances of losses caused by disease as they are often able to deal with the more common conditions themselves; otherwise, they refer mortalities to the inspectors who make use of the diagnostic services of the Animal Health Stations.

Pullorum Disease.—During the year 182,879 birds were tested for pullorum disease, 8,570 giving a positive reaction (4·68 per cent.). This shows an increase on the previous year's testing of 1·2 per cent. However, 55 thousand birds belonged to owners whose flocks had not previously been under test. There were several instances of increased incidence in flocks which had been previously tested. It is considered, however, that these were caused, in some cases, by feeding incubator "clears" which had not been boiled—a circumstance resulting from feed shortage. In other cases, the increase was the result of the hatching of eggs for other farmers whose stock had not been tested and where the incidence was unknown and therefore probably high.

Thirty-seven lots of young chickens were examined bacteriologically, and pullorum disease was diagnosed in twenty of them. In the examination of the hatchery flocks for pullorum disease some culling of unsuitable stock is carried out at the same time. During the year this amounted to 6,000 birds, or 3·28 per cent. of the flocks.

Coccidiosis.—A true index of the importance of this disease cannot be obtained from reports of outbreaks as farmers learn to detect the trouble for themselves and take action to combat it. It is, however, the cause of a relatively heavy mortality, and the period under review has been no exception.

Deficiency Diseases.—Vitamin A deficiency was a common nutritional deficiency observed during the year, brought about by the absence of good supplies of green feed, the difficulty of obtaining choice lucerne chaff, the shortage of maize and its high cost, and the almost complete absence of vitaminized oils.

Vitamin B (*Riboflavin*) Deficiency.—Deficiencies of the Vitamin B complex were not uncommon and these deficiencies were induced by the shortage of green feed and dried milk products in the food of young chickens. This deficiency with Vitamin A deficiency was probably a contributory cause of increased mortality from other diseases.

Avian Leucosis.—This disease is apparently becoming more prevalent in commercial laying flocks. In pullets approaching lay or that have just commenced laying, the mortality has at times been exceptionally heavy, but generally the death rate has not been spectacular, though it has persisted throughout the year. Sanitation, careful breeding and selection may do much to reduce the incidence of this disease.

Internal Parasites.—Capillaria annulata, a worm infesting the crop and oesophagus, was encountered for the first time in specimens from the Wynnum area.

Acuaria (*Dispharynx*) *spiralus,* which affects the glandular stomach, also was observed making the fourth occasion on which these parasites were recorded during the past 15 years.

Numerous enquiries have been made with reference to the treatment of tapeworms and the common round worms infecting poultry (*Ascaridia galli* and *Heterakis gallinae*).

On farms with good husbandry practices the incidence of worms is not great.

Fowl Tick Fever (*Avian spirochaetosis*).—Outbreaks of fowl tick fever on several farms caused heavy losses in laying hens. This disease is transmitted by the fowl tick (*Argus persicus*), and occasionally perhaps by the red mite (*Dermanyssus gallinae*). In some cases it was reported that no fowl ticks were present, but where the search had been thorough and persistent, ticks in small numbers were found.

External Parasites.

Fowl Tick.—A field trial in which a heavily infested poultry house was sprayed with a 2 per cent. D.D.T. solution in lighting kerosene has resulted in complete freedom from larvae for at least three months. Although the number of adults and nymphs considerably decreased, these stages could always be found after treatment without much searching.

Laboratory trials indicate that while the larvae appear very susceptible to contact with D.D.T. on treated surfaces, the nymphs and adults are markedly resistant. On the other hand, observations on the behaviour of larvae, nymphs and adults to contact with surfaces treated with gammexane indicate that all these stages are highly susceptible. Field trials with gammexane will be carried out in the near future.

Stickfast Flea.—In September, 1945, a further outbreak of stickfast flea was located in the Normanby poultry district. This was reported on a farm near Harrisville. It is presumed that infestation was spread by a stray dog. Prompt action was taken to make a survey of the immediate surroundings and 34 infested properties were listed. All work in the Boonah poultry district had to be discontinued in order to permit the staff to concentrate on treatment in the Normanby district, with the object of preventing the spread to the more thickly populated areas. The movement of dogs and the straying of cats, together with some indifference on the part of farmers, makes control of the spread of infestation very difficult. The treatment of properties is not easy as very few farmers have efficient methods of housing poultry and, although provision exists under the Act where an owner might be ordered to confine his birds, it has been almost impossible to obtain the material necessary for building, consequently such orders have not been issued.

Notwithstanding the difficulties with which farmers and officers of the Department have had to contend in controlling the flea, of the total of 46 properties quarantined in the Normanby poultry district at the end of the year, 35 were apparently clean.

In the Boonah poultry district where 281 farms have been quarantined, the number now known to be still infested is only 118. There is an area in this district, however, that has still to be surveyed. The total number of properties released from quarantine in the Boonah district is 68.

In the course of the year a series of experiments in the use of D.D.T. for the control of the flea was undertaken. The most satisfactory of these was a 50 per cent. water dispersible form now available on the market.

One farm with approximately 180 head of mixed breeds and ages, where birds were carrying an exceptionally heavy flea infestation, and where they had access to the area under two or three barns (places that experience shows are often grossly infested), and the complete range of the general farm homstead, it was found that complete immersion in a 2 per cent. dip afforded protection against reinfestation for a period of up to at least sixteen weeks. This property is still under observation.

Further experiments are being conducted with dipping fluids at a strength of 1.0 per cent. and 0.5 per cent.

All birds on infested properties in the Normanby poultry district are now being treated with a 2 per cent. solution and a further survey of the area undertaken. Properties carrying infested birds will be treated as located.

General.

With the object of extending the services of the Poultry Branch over a wider field and enabling officers working in certain areas to obtain a better idea of local conditions and problems, an officer has been stationed at Cairns and another at Rockhampton.

Much time is devoted to blood testing of poultry flocks, but even when engaged on this work opportunity is taken by inspectors to advise poultry raisers on general husbandry practices. This is done in some cases by lectures at night, field days where it is possible to get farmers together, and individual instruction to farmers.

Instruction was also carried out through *The Queensland Agricultural Journal*. Reprints of these articles are obtained for distribution among those requiring advice on the points covered.

The shortage of poultry food supplies necessitated the rationing of poultry mashes. In this work is was necessary for the poultry staff to make investigations into numerous cases. The food supply has been such that many enquiries have been dealt with. These enquiries were made with the object of ascertaining how best the material available may be used.

Brands.

Details of Registrations, Transfers, &c., for Year 1945-46.

—	No.	Fees Received.	No. Since Inception of Legislation.
Three-piece ordinary horse and cattle brands registered	477	477 0 0	92,100
Cancelled horse and cattle brands registered ..	369	1,107 0 0	8,595
Horse and cattle symbol brands registered ..	68	510 0 0	2,055
Cattle earmarks registered	514	514 0 0	31,784
Horse and cattle brands transferred	1,828	914 0 0	66,857
Sheep brands and earmarks registered ..	83	61 0 0	12,966
Sheep brands and earmarks transferred ..	225	56 5 0	7,505
Distinctive brands registered	10	No fee	1,290
Alteration of address of brands	131	No fee	..
Brands cancelled ..	9	No fee	..
Earmarks cancelled ..	126	No fee	..
		£3,639 5 0	

There has been an increase in the number of registrations of cancelled brands, transfers of horse and cattle brands, registration of sheep brands and earmarks, and transfers of sheep brands and earmarks, and a decrease in the registration of ordinary horse and cattle brands, cattle earmarks, symbol brands and distinctive brands compared with the figures for the year 1944-45.

There has been a decrease in the amount of fees collected compared with the previous year, but considering the disturbed condition of labour and the adverse weather conditions affecting the pastoral industry, the amount received was very satisfactory.

A close inspection of the brands and earmarks on cattle arriving at meatworks and saleyards is being maintained and action taken in connection with any irregularities.

It would appear that stock owners generally are complying with the requirements of the *Brands Act* as very few cases of irregular branding and earmarking have been reported during the year.

There was one amendment to the *Brands Act* during the year. By this amendment, a registered owner of a horse and cattle symbol brand may use a symbol brand up to three inches in length. Previously the maximum size was limited to two and a-half inches, as is still the case of a three-piece brand. The increase was deemed necessary as many symbol brands are of a complicated design and the use of a two-and-a-half inch branding iron in the case of these brands resulted in an unsightly and indecipherable blotch.

The Horse and Cattle Brands Directory, complete to the end of 1944, is in the hands of the Government Printer. There is still a considerable amount of supplementary work to be done on the Directory and some months must elapse before it is finally published. The revised edition of *The Sheep Brands and Sheep Earmarks Directory*, complete to the end of 1945, is also in the hands of the Government Printer.

Slaughter of Stock.

The need for central slaughtering establishments in the larger populated centres of the State is an obvious one. As the regulations stand, any one may start butchering at any centre provided a structure is built which complies with the minimum requirements of the Act. As a result, many relatively small towns have as many as eight to ten slaughtering establishments within their environs, representing much wasted energy and expense.

The standard of inspection is kept high, especially in centres where permanent inspectors are stationed. The necessary maintenance of slaughtering establishments and shops, which to some extent fell into arrears because of shortages of both material and labour during the war years, is gradually being overcome.

There were twelve prosecutions for breaches of the Act.

Federal Quarantine.

Work since the cessation of hostilities in the Pacific has been very considerably reduced. However, during the period when numerous troopships were returning to Australia and because Brisbane was frequently the first port of call, strict vigilance was maintained to prevent the entrance of any prohibited animal or bird.

The following animals, &c., were bonded:—

81 dogs	4 rice birds	8 fowls
1 duck	4 budgerigahs	7 galah parrots
11 canaries	15 monkeys	1 squirrel
274 cats	1 pigeon	

The following were seized and destroyed:—

67 dogs	5 parrots	1 canary
1 cockatoo	1 finch	4 budgerigahs
2 tortoise	87 cats	
16 monkeys	1 goat	

In addition, 173,200 pigs were slaughtered in meatworks and bacon factories for export.

A total of 2,701 (0·718 per cent.) carcases of swine was totally condemned for tuberculosis at bacon factories. In addition, there were 8,198 (2·18 per cent.) partial condemnations.

Trans-Border Stock Passings.

The following sets out particulars of stock which crossed the borders into or from Federal and State Territory:—

—	Cattle.	Sheep.	Pigs.
Entered from Northern Territory	66,528	..	..
Entered from New South Wales ..	14,323	17,502	..
Removed to Northern Territory	553	..	..
Removed to New South Wales ..	330,032	1,239,895	21,248

Bacon Factories.

The following figures indicate the total number of stock slaughtered for local consumption; slaughterings for export and on farms and stations are not included:—

—	Bullocks.	Cows.	Calves.	Sheep.	Swine.
Bacon factories	10,700	18,011	12,203	2,646	306,137
City of Brisbane	35,141	61,146	65,546	569,918	3,738
Larger population centres	54,263	66,616	23,032	355,066	13,187
Country centres	22,506	30,533	10,541	99,374	2,956
Totals	122,610	176,306	111,322	1,027,004	326,018

Live Stock Statistics.

The latest available figures show the approximate number of live stock in the State as at 31st March, 1946:

Horses ..	367,357	Sheep ..	18,943,762
Cattle ..	6,538,067	Swine ..	415,411

JOHN LEGG,
Acting Director, Division of Animal Industry.

REPORT OF THE DIRECTOR, DIVISION OF DAIRYING.

Reorganisation of Division.

Following on the reorganisation of the Department and the establishment of the Division of Dairying, which became effective from the 1st July, 1945, the State has been divided into six districts, a senior officer being placed in charge of each district, with other officers working under his supervision. It is intended that emphasis shall be given to advisory and extension services rather than routine inspection and that dairy factories will be focal points from which officers will work. Efforts will be concentrated on improving the quality of produce as the need arises. Close liaison between the Dairy Research and Field Branches with a view to providing effective technical assistance to the industry is being established.

The activities of the Division were restricted during the war years by the many extraneous duties which officers were called upon to perform. Since the end of the war many readjustments in staff and organisation have had to be made.

Seasonal Conditions.

Seasonal conditions in the dairying districts in 1945-46 were remarkably variable; rainfall distribution was erratic, and total registrations were below average in all districts. Except the Port Curtis district, useful rain fell in the opening months of the season and production for the first quarter was well above that in the corresponding period of the preceding season. Favourable conditions continued in the second quarter on the Darling Downs and in the Moreton districts, but comparatively dry conditions prevailed in the Wide Bay, Burnett, and Port Curtis districts. Dairy pastures and production responded to the good rains of January and February, but thereafter rainfalls were generally under average, nutritive value of pastures declined and dairy production fell sharply. In the final quarter, production was adversely affected throughout the State by unusually dry conditions, particularly in the Port Curtis and Burnett districts. The dairy industry is going through a hard winter; pas-

tures everywhere are dry, winter fodder crops are backward or unplanted, and water supplies in some districts are rapidly diminishing.

Changing Farm Practices.

As with other primary industries, dairying has had to make adjustments to fit in with changing circumstances and the advisory and extension services of the Dairy Division have been adapted in accordance with altered practices on dairy farms and in factories.

Machine-milking has increased notably in recent years, stimulus being given by the diminishing labour supply position in rural areas. It is estimated that 30 per cent. of dairy farmers throughout the State now use milking machines, while the percentage is as high as 85 per cent. in some specialised dairying districts. Recent investigations have shown that, by a proper appreciation of the essentials of hygiene and mechanical care, milk and cream of the highest quality can be produced by mechanical milking and that productivity and length of lactation of dairy cows are not affected.

Many farmers forced by wartime exigencies to abandon the stripping of cows milked by machines have found the non-stripping does not affect milk yields or animal health, while it minimises labour requirements in the shed. Although largely a wartime expedient, it is believed the non-stripping technique will increase in popularity; for success, the milking machine must be in good mechanical condition and efficiently operated.

A service has been inaugurated to assist dairy farmers with the mechanical and sanitary care of farm dairy machinery, especially milking machines and separators. Field days have been organised in many centres in co-operation with branches of the Queensland Dairymen's Organisation. Visits were also made to farms for the purpose of checking plants and remedying any defects. At these demonstrations particular attention was given to pulsators, vacuum gauges, speeds of plants, air leaks, rubber inflations of milking machines, and the foundation, level setting, height of bowl, discs and speed of separators, as well as operational care and cleansing procedure.

Field officers in dairying districts where a large proportion of farms are equipped with milking machines have now been provided with vacuum gauges and are in a position to afford sound advice to producers on the care and operation of milking machines and separators.

Coupled with machine-milking and the increasing installation of steam sterilizers for dairying purposes, a milking shed has been specially designed with a view to permitting all operations, including the storage of milk and cream, to be conducted in a single building, which affords greater convenience than by dividing the dairy-shed operations among different buildings. With the easing of the supplies of timber and building materials and manpower, numbers of new sheds, designed according to the modified plan, have been constructed. This shed design will also facilitate the cooling of milk and cream, a matter of great importance in the improvement of the quality of dairy produce.

The use of electricity for motive power for the milking machine and the heating of water for use in dairy sheds, although a recent innovation in most dairying districts, is spreading as rapidly as installations become available.

Butter Production and Quality.

The output of Queensland butter factories was 101,242,498 lb., of an estimated value of £7,493,436. Although this production exceeded that of the previous year by 6,236,959 lb. the effect of adverse seasonal and other disabilities of recent years is clearly seen in the subjoined table showing butter production from 1938-39 to 1945-46.

Year.	Tons.
1938–39	68,919
1939–40	62,408
1940–41	52,268
1941–42	42,712
1942–43	49,782
1943–44	45,275
1944–45	42,413
1945–46	45,197

With a decrease in the abnormal liquid milk requirements in recent years, because of the ending of the war and the withdrawal of service personnel from Queensland, the easing of labour disabilities on dairy farms and an improvement in the machinery and equipment supply position, butter production should gradually return to its pre-war level.

The average payout trend to suppliers by Queensland factories in recent years has been:—

Year.	Per lb. Commercial Butter. s.	d.
1938–39	1	1·55
1939–40	1	2·02
1940–41	1	1·88
1941–42	1	1·63
1942–43	1	3.9
1943–44	1	6.8
1944–45	1	7·9
1945–46	1	7·9

A departure was made in the method of allocation of Commonwealth Government subsidy. As from 1st April, 1946, the subsidy became payable on a flat rate in contrast with the "flush" and "non-flush" seasonal differential subsidy rates paid from 1st April, 1944, to 31st March, 1946.

The Commonwealth Government has approved a continuance of the subsidy to the dairying industry until 31st March, 1947, such subsidy being estimated to return dairy farmers 1s. 7½d. per lb. commercial butter equivalent at the factory for their produce. Details of this amount for commercial butter representing average farm costs, including transport of cream from the farm to the factory, are as follows:—

	Per lb. d.	s.	d.
Farm working and maintenance costs			5·437
Depreciation	1.370		
Fuel (100 per cent. milking machines and motor vehicles)	1·052		
Repairs and replacements	0·487		
Fodder, seed and fertilizer	0·956		
Rates and taxes	0·343		
Other costs	1·229		
	5·437		
Capital charges (interest)			3·663
Labour reward			10·400
Management allowance of 25s. per week for the farmers	1·108		
Workers wages, including the farmer himself at award rate	9·292		
Average farm production cost		1	7·500

Of the total butter production 83·18 per cent. was officially examined by Commonwealth and State grading staffs.

The grading results were:—

	Boxes.	Per Cent.
Choice grade	549,357 ..	36·53
First grade	835,026 ..	55·52
Second grade	103,325 ..	6.87
Pastry grade	16,223 ..	1·08

The subjoined table sets out the grading results in recent years—

Year.	Grades.			
	Choice.	First.	Second.	Pastry.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
1938–39 } Export	51·06	38·24	9·97	·73
1939–40 } only	49·9	37·4	11·8	·97
1940–41 }	49·26	38·1	11·3	1·34
1941–42	52·51	41·11	5·77	·61
1942–43	54·94	39·94	4·68	·44
1943–44	52·0	43·0	5·0	..
1944–45	45·37	47·4	6·53	·7
1945–46	36·53	55·52	6·87	1·08

Butter quality showed a further decline this year. The abnormal incidence of weed-tainted butter was largely responsible for the deterioration in the year's gradings in comparison with those of the preceding season; nevertheless the consistent downward tendency of recent years should be arrested now that the war is over and a more determined approach made to the problem of raising quality by all sections of the industry and particularly at the source of production. Given a raw product of the requisite quality, the well-equipped Queensland factories are capable of processing it into butter comparable in quality with that of any other country. The assured market now available until 1948, when the present Imperial contract expires, should not be viewed complacently; intensive competition from both the produce of other countries and of butter substitutes can be expected within the next few years.

Weeds on pasture lands, especially on the "scrub" lands, are causing concern to the butter industry because of their tainting effect on dairy produce. Taints of this nature are not diminished by existing factory processes. Studies aimed at reducing or eliminating the intensity of weed flavours in butter will be commenced by the C.S.I.R. in Queensland in the forthcoming year.

In the year under review streaky and mottle texture defects were prevalent in the butter output of some factories. The cause of the relatively high incidence of this condition has, however, not been clearly determined.

In the course of the year 100-box butter churns were installed in two Queensland factories. Previously, the 40-box churn was the largest used. Some four years ago an all-metal churn was installed in one factory, but the capacity of this type of churn, which at present does not exceed 2,000 lb., is likely to limit its installation in larger factories.

Field officers of the Division have continued to provide the liaison between the Dairy Research Branch and the factories so far as the operations of the butter improvement service are concerned. The Queensland Butter Board again contributed £1,000 as a grant towards this service, by means of which butter from all factories is regularly sampled and examined chemically and bacteriologically. Despite the inability to install new equipment in the past few years and, in fact, the difficulty of maintaining efficiently existing equipment, especially churns—the main contaminatory factor in a modern butter factory—the biological control of butter manufacture was, in the circumstances, well maintained. There has been, too, consistent progress in the control of the composition of butter in the six years since the butter improvement service was inaugurated, but this important economic aspect of manufacture has not been given the attention warranted by some factories.

Cheese Production and Quality.

As the return for milk supplied for cheese manufacture continued to bear a favourable relationship to the price received for cream supplied for butter manufacture, there was practically no movement of supplies from cheese factories. The seasonal conditions in the main cheese producing district—the Darling Downs—were favourable for most of the year, though decidedly dry for the final two months.

The production was 26,923,153 lb., valued at approximately £1,362,619, compared with 23,001,555 lb. valued at £1,109,975 in 1944-45.

As shown in the subjoined table, Queensland cheese production has expanded in recent years because of special wartime demands.

Year.	Tons.
1938–39	7,031
1939–40	6,179
1940–41	5,237
1941–42	7,292
1942–43	12,730
1943–44	10,733
1944–45	10,101
1945–46	12,023

Cheese officially graded by Commonwealth and State graders was 18,308,511 lb., the grade classifications being—

	Lb.
Choice and first grade	12,863,746
Second grade	5,176,916
Third grade	267,849

Despite expansion of the industry to more than twice its pre-war level, and wartime disabilities on farms and in factories, Queensland cheese quality has shown marked improvement in recent years. This is a satisfactory sequel to a campaign extending over some years for the rehabilitation of the cheese industry, which involved the rebuilding and re-equipping of factories just prior to the war, intensive farm instruction, the further improvement of many factories during the cheese expansion drive in 1941-42, the systematic grading of cheese, and improved technical assistance rendered by the Department.

The subjoined table gives the results of official gradings from 1938-39 to 1945-46—

Year.	Grades.		
	Choice and First.	Second.	Third.
	Per Cent.	Per Cent.	Per Cent.
1938–39	40·54	59·46 }	
1939–40	41·01	58·99 }	2nd and 3rd
1940–41	63·36	36·64 }	
1941–42	73·15	24·83	2·02
1942–43	73·17	26·32	·51
1943–44	75·65	24·33	·02
1944–45	72·6	26·39	1·01
1945–46	70·27	28·28	1·45

It is considered that the stage has now been reached when further improvement is likely to be slow, unless provision is made for the grading of all milk intended for cheese manufacture. This forward move now has the support of the industry and consideration is being given to the working out of a satisfactory system. A voluntary grading scheme, operated by three associations, has proved acceptable to the producers and the cheese manufactured by these associations is of consistently satisfactory quality.

Field officers made 130 visits to cheese factories in the course of the year, carried out 15,000 tests on milk supplies and on factory processes, and visited hundreds of farms in connection with instructional work.

Starter failures due to bacteriophage continue to be a problem of cheese manufacture. Field officers have visited factories which have experienced slow vats and have recommended the following procedure in endeavouring to minimise "phage" infection:—

(*a*) Propagation of bulk starter in starter cabinets, preferably isolated from the cheesemaking room; starter cans to be fitted with "water-seal" lids.

(*b*) Rotation of starters daily, using several strains the phage for each of which is strain-specific and thus minimising the building-up of phage in the factory equipment.

(*c*) Intensive chlorination of factory equipment prior to use each day.

(*d*) Effective heating of whey.

An experimental isolated starter room erected at Yargullen factory is giving promising results in propagating single-strain starter free from phage infection. Following some difficulty experienced in maintaining the temperature of this room in the hot weather, the ventilation system was modified with satisfactory results.

Further observations on the addition of calcium chloride at the rate of 2 oz. per 100 gallons to milk pasteurized for cheesemaking have indicated its beneficial influence when milk of low casein and solids-not-fat content is being dealt with during period of dry weather.

With a view to ascertaining if the physical condition of cheese might be improved, investigations were carried out in manufacturing cheese in accordance with a system recently reported successful in America. The main departure from normal procedure is in the low acidity developed at various stages of manufacture. The practicability of the method under Queensland conditions was demonstrated.

Mite infestation of some cheese holding rooms assumed serious proportions in the past year. Control measures so far tried have centred round improved curing-room hygiene, coupled with fumigation with formalin, sulphur, and ammonia. It is hoped to be able to carry out tests using dichlorethyl ether, which has recently been reported on favourably as an acaracide by New Zealand investigators.

During the year three cheese factories installed whey separators for the recovery of butterfat from whey. Whey separation is proving economically sound and additional whey separators are likely to be provided in the larger factories.

Although waxing of cheese intended for export to Britain is not permitted under the terms of the Imperial contract, some cheese factories are still waxing cheese sold on the local market. Observations at factories during the year indicated the desirability of a pre-drying period prior to waxing, and that waxed cheese requires holding in rooms the temperature and humidity of which are adequately controlled.

Trials on partially reducing the acidity of milk of high acidity prior to pasteurization resulted in the production of cheese which was officially classified as first grade, while the unneutralized milk produced cheese of low second grade. The lifting of cheese quality must, however, be approached primarily from the angle of improving the quality of milk rather than by attempting to renovate inferior milk, which can at best produce only a bare first-grade cheese.

The manufacture of varieties of cheese other than cheddar has shown steady progress in recent years. These varieties are Gruyere, Roman, Red Malling and Cottage. The Dairy Division has assisted the manufacturers of these cheeses in the year by introducing special starter organisms required in their manufacture. One factory is now experimenting in the making of Gouda cheese and satisfactory progress is reported.

During the last summer it was found that much of the cheese arriving in Brisbane from country factories was in an unsatisfactory condition when the wagons were opened up. At the request of the Cheese Board this problem was given much consideration and a report was subsequently made in which several recommendations were given.

Despite the proper icing of the wagons before leaving Brisbane it was easily shown by calculation that very little if any cooling of the cheese would result after loading at the factory. The loading of approximately 6 tons of uncooled cheese is far beyond the refrigeration available as represented by the cool air of the wagon and the remaining unmelted ice combined.

No easy solution of this problem is available, as the wagon is charged to capacity with ice and it is not possible to renew this at cheese factories as no ice supplies are generally available locally. In any case, the time factor is against any effective cooling during transit and, such being the case, deterioration in quality is very likely as control of both cheese temperature and the air humidity within the wagon is very indeterminate.

The logical conclusion was that the only satisfactory technique would be the proper cooling of cheese before leaving factories by the use of, preferably, air conditioning. With proper self-contained air-conditioning units, efficient control is easily practicable, the only drawback being the installation costs. As a result, an alternative method using only standardized refrigeration equipment is being considered and it is hoped that, with proper technique, reasonably accurate control of humidity will also be,

additionally, obtained. Full arrangements have been made with the Irongate Co-operative Dairy Association to enable a proper investigation of this technique during the next summer season.

The investigations on the manufacture of cheese from homogenised milk were brought to a conclusion. Modifications in plant layout and treatment have simplified the technique. The following are comments by the Australian Dairy Produce Controller (Mr. C. Sheehy) on a sample examined by him in London during his recent visit to Britain:—

> "It was to my way of thinking as fine a flavoured cheese as ever I tasted. Messrs. J. Howey (Victoria) and A. Tuohy (London Manager, Australian Dairy Produce Board), who were with me when it was opened, were greatly impressed by its quality, which they agreed was delicious. You will be glad to know that there was only one tiny trace of fat on the outer paper, whilst the parchment wrapping also indicated a similarly small leakage of fat for a cheese that had come from Australia to England through the tropics by way of ordinary parcel post. It was truly an amazing achievement, as the cheese on arrival was in every way in as good condition as one would expect to find associated with a similar cheese marketed locally in the ordinary way."

This product, which does not exude fat at temperatures over 100 deg. Fahr., is expected to prove very acceptable under tropical and sub-tropical conditions. The cheese matures much faster than ordinary cheddar cheese, yield of cheese per pound butterfat is higher, and fat losses in the whey are lower. The Queensland Butter Board has assisted materially in these investigations by way of the purchase of any necessary factory equipment, whilst the directorate and staff of the South Burnett Co-operative Dairy Association have placed every facility at the disposal of departmental officers responsible for the investigations. In conjunction with the Council for Scientific and Industrial Research and the Queensland Butter Board, attention is now being given to developing a method of improved packing of this product. The aim is to pack in a consumer-size square package with special transparent covering.

Liquid Milk Trade.

Because of the emphasis now being placed on the need for raising the nutritional level of the people and the continuous support of nutritional authorities of the pre-eminent qualities of milk and milk products, it is gratifying to be able to report that an adequate and safe supply of pasteurized milk is becoming available in an increasing number of towns throughout the State. The consumption of fresh milk in Queensland is much lower than it should be among people enjoying our standard of living and a considerable increase in consumption is desirable. Nutritional authorities stress that the minimum intake per person for adequate nutritional needs is one quart daily for children and one pint for adults. If this local means for the disposal of a product of the dairy industry can be expanded, it will partially aid in relieving the industry from the perplexing economic problem of being dependent on an export market for the disposal of large quantities of surplus dairy produce.

The Warwick Co-operative Dairy Association and the Millaa Millaa Co-operative Dairy Association have milk pasteurizing factories in the course of construction at Warwick and Innisfail, respectively. Pasteurized milk became available in the year to residents of Charters Towers, to which town supplies were railed from the Atherton Tableland Co-operative Dairy Association's depot at Townsville and to Bowen and Collinsville, which were supplied from the Port Curtis Association's factory at Mackay. A small pasteurizing plant also commenced operations at Caloundra, while a plant in Cairns, previously engaged in the chilling of milk, was re-erected and equipped for pasteurization.

The Brisbane laboratory carried out systematic laboratory control of milk quality and processing of milk supplied to and treated at the Brisbane milk handling plants, and at butter factories near Brisbane, now engaged in the chilling of milk for despatch to Brisbane pasteurizing plants. The quality of the raw milk supply is constantly being checked by means of the methylene blue test performed by the depot staffs; all inferior samples are submitted to the Dairy Research Laboratory for further examination.

The activities of the Division in relation to the liquid milk trade have been considerably improved during the twelve months as a result of the divisional organisation, which has enabled senior dairy advisers to allocate definite duties to field officers. The Brisbane Milk Board increased its grant for services rendered in milk quality control to £2,500 per annum and, additionally, has engaged two field officers for advisory duties amongst producers. These officers work in close collaboration with the departmental officers and are supervised by the Senior Dairy Adviser stationed in Brisbane.

The Toowoomba laboratory continued to provide good service in the carrying out of laboratory examinations on milk treated at the Toowoomba and Warwick factories, and farm instruction was actively pursued by the Downs field staff.

Field officers of the Division stationed in other towns where milk treatment plants or distribution depots are located have given close attention to efforts to ensure the production of milk of high quality and its efficient handling in factories and depots.

The high temperature-short time system of pasteurization of milk, which has been installed in several factories in recent years, was officially sanctioned by the Health Department by an amendment of the *Food and Drugs Regulations*, published in the *Government Gazette* of the 20th April, 1946.

Milk and Cream Transport.

Sections 16B and 16C of the *Dairy Produce Acts* make provision for the orderly control of the transport of milk and cream from farms to dairy produce factories by the gazettel of milk and cream routes and the licensing of carriers. The committee appointed in pursuance of the abovementioned sections of the *Acts* consists of the Director of Dairying, a senior dairy adviser,

and a representative of the industry. The Committee met at frequent intervals and members visited various districts in connection with matters arising from the gazettal of new routes or amendments to existing routes. The allocation of fuel rations to carriers and the distribution of ration tickets on behalf of the Liquid Fuel Control Board was continued. The committee was in frequent consultation with the appropriate authorities relative to applications by licensed cream carriers for tyres and tubes, the purchase of lease-lend vehicles, removal of gas producer units and other matters and, again, as in past years, the co-operation of the respective departments ensured that the transport of milk and cream was satisfactorily maintained.

Twenty-four applications for new milk and/or cream routes were examined and nine previous gazettals checked. One hundred and fifty-six applications for carriers' licenses were recommended for approval and licenses issued accordingly.

Herd Recording.

Pure Bred Testing.—A total of 568 stud dairy cows was tested over their lactation periods for entry into the advanced register of the various dairy cattle herd book societies; 363 cows qualified for entry, 113 failed to attain the production standards, and 92 were withdrawn from test.

The following table shows details of the results:—

Breed.	Passed.	Failed.	Withdrawn.
Australian Illawarra Shorthorn	147	49	61
Jersey	194	50	27
Guernsey	15	..	1
Ayrshire	7	14	3
Total	363	113	92

There has been a strong demand for stud stock throughout the year and young bulls, the progeny of dams which have the production backing entitling them to entry into the advanced register of the respective breed societies, have fetched high prices.

Grade Herd Recording.—The fundamental basis of dairy herd improvement is to keep records of production of milk and butterfat of all cows in the herd. It enables the dairy farmer to formulate his breeding and management policy. Under wartime conditions interest in herd testing quite naturally waned, but in the post-war period it should become a most important phase of extension activity. The average yearly production per cow in Queensland herds tested under the grade herd recording scheme has been approximately 150 lb. butterfat. Even though dairying in Queensland is carried out mainly on an extensive, pastoral basis, this production requires considerably raising. Herd testing will teach the lesson that production can be raised with the existing stock by supplementary feeding in the autumn and winter when pastures are incapable of providing full feeding. The economically feasible means of attaining the objective is to conserve as hay some of the surplus growth of pasture in the reliable summer rainfall season, or to make provision for the growth of summer fodder crops for conservation. Better feeding and better breeding must be complementary, but obviously the provision of adequate fodder supplies (and water) for the dairy herd at all times is a prerequisite to any constructive breeding policy.

Following the approval of the Commonwealth Government to bear one-third of the cost of approved herd testing schemes, consideration is being given to an amendment of the Queensland scheme with a view to providing for the setting up of herd testing units, each unit employing its own tester to visit farms of co-operating farmers for the purpose of sampling, weighing and testing the milk and computing all records.

In the year under review, 42 herds were tested under the grade herd testing scheme, records of 1,751 cows being computed.

Other Divisional Activities.

Rebate of Freight.—Rebates of freight on the Queensland railways for dairy bulls which are the progeny of advanced register cows were paid in respect of 51 applications, the total amount of freight refunded amounting to £213 8s. 6d.

Examinations.—Theoretical examinations of factory operatives for certificates of competency under the *Dairy Produce Acts* were held in July, the numbers of candidates who presented themselves for the respective examinations being—

Teachers milk and cream testing ..	1
Milk and cream testing	63
Milk and cream grading	55
Buttermaking	25
Cheesemaking	10

Successful candidates were subsequently examined in the practice of the above subjects and the number of certificates of competency issued was—

Teachers milk and cream testing ..	1
Milk and cream testing and grading ..	32
Buttermaking	15
Cheesemaking	5

Restriction of the Use of Cream.—This Division, on behalf of the Federal Controller of Dairy Products, issues permits under the Cream (Disposals and Use) Order for the obtaining of cream for ice-cream manufactures and invalids in this State, exclusive of the metropolitan area. In all 594 permits were issued for medicinal purposes and 462 permits for ice-cream manufacture.

Drought Relief Grant.—A drought relief scheme financed conjointly by the Commonwealth and State Governments was approved in the year and is being administered by the Division. The scheme was intended to assist farmers in drought-stricken areas by making grants of money in the event of their income from dairying for 1944-45 not being equivalent to 75 per cent. of the income for 1943-44. 1,021 applications were received and dealt with by field officers and head office staff.

Competitions.—Butter and cheese competitions were conducted for the Queensland Division of the Australian Institute of Dairy

Factory Managers and Secretaries. These involve not only the monthly judging of selected boxes of butter and crates of cheese, but also the computing of the points gained under ordinary grading conditions, as well as the ascertaining of the average moisture content of butters submitted by competing factories.

Publications.—Officers of the Division contributed the following articles to the *Queensland Agricultural Journal*:—

Milk and Cream Grading—E. B. Rice.

Balance in Dairy Farming—R. E. Watson.

Dirt in the Dairy—C. R. Tummon.

Evaporation of Water from Dams—F. G. Few.

The Milking Machine—E. Sutherland.

Buttermaking—J. D. Ogilvie and E. B. Rice.

Milk Cooling on Darling Downs Farms—G. R. Sigley and W. J. Park.

A Model Dairy Building—C. R. Tummon.

Queensland Cheese Production, 1944-45.

Queensland Butter Production, 1944-45.

Milk Supplies and Cheese Quality—L. E. Nichols and Others.

Water and Salt Control in Buttermaking—L. A. Burgess.

Washing Dairy Utensils—P. McCallum.

Milk Spoilage by the Can—V. R. Smythe.

A Water Cooling Tower for Milk and Cream Cooling on the Farm—F. G. Few.

Some Points in Herd Management—C. R. Tummon.

Percentage of Butterfat in Cream—C. R. Tummon.

Device for Inspecting Milk Tubes—S. A. Clayton.

Lectures and Field Days.

Twelve radio talks were given over the National stations and 15 addresses or talks were given to different societies, dairy industry conferences, and lunch-hour clubs. Field days, abandoned during the war, were revived and were conducted at 62 centres. Dairy displays were shown at country shows and the Child Welfare Health Week Exhibition.

Staff.

Three officers of the Division were retired on 30th June, 1946, because of their having attained the retiring age, two resigned during the year to enter private business, and five, who had been in the Armed Services, resumed their former duties. Six field officers were appointed from an examination held in March, 1945, for inspectorships under the *Diseases in Stock, Slaughtering and Dairy Produce Acts*, but one is still in the Services and has not yet taken up duties.

Naturally some time must elapse before a reorganisation becomes effective, but it is believed the Division will give increasingly good service to the industry when it has had the opportunity to properly settle down to the new organisation. A number of transfers effected in the year has prevented a real settling down to the job in some districts, normal field work in many districts has been impeded by officers having to secure calves for the prospective land settlement requirements of ex-servicemen and, furthermore, many officers have had to deal with a large number of drought relief applications.

The activities of the Dairy Research Branch are reported on separately by the Senior Dairy Technologist.

E. B. RICE,
Director of Dairying.

DAIRY RESEARCH BRANCH.

The three laboratories at Brisbane, Hamilton and Toowoomba have been busily employed throughout the year. The programme of work has included (*a*) research work, (*b*) routine quality control of dairy products, (*c*) chemical and engineering investigations and surveys, (*d*) analytical work for Commonwealth Government Department of Agriculture and Commerce, (*e*) testing of dairy glassware, (*f*) training of field officers at short dairy schools, (*g*) extension work, (*h*) general service to the industry.

The work accomplished is indicated below.

Research Work.—A number of investigations have been completed and others are in progress.

Milk.—Investigations into milk quality problems have received a considerable amount of attention throughout the year, and several papers have been published, viz.—"Studies on the Effect of Transport and Storage on Bacteriological Quality of Raw Milk." Parts 1 to 3 have been completed by Mr. V. R. Smythe.

Part 1.—"The Reduction of Methylene Blue by Raw Milk as Influenced by Time and Temperature of Storage."

Part 2.—"The Effect of the Milk Can on the Methylene Blue Reduction Time."

Part 3.—"The Effect of Storage on the Pasteurizability of Raw Milk."

Parts 1 and 2 have been published already in the *Queensland Journal of Agricultural Science*, and work on Part 3 has been completed and a paper is in course of preparation.

In addition, a considerable amount of work has been done on the microscopic appearance of farm milks and the types of organisms contaminating milk from various sources. Already 200 strains of bacteria have been isolated from fifteen various farm sources and are in process of identification. This work should yield valuable information for future advisory service.

Investigations also were carried out on bulk milks from country depots, to determine sources of supply responsible for high bacterial counts after pasteurization. To obtain the information desired, all individual farm milks entering the following depots were sampled, laboratory pasteurized and submitted to a roll tube count:—Caboolture, Booval, Southport, Woodford and Beaudesert. This investigation, which located the farms from which came the high counts, greatly facilitated the work of field officers.

Cooling.—A technical paper on "The Efficiency of Charcoal Coolers for Holding Cream on Farms" was published in the

Queensland Journal of Agricultural Science in September, 1945 (Vol. 2, No. 3). This paper detailed the results of investigational work carried out on this subject during the previous year, when a practical article for the benefit of farmers was published in the *Queensland Agricultural Journal*. These papers were written by Mr. F. G. Few.

"Bacteriophage" investigations have continued throughout the year. An experimental isolated starter building was built at Yargullen and has been under observation since September, 1945. The results to date are promising and the manager of the factory is confident that isolation of the cultures from the factory will prove to be a means of mastering the bacteriophage problem. Attention also is being given to the use of ultra-violet light rays as a possible means of combating bacteriophage, and some preliminary experiments have already been completed.

Homogenised Cheese.—Further investigations have been made on problems associated with the manufacture of homogenised cheese. The factory of the South Burnett Co-operative Dairy Association, Murgon, has been fitted with suitable manufacturing equipment and commercial scale batches have been turned out under supervision. The conditions of manufacture have been closely studied and much valuable information obtained.

Milk Quality Control.

(*a*) Raw milk supplied to Brisbane has been under constant supervision of the laboratory. The initial testing of the raw milk has been performed on its arrival at the Brisbane depots, and 60,000 methylene blue and 31,000 fat tests have been performed by depot testers under the control and direction of the Dairy Research Branch.

In the laboratory 6,510 low quality milks have been microscopically examined and advice notes forwarded to producers. Also 640 methylene blue tests were completed for one wholesale vendor.

(*b*) *Pasteurized Milk.*—Bottled pasteurized milk in Brisbane has been examined daily; 902 samples were submitted to 1,850 tests for total bacterial count, coliform organisms, phosphatase test and fat percentage. In Toowoomba and Warwick the pasteurizing plants have received surveys twice weekly.

(*c*) Miscellaneous samples associated with milk control totalled 1,020. These included individual cow's milk for mastitis detection, bulk milks from depots, cream and farm waters.

This control work has been carried out in co-operation with the Milk Board and the field staff. The producers are becoming more appreciative of this work, and realise that they are benefiting by being promptly advised of any defect that may occur.

Butter Quality Control.

At Hamilton laboratory 2,979 churnings of butter from forty-four factories have been examined bacteriologically and chemically, and results, together with advice, forwarded to factories and field officers.

The following table gives the bacteriological quality index figures for Queensland butter factories for the six years during which the butter improvement service has been operating:—

Quarter.	1940–1.	1941–2.	1942–3.	1943–4.	1944–5.	1945–6
July-Sept. ..	222	298	299	277	286	289
Oct.-Dec. ..	177	224	241	245	256	215
Jan.-Mar. ..	171	246	248	235	239	195
Apr.-June ..	257	272	243	259	285	228

These results indicate a decline in quality which is no doubt attributable to the condition of the equipment in the factories after the strenuous war years. Much replacement of equipment will be necessary in the very near future. The composition of the butter is indicated in the following:—

Average annual moisture = 15·50 per cent.
Average annual salt = 1·36 per cent.

These figures indicate that the farmers of Queensland are £30,000 per annum (approximately) better off than they were six years ago, as a result of improved butter composition. Over the period of six years during which the butter improvement service has been operating the improvement in butter composition has been worth £150,000 (approximately) more to the dairy farmers of the State.

Butter factories were serviced by visits from laboratory and field officers when surveys and special examinations were carried out.

Cheese Quality Control.

This work has been carried out partly by the field officers and partly by the laboratories at Toowoomba and Brisbane. In Brisbane 17 cultures of lactic streptococci have been maintained throughout the year, of which 5 are in regular use for supply to cheese factories. Altogether 694 cultures were distributed to cheese factories. Five cultures of lactobacilli and 6 of penicillium or allied cheese moulds have been carried for experimental purposes. Bacteriophage samples were forwarded from 3 factories representing 7 occasions when slow vats or unclotted cultures were experienced. From examinations of 29 samples forwarded evidence was obtained that bacteriophage was sent to farms in insufficiently heated whey and was returned in the raw milk due to improper cleansing and sterilisation of cans on the farms. Evidence was also obtained of heavy infections from factory equipment and/or environs.

Dairy Chemical Engineering Surveys and Investigations.

A complete chemical engineering survey of ten butter factories not previously visited was carried out during the year. In some cases specific problems brought forward by the factory managers were, in addition, dealt with while at the factory. Subsequent to each visit complete details of each factory have been recorded, a detailed drawing of each factory prepared and finally a comprehensive report dealing with engineering aspects written for the benefit of managers, &c., and for future divisional reference.

Six cheese factories owned by the Pittsworth Co-operative Dairy Association Limited were also visited in the course of the year. This was necessitated by the fact that this association contemplated quite extensive alterations to existing factories and all details were fully

considered during visits to each factory. A report on this matter was submitted to other officers of the Division for opinion on items under their jurisdiction.

Experimental work on water-cooling on dairy farms for the purpose of milk or cream cooling, initiated during the previous year, was continued until December, 1945. The results had been so satisfactory that it was decided to design a suitable tower incorporating all known desirable features and stimulate its use by writing an article for the farmers' instruction in the *Queensland Agricultural Journal*. A suitable design was decided upon and thereafter a tracing, blue-prints, and complete specifications were drawn up to enable easy construction of the towers on dairy farms. Much of the experimental work was carried out by the Senior Dairy Adviser, but several visits were made by the Chemical Engineer to obtain particular details and to check experimental results as obtained on the spot. It is felt that the conclusion of this work in the Beaudesert district will fill a definite want in the desirable technique for milk and cream production on the farm, and a better quality product can confidently be expected from its general practical adoption.

A sequel to this work is the designing of a tower for water-cooling at cheese factories. Very many factories are at a disadvantage during the hot summer months in effectively cooling pasteurized milk sufficiently before making cheese, and a simple and satisfactorily designed tower is considered to offer the required solution. Work on this problem is under way at the present time and the Pittsworth Co-operative Dairy Association has agreed to erect the designed tower at one of its factories to enable experimental work to be initiated next summer.

Work on corrosion in brine refrigerating systems, carried out for nearly a two-year period, was completed during the year. An advisory leaflet for circulation to all factories advocating the initiation of corrosion preventive methods is in course of preparation. The overcoming of most of the corrosion in this respect, so evident at most factories during survey work, will be of considerable economic importance in the aggregate to the dairying industry of this State.

At the request of the Cheese Board a further investigation of the most suitable and economical method of air-conditioning cheese storage rooms at factories is receiving attention. One factory has agreed to allow experiments to be conducted on one type of proposed equipment during next summer, and it may be possible to recommend a suitable unit before the end of the coming year. The transport by rail of cheese from the factory to cold stores in Brisbane also was considered at the request of the Cheese Board and a subsequent report was forwarded on this subject.

All engineering matters in the dairying industry have received attention and advice on overcoming problems and difficulties frequently given. Drawings and tracings also have been made for use by other officers of the Division, or for inclusion in articles for publication or other purposes.

Analytical and General.

Analyses of samples for the Department of Commerce and Agriculture were taken over in September from the Agricultural Chemical Laboratory, and have included butter, cheese and egg-pulp. Samples tested:—

Butter	249
Cheese	145
Egg pulp	36
	430

General laboratory work for factories and producers in the course of investigations frequently involved both chemical and bacteriological examinations. Samples examined under either one or both headings have numbered 260 and have included milk, cream, water, butter, cheese, dairy by-products, rennet, cheese starter, brine, detergents, germicides, deposits from waste pipes and churn scrapings.

The testing of dairy glassware also was taken over from the Agricultural Chemical Laboratory during September, 1945. This has been and still is in rather short supply, and is only of fair quality. Support has been given to a recent move by the Standards Association of Australia for the preparation of an Australian standard for Babcock glassware and accessories. Glassware tested was as follows:—

—	Approved.	Condemned.	Broken.	Total Items.
Babcock milk bottles	Nil	Nil	Nil	Nil
Babcock cream bottles	1,279	7	4	1,290
Babcock milk pipettes ..	714	..	23	737
Babcock cream pipettes ..	753	3	16	772
9 ml. pipettes ..	264	..	1	265
Dairy thermometers	501	106	22	629
				3,693

In addition 164 quarts of N/10 sodium hydroxide and 21 miscellaneous preparations were made.

Laboratory Training of Field Officers.

In September, 1945, 12 field officers were given a comprehensive two weeks' course in dairy bacteriology and chemistry. This course was given in the Dairy Research Laboratory and consisted of lectures, practical work and demonstrations. In addition to this special school, seven other field officers have been given instruction in the laboratory prior to their taking up their positions in the field.

Extension Work.

The officers of the Laboratory participated in (a) field days, (b) radio talks, (c) lectures and (d) contribution of articles to the *Queensland Agricultural Journal*.

A general service, apart from the matters mentioned, has been rendered to the industry and the public by the laboratories, the officers of which have been eager at all times to give service and advice when needed.

The whole year's work has been characterized by co-operation between the laboratory and field staffs, a relationship which has been of mutual benefit and which has resulted in a more satisfactory organization of the work and greater service to the producers.

O. St. J. KENT,
Senior Dairy Technologist.

REPORT OF THE DIRECTOR, DIVISION OF MARKETING.

In accordance with the provisions of "*The Primary Producers' Organisation and Marketing Acts,* 1926 *to* 1941," I have the honour to submit herewith my annual report for the year ended 30th June, 1946.

The Marketing Branch, one of the Branches comprising the Division of Marketing, is concerned amongst other things with the administration of the following Acts, viz.:—

"*The Primary Producers' Organisation and Marketing Acts,* 1926 *to* 1941."
"*The Wheat Pool Acts,* 1920 *to* 1930."
"*The Fruit Marketing Organisation Acts,* 1923 *to* 1945."
"*The Primary Producers' Co-operative Associations Acts,* 1923 *to* 1934."
"*The Dairy Products Stabilisation Acts,* 1933 *to* 1936."
"*The Second-hand Fruit Cases Act of* 1940."

The marketing boards, the activities of which are hereinafter reviewed and which are producer-controlled, with the Director of Marketing as a member ex officio, operate, unless otherwise indicated, under "*The Primary Producers' Organisation and Marketing Acts,* 1926 *to* 1941."

During the five-year period 1941-42 to 1945-46 produce of an approximate average annual value of £11,837,000 has been subject to the operations of marketing boards including the State Wheat Board (constituted under "*The Wheat Pool Acts,* 1920 *to* 1930") and the Committee of Direction of Fruit Marketing (constituted under "*The Fruit Marketing Organisation Acts,* 1923 *to* 1945").

Council of Agriculture.

The constitution of the Council of Agriculture comprises the Minister for Agriculture and Stock, the Director of Marketing and representatives elected by the several commodity boards, including the Committee of Direction of Fruit Marketing and the Queensland Cane Growers' Council.

The Council of Agriculture meets annually (except for emergency meetings), and between annual meetings the business of the Council is carried on by an Executive Committee consisting of the President, the Deputy President, the Director of Marketing and three other members appointed by the Council.

During the year under review the Council has dealt with many matters of common interest to commodity boards and in addition assistance has been given in a further revision of data in relation to costs of production in the dairying industry. These data were originally compiled by a special committee appointed by the Commonwealth Dairy Produce Equalisation Committee and consisting of representatives of the Queensland Council of Agriculture, the New South Wales Primary Producers' Union and the Victorian Dairymen's Association, and reviews have been made from time to time by the Dairying Industry Production Costs Committee, which is representative of the Australian Dairy Farmers' Federation, the Commonwealth Dairy Produce Equalisation Committee and the Dairy Produce Control Committee. The Acting Secretary of the Council of Agriculture is the investigating officer in Queensland for the committee.

Production costs as determined by the Dairying Industry Production Costs Committee have been used for the information of the Prices Commissioner to asisst him in advising the Commonwealth Government in relation to wartime and post-war subsidies in the dairying industry.

The Acting Secretary of the Council has represented several commodity boards in hearings before the Commonwealth and State Arbitration Courts.

Cane Growers' Council.

The Queensland Cane Growers' Council has the status of a non-marketing board for the commodity sugar cane. It is the central body of a canegrowers' organisation comprising mill suppliers' committees and district canegrowers' executives with elected representatives from the latter constituting the Cane Growers' Council.

The Council and its subsidiary bodies exercise a variety of non-marketing functions associated with the development of the sugar industry, including co-operation within the industry, research—agricultural and economic, and generally doing things for the protection and advancement of the industry and of the growers engaged in the industry.

There are 7,750 growers engaged in the industry and the average annual value of sugar cane produced in the period of five years from 1941-42 to 1945-46 is £8,844,000.

Dairymen's State Council.

In October, 1945, the question as to whether or not section 30 of the Primary Producers Organisation and Marketing Acts would be applied with modifications to the dairying industry for the setting up of a field organisation on the general lines of the application of section 30 to the sugar-cane growing industry was submitted to a poll of dairymen. The question was answered in this poll in the affirmative, the voting being as follows:—

In favour of the proposal	14,075
Against the proposal	564
Informal	838
Total ballot papers returned ..	15,477
Ballot papers sent out ..	23,269

Elections have been completed in the nine districts into which the State has been divided for the constitution of district dairymen's councils, and at the inaugural meetings of these district councils representatives are to be elected to form the Dairymen's State Council.

Like its counterpart, the Cane Growers' Council, the Dairymen's State Council has no powers of marketing but is an organisation established to look after the general interests of dairymen.

The Acts contain provisions for commodity marketing boards to establish field organisations of their growers, but the form of organisation modified from section 30 has been adopted as suitable for dairymen because the commodity boards established for the marketing of butter and cheese are representative of the factories

and not directly of the dairymen. This type of grower organisation on a commodity basis is a departure from the old Queensland Producers' Organisation, embracing all primary producers irrespective of the commodity produced by them and which, after failing to obtain the support of the producers, was abolished by the 1938 amendment of the Primary Producers Organisation and Marketing Acts.

ARROWROOT BOARD.

This Board, which functions in respect of both arrowroot bulbs and arrowroot flour, was originally constituted on 1st December, 1922.

1945 *Crop.*—The quantity of flour received by the Board amounted to 681 tons, which was manufactured from 6,818 tons of bulbs.

The advances paid by the Board to growers on bulbs delivered to the mills totalled £2 9s. 11·18d. per ton, after deducting the Board's administrative levy of 9d. per ton. Millers have received £13 per ton on flour manufactured.

Sales of arrowroot flour realised £27,874 11s. 9d., at the fixed rate of £41 per ton.

The following table showing the Board's intake of arrowroot flour over a number of years, is given for comparative purposes:—

ARROWROOT FLOUR DELIVERED TO BOARD.

Year.	Intake.
	Tons.
Average 1934–38	567
1939	528
1940	755
1941	645
1942	1,088
1943	541
1944	592
1945	681

ATHERTON TABLELAND MAIZE BOARD.

The Board was originally constituted on 31st August, 1923.

1944-45 *Season.*—As mentioned in my last report, the yield for the 1944-45 season was 16,923 tons, on which a first advance had been paid to growers of £9 per ton. A final payment of £2 3s. 4½d. per ton was made on 18th October, 1945, making the total payment to growers for the season £11 3s. 4½d. per ton.

1945-46 *Season.*—

STOCK TRANSACTIONS.

	Tons.	Tons.
Stock on hand from 1944–45 pool		37
Maize received from growers ..	4,741	
Less moisture deductions ..	308	
		4,433
		4,470
Sales—		
Maize	4,508	
Offal	51	
	4,559	
Less weight of bags ..	62	
		4,497
Over run for season		27

Marketing.—Sales of maize, including subsidy received, and surpluses from sales of poultry, pig and cattle foods, totalled £76,642 8s 1d.

Second Grade Maize.—The 1945-46 season was one of the most disastrous ever experienced on the Tablelands, owing to excessively heavy rains early in the season when the maize was 12 to 15 inches high. Moist conditions resulted in an unusually large proportion of second grade maize, but faced with an extreme shortage of grain, the Board decided to accept this for the manufacture of poultry, pig and cattle foods. As a result of this decision, growers delivered 226 tons gross weight of second grade maize for which they received an advance of £6 per ton. On 11th April, 1946, the Board decided to pay the same price for this maize as first class maize on gross deliveries, less 20 per cent., which was estimated to represent the loss plus cost of turning and handling over and above that necessaary for first class maize.

Advances to Growers.—Advances at the rate of £10 per ton on first and second class maize have been made to date. Final payment has still to be considered by the Board.

ATHERTON TABLELAND MAIZE GUARANTEE AND SUBSIDY SCHEME.

Growers suffered heavy losses as a result of wet conditions, and in view of the poor crop on the Tableland in the 1945-46 season together with the fact that all maize delivered to the Board was brought under control for sale to essential feeders of pigs, poultry and dairy cattle, the Commonwealth Government guaranteed a price of £15 per ton at silos for maize delivered to the Board.

All maize sales by the Board were made exclusively to essential feeders of pigs, poultry, and dairy cattle for food production, and these sales were subsidised by the Commonwealth Government at the rate of £6 10s. per ton, to allow sales at £8 10s. per ton, buyers' station. Owing to the unfavourable seasonal conditions, which resulted in a very poor crop, it was found necessary to limit the area of the subsidy scheme to a point north of Rungoo, on the main line between Ingham and Cardwell.

Merchants in the main North Queensland centres, the Atherton Tableland Maize Board, and the Department of Agriculture and Stock co-operated with the Commonwealth Government in implementing the subsidy scheme.

By 2nd January, 1946, maize stocks on the Atherton Tableland totalled only 1,000 tons, of which the bulk was required by the Maize Board for the manufacture of mashes. The Cairns and Innisfail districts were therefore eliminated from the maize distribution area, and wheat was supplied instead of maize to merchants in these districts.

For the 1946-47 season, the Guarantee and Subsidy Scheme has been continued with certain modifications. Subsidised sales by the Board are permitted only direct to the essential feeder or his co-operative association, in a minimum truck load of 6 tons. The freight subsidy is limited to the maximum concession of 4d. per bushel in truck lots of 6 tons. The scheme

was approved by the Commonwealth on the basis of a guaranteed price of 7s. per bushel (£14 per ton) with a subsidised price to essential feeders of pigs, poultry, and dairy cattle at 4s 9d. per bushel.

The scheme applies to an area, the southern limit of which is at Rungoo, with an extension to meet a special set of circumstances at Townsville.

BARLEY BOARD.

The Board was originally constituted on 24th April, 1930.

1944-45 *Season.*—The total quantity of barley received into the pool for the season was 57,018 bushels 20 lb., for which growers received £14,614 8s. 9d.

Sales of barley aggregated 57,025 bushels 14 lb. for a value of £15,652 13s., whilst gains in weight of barley received totalled 6 bushels 44 lb.

First advance to the growers was based on the selling price less 1s. per bushel, and the final advance was fixed at 8d. per bushel on all grades of barley delivered to the Pool. A summary of the payments to growers is as follows:—

—	—	First Advance.	Final Advance.	Total Paid.
	Bus. lb.	*s. d.*	*s. d.*	£ *s. d.*
Chevalier ..	50,695 22	2 6 to 5 0	0 8	13,135 17 11
Cape	6,322 48	2 9 to 5 0	0 8	1,478 10 10

Working expenses of the Pool amounted to £903 4s. 8d., leaving a balance on realisation of £134 19s. 7d., which was transferred to Hail Insurance Reserve Account. No claims were received for hail insurance, and the balance of the reserve, £570 7s. 11d., was transferred to 1945-46 Pool.

1945-46 *Season.*—Deliveries for the season to date total 114,127 bushels 41 lb. on which growers received a first advance of £24,341 17s. 1d. A summary of receivals showing the first advance is as follows:—

—	Delivered.	Price per Bushel.	Total.
	Bus. lb.	*s. d.*	£ *s. d.*
Chevalier Malting	92,952 48	4 6	20,914 6 5
Feed	544 2	3 6	95 4 2
Feed	9,487 20	3 0	1,423 2 4
	102,984 20	..	22,432 12 11
Cape Malting ..	8,841 41	3 6	1,547 6 8
Feed	1,330 42	3 3	216 5 3
Feed	970 38	3 0	145 12 3
	11,143 21	..	1,909 4 2
Total ..	114,127 41	..	24,341 17 1

Sales for the season so far have totalled £29,505 14s. 8d. on a total weight of 113,804 bushels 10 lb.

As a result of hail damage to barley crops during September and October, 1945, compensation was paid to growers at the rate of 3s. per bushel on 7,139 bushels 34 lb., amounting to £1,070 19s. 1d. After payment of hail assessment expenses, £20 2s. 6d., the Hail Insurance Reserve Fund was in debit to the extent of £520 13s. 8d. The fund will be provided for when the final advance is being paid.

Malting Premises.—Negotiations are still proceeding with the State Wheat Board relative to the transfer to the Barley Board of the Black Gully malthouse, which the Wheat Board is utilising as a store for wheat sacks and feed wheat. Previously, in 1940, the two Boards had reached an advanced stage in negotiations for the transfer of this property when the matter had to be temporarily held in abeyance because of the acquisition of barley by the Commonwealth Government.

BROOM MILLET BOARD.

The Board was originally constituted on 11th March, 1926.

1944-45 *Season.*—During this season, which covers the period 1st November, 1944, to 31st October, 1945, 96 tons 3 cwt. 2 qr. 5 lb. of broom millet was received and sold. This quantity realised £7,113 8s. 1d., an average of £73 18s. 4d. per ton. The maximum price realised was at the rate of £84 per ton and the minimum price was at the rate of £50 per ton.

This tonnage was insufficient for local requirements, and manufacturers had to obtain some of their supplies from the Northern Rivers district of New South Wales.

1945-46 *Season.*—During the period 1st November, 1945, to 30th June, 1946, 72 tons 15 cwt. 2 qr. 22 lb. of broom millet was received and sold, the amount realised being £5,441 19s., or an average of £74 15s. per ton. The maximum price realised was at the rate of £84 per ton, and the minimum price was at the rate of £40 per ton.

During the last few years several new broom manufacturers have commenced making millet brooms in Queensland, two firms being located at Rockhampton. These firms are supplying most of North Queensland's requirements, which were previously supplied from New South Wales, and there is, in consequence, a greater demand for supplies of broom millet in this State.

The following table, showing receivals by the Board, realisations, and average prices, is given for purposes of comparison:—

Year.	Receivals.	Realisations.	Average Price per Ton.
	Tons.	£ *s. d.*	£ *s. d.*
1938–39 ..	133	5,907 4 1	44 8 3
1939–40 ..	86	4,312 19 4	50 2 6
1940–41 ..	99	3,631 14 9	36 16 8
1941–42 ..	39	2,229 13 11	57 3 5
1942–43 ..	45	3,232 3 10	71 0 7
1943–44 ..	89	6,672 12 1	75 7 6
1944–45 ..	97	7,113 8 1	73 18 4

BUTTER BOARD.

The Board was originally constituted on 19th February, 1925.

Members of the Butter Board (other than the Director of Marketing) are elected by the butter factories or the co-operative associations owning the factories. Voting is on the basis of the quantity of butter manufactured during the year ended on the 30th June immediately preceding the date on which the election is to be held. The following scale applies:—

Under 26 tons—Ineligible to vote.

At least 26 tons—One vote.

Over 26 tons but not exceeding 100 tons—Two votes.

Over 100 tons—then in addition to two votes in respect of the first 100 tons so manufactured, one vote in respect of every 100 tons or part thereof in excess of the first 100 tons.

Except for the butter requirements of the city of Brisbane, to which reference is made hereunder, the Board does not take possession or assume ownership of the commodity, but licenses agents, through which the various factories may dispose of their product. Agents are licensed by the Board subject to conditions in regard to selling prices and to the rate of commission payable to them by the factories. The operations of the Board are closely integrated with those of the State Dairy Products Stabilisation Board and the Commonwealth Dairy Produce Equalisation Committee Limited.

Production and Sales.—Butter manufactured for the season 1945-46 and the markets in which it was sold are shown, month by month, also annually in comparison with past years, in the following tables:—

MANUFACTURE AND SALES OF QUEENSLAND BUTTER TAKEN INTO ACCOUNT FOR EQUALISATION PURPOSES FOR YEAR ENDED 30TH JUNE, 1946.

Month.	Manufacture (Boxes).	Commonwealth Sales.		Exports.			Grand Total Sales.
		Queensland.	Interstate.	Ships' Stores and Countries other than Great Britain.	Great Britain.	Total.	
1945.		Boxes.	Boxes.	Boxes.	Boxes.	Boxes.	Boxes.
July	104,893	71,089	3,216	3,488	22,371	25,859	100,164
August	121,757	73,435	4,534	1,249	45,218	46,467	124,436
September ..	126,025	64,000	2,075	1,137	55,104	56,241	122,316
October	159,494	80,489	1,849	1,555	69,426	70,981	153,319
November ..	148,762	47,292	5,020	274	103,071	103,345	155,657
December	194,783	39,733	350	99	138,078	138,177	178,260
1946.							
January	199,530	39,704	189	211	163,959	164,170	204,063
February	225,762	35,209	4,807	1,465	181,996	183,461	223,477
March	208,328	57,672	64,475	3,712	122,781	126,493	248,640
April	146,914	25,252	27,843	8,087	59,723	67,810	120,905
May	103,251	36,206	39,979	2,492	32,735	35,227	111,412
June	68,382	29,593	17,551	2,049	17,500	19,549	66,693
Totals ..	1,807,881	599,674	171,888	25,818	1,011,962	1,037,780	1,809,342

NOTE.—This table is subject to revision, as the figures for the months February to June, 1946, are taken from interim returns only.

COMPARISON OF MANUFACTURE AND SALES OF QUEENSLAND BUTTER TAKEN INTO ACCOUNT FOR EQUALISATION PURPOSES FOR YEARS 1935–36 TO 1945–46.

Year.	Manufacture (Boxes).	Commonwealth Sales.		Exports.			Grand Total Sales.
		Queensland.	Interstate.	Ships' Stores and Countries other than Great Britain.	Great Britain.	Total Exports.	
		Boxes.	Boxes.	Boxes.	Boxes.	Boxes.	Boxes.
1935–36	2,008,784	505,510	104,140	74,626	1,327,371	1,401,997	2,011,647
1936–37	1,507,544	516,546	51,699	33,090	882,983	916,073	1,484,318
1937–38	2,052,544	525,519	108,476	54,269	1,344,844	1,399,113	2,033,108
1938–39	2,756,657	525,915	81,269	64,710	2,103,317	2,168,027	2,775,211
1939–40	2,496,350	534,067	101,075	82,989	1,795,034	1,878,023	2,513,165
1940–41	2,090,677	547,912	161,579	84,517	1,292,224	1,376,741	2,086,232
1941–42	1,708,311	558,812	279,539	123,410	724,816	848,226	1,686,577
1942–43	1,992,079	769,738	437,823	58,429	759,336	817,765	2,025,326
1943–44	1,811,016	912,712	160,665	14,757	726,726	741,483	1,814,860
1944–45	1,696,637	807,420	119,634	3,715	761,726	765,441	1,692,495
1945–46*	1,807,881	599,674	171,888	25,818	1,011,962	1,037,780	1,809,342

* Interim figures only.

The substantial reduction in the 1945-46 figures reflects the effects of the serious drought which was experienced in the Queensland dairying districts in that season. Deficient supplies of manpower and materials were responsible for decreased production in the war years 1941-42 to 1944-45. Substantially increased sales in Queensland in that period were the result of population augmented by the presence of Australian and Allied forces, and civilian workers engaged on defence projects.

Values returned to Manufacturers.—Sales of butter totalling 1,809,342 boxes for the season 1945-46 yielded to factories for bulk butter net prices, on the basis of equalisation values of 1s. 5·68d. per lb. for the months July, 1945, to March, 1946, and 1s. 6·11d. per lb. for the months of April, May and June, 1946, or an average net value for the year of 1s. 5·75d. per lb. as at agents' floors, Queensland ports of shipment. The calculations have been based upon interim equalisation figures and are therefore subject to revision.

The following table shows a comparison of the net returns of the various seasons since 1929-30:—

COMPARISON OF NET PRICES RETURNED TO FACTORIES FOR BULK BUTTER AS AT AGENTS' FLOORS QUEENSLAND PORTS OF SHIPMENT, ON BASIS OF EQUALISATION FIGURES, YEARS 1929–30 TO 1945–46.

Year.	Quantity Sold.	Total Net Value.			Net Value per Box.	Net Value per Lb. (Approx.).	
	Boxes.	£	*s.*	*d.*	£	*s.*	*d.*
1929–30	1,348,839	5,371,058	8	1	3·98198629	1	5·07
1930–31	1,665,489	5,653,443	10	4	3·39446464	1	2·55
1931–32	1,694,241	5,108,917	9	6	3·01546089	1	0·92
1932–33	1,787,044	4,277,219	8	5	2·39346061	0	10·26
1933–34	2,199,468	4,904,319	15	11	2·22977547	0	9·56
1934–35	2,337,700	5,928,787	6	2	2·5361626	0	10·87
1935–36	2,011,647	5,926,694	14	0	2·94619021	1	0·63
1936–37	1,484,318	4,644,371	7	1	3·1289598	1	1·41
1937–38	2,033,108	6,992,797	2	0	3·4394617	1	2·74
1938–39	2,775,211	9,468,530	11	0	3·41182366	1	2·62
1939–40	2,513,165	8,941,479	15	6	3·55785624	1	3·25
1940–41	2,086,232	7,469,744	11	3	3·58049563	1	3·34
1941–42	1,686,577	6,186,649	4	4	3·66816885	1	3·72
1942–43	2,025,326	7,725,042	1	5	3·81422547	1	4·35
1943–44	1,814,860	6,950,723	12	10	3·8298952	1	4·41
1944–45*	1,692,495	6,536,053	3	5	3·8617858	1	4·55
1945–46*	1,809,342	7,493,436	16	1	4·141526	1	5·75

* Interim figures only.

Dairy Industry Subsidy.—Following on a review of butter production costs by the Dairy Committee of Inquiry appointed by the Minister for Commerce (Mr. Scully), during 1942, the Commonwealth Dairy Production Costs Committee—a body representative of recognised dairy farmers' organisations in the different States, the Dairy Produce Control Committee, and the Commonwealth Dairy Produce Equalisation Committee—presented a new costs submission to the Prices Commissioner.

The Commonwealth Government subsequently granted an increase in subsidy of ·44d. per lb. commercial butter in respect of butter manufactured on and after 1st November, 1945. The Commonwealth Government had previously applied additional subsidies on butterfat of 2·4314d. per lb. May to August, 1945, and 1·2157d. per lb. butterfat for September and October. The increase of ·44d. commencing 1st November, 1945, was designed to yield to dairy farmers an average return of 1s. 7½d. per lb. commercial butter which would apply until 31st March, 1947.

With the year commencing 1st April, 1946, the Commonwealth Government discontinued the practice of seasonal subsidy payments in favour of a flat rate basis throughout the year. The rate for the present subsidy year is 31s. 8d. per cwt. which figure, when added to the average equalisation value, is calculated to bring the overall return to manufacturers to 200s. 8d. per cwt., representing an average return to the dairy farmer of 1s. 7½d. per lb. commercial butter.

Rates of subsidy on which payments to Queensland butter manufacturers were based in respect of the period 1st July, 1942, to 30th June, 1946, are as follows:—

Period.	Subsidies.			
		s.	*d.*	
July, 1942, to March, 1943	General Subsidy	8	1	per cwt.
April, 1943, to March, 1944	General Subsidy	35	5·575	per cwt.
April to May, 1944	General Subsidy	0	6·379453	per lb. butterfat
June to November, 1944	General Subsidy	0	6·375	per lb. butterfat
December, 1944 to March, 1945	General Subsidy	0	4·25	per lb. butterfat
April, 1945	General Subsidy	22	3	per cwt.
	Seasonal Subsidy	0	2·66	per lb. butterfat
May to August, 1945	General Subsidy	22	3	per cwt.
	Seasonal and Special ..	0	5·0914	per lb. butterfat
September, 1945..	General Subsidy	22	3	per cwt.
	Seasonal and Special ..	0	3·8757	per lb. butterfat
October, 1945	General Subsidy	22	3	per cwt.
	Special Subsidy	0	1·2157	per lb. butterfat
November, 1945, to February, 1946	General Subsidy	22	3	per cwt.
	Special Subsidy	0	0·5349	per lb. butterfat
March, 1946	General Subsidy	22	3	per cwt.
	Seasonal and Special ..	0	3·1949	per lb. butterfat
April to June, 1946	General Subsidy	31	8	per cwt.

The following are the total amounts paid during the same period to Queensland butter manufacturers:—

	£
1942–43	672,635
1943–44	1,920,057
1944–45	1,993,251
1945–46	1,835,452
Total	£6,421,395

Consumption.—Butter consumption in Queensland as indicated by sales at local values, excluding sales to other States but including imports from other States, receded to 604,674 boxes for the season 1945-46, from 812,420 boxes sold locally in the previous season, whilst there was still a local demand from the Australian and Allied services. Consumption has increased steadily each year from 401,806 boxes when the Board commenced operations in 1925-26. The following table shows consumption of butter in Queensland each year for the ten years ended 1945-46, as compared with the average annual consumption for the previous decade:—

Year.	Consumption Inclusive of Imports from Other States (Boxes).
Average 1926–27 to 1935–36	437,368
1936–37	535,784
1937–38	537,519
1938–39	537,915
1939–40	654,067
1940–41	560,000
1941–42	570,812
1942–43	789,932
1943–44	912,308
1944–45	812,420
1945–46	604,674

Rationing of butter was instituted by the Commonwealth Government in June, 1943, at the rate of 8oz. per person per week. The rate was subsequently reduced to 6 oz. per week in June, 1944. Per capita consumption for Queensland for the year 1939-40 was 30 lb. The present ration scale is the equivalent of 19½ lb. per annum.

Butter Supplies for City of Brisbane.—Butter for the local needs of Brisbane and for contiguous areas is selected by the Butter Board from butter submitted for grading for export at the Hamilton Cold Stores, Brisbane. Such butter is patted by the Board and sold to retailers. Profits are returned to and shared by all factories. The operations at Hamilton during the year under review resulted in a saving to the dairy farmers of Queensland of £51,833 1s. 4d.

Following the outbreak of war the Hamilton factory, in co-operation with the Council for Scientific and Industrial Research and the Department of Agriculture and Stock perfected a means of extracting the pure butterfat from second-grade butter with a view to the saving of refrigerated shipping space. This provided the foundation for a scheme of assistance to the Australian and Allied forces serving in hot climates after the outbreak of war with Japan, when a product with a higher butterfat content than butter itself, but with a higher melting point, was developed. The Board also serviced the forces with large quantities of pat butter.

The hot climates product "Butter Concentrate" has now been improved until the Board can guarantee it to keep its table quality in any climate for twelve months after manufacture. Orders for this product have declined steeply with demobilisation of the forces, but there should be an attractive future for it in tropical countries when post-war controls over the marketing of butterfat can be eased.

The Board is also co-operating with the Department and the South Burnett Co-operative Dairy Association Ltd. in the development of a new type of cheese.

CHEESE BOARD.

The Board was originally constituted on 31st August, 1923.

Cheese Production.

Favourable seasonal conditions were experienced until the last few months of the year. As a result, cheese production in 1945-46 was the second highest on record, being only 696 tons below the record of 1942-43. The 1944-45 production was exceeded by 1,926 tons.

The quantity of cheese manufactured in Queensland in each of the years 1937-38 to 1945-46 is shown below in pounds and tons:—

Year.	Lb.	Tons.
1937–38	11,947,771	5,334
1938–39	15,774,947	7,042
1939–40	13,845,131	6,181
1940–41	11,736,848	5,240
1941–42	16,350,560	7,299
1942–43	28,501,265	12,724
1943–44	24,030,545	10,728
1944–45	22,628,095	10,102
1945–46	26,942,810	12,028

Variety of Cheese Manufactured.

Although one factory increased its output of fancy varieties, cheddar represented 97.5 per cent. of total manufacture. The following table sets out the quantities of each variety manufactured in the last four years:—

Variety.	1942–43.	1943–44.	1944–45.	1945–46.
	Lb.	Lb.	Lb.	Lb.
Cheddar	27,966,288	23,443,829	22,243,451	26,259,436
Gruyere	47,167	52,522	9,019	29,747
Other Varieties	487,810	534,194	375,625	653,627
	28,501,265	24,030,545	22,628,095	26,942,810

Production in Other States.

The figures in the following table, showing cheese production in all States except Western Australia, have been furnished by the Commonwealth Dairy Produce Equalization Committee Limited.

State.	1942–43.	1943–44.	1944–45.	1945–46.
	Lb.	Lb.	Lb.	Lb.
Queensland	28,501,265	24,030,545	22,628,095	26,301,496
New South Wales	5,241,734	5,582,557	4,395,320	4,890,671
Victoria	25,568,184	27,790,925	28,706,982	34,877,052
South Australia	18,056,920	19,821,646	18,536,260	22,553,091
Tasmania	716,944	910,571	1,169,328	1,027,994

It will be noted that in the above table Queensland production for 1945-46 is shown at 26,301,496 lb. as against 26,942,810 lb. recorded by the Board. The discrepancy is accounted for by the fact that the Equalization Committee's figures exclude the production of one Queensland factory and include the production of a New South Wales factory close to the Queensland border.

Disposals.

Particulars of disposals of cheese for the past eight years are tabulated below:—

Year.	Local.	Process.	Overseas.	Total.
	Lb.	Lb.	Lb.	Lb.
1938–39	3,138,277	1,754,309	9,581,748	14,474,334
1939–40	3,246,497	1,294,500	9.272,131	13,813,128
1940–41	3,422,167	1,438,345	6,559,707	11,420,219
1941–42	4,891,061	2,114,875	7,590,116	14,596,052
1942–43	9,700,120	2,586,350	15,786,040	28,072,510
1943–44	10,114,077	3,569,607	9,706,388	23,390,072
1944–45	10,055,833	4,021,228	7,271,449	21,348,510
1945–46	10,313,188	4,170,740	9,514,867	23,998,795

A better indication of the actual destination of the cheese sold will be gained from the following table, in which the figures for the last four years have been further dissected:—

Market.	1942–43.	1943–44.	1944–45.	1945–46.
	Lb.	Lb.	Lb.	Lb.
Sold Locally	6,258,385	5,839,332	5,293,560	4,991,580
Interstate (under permit)	3,441,735	4,274,745	4,762,273	5,321,608
Processed for Australian Market	2,586,350	3,569,607	4,021,228	4,170,740
Processed for Forces Overseas	12,685,441	7,031,465	6,282,314	2,734,064
Exported to United Kingdom	3,065,935	2,642,636	948,233	6,596,165
Exported to Other Countries	34,664	32,287	40,902	184,638
	28,072,510	23,390,072	21,348,510	23,998,795

Prices.

In accordance with the Commonwealth Government's policy of price fixation and subsidies, local market rates for mild cheese of 1s. per lb. for medium sizes and 1s. 1d. per lb. for loaf sizes and the price of 10½d. per lb. for cheese sold to processors for their Australian market, have remained unchanged since 6th March, 1942.

The equalization return has remained unaltered since 1st April, 1945. Based on the local price stated above and the British Ministry of Food price of 107s. 6d. per cwt. Australian currency, it has given a net return of 101s. 6d. per cwt. This does not include subsidies, the varying rates of which are shown in the paragraph under that heading. From 1st April, 1946, subsidy has been paid at the flat rate of 16s. 7½d. per cwt. of cheese, bringing the gross return to factories to 118s. 1½d. per cwt.

The average equalization prices for all cheese sold over the past nine years are as shown hereunder:—

Year.	Average Equalisation Price. Pence per Lb.
1937–38	8·046
1938–39	7·675
1939–40	8·166
1940–41	8·296
1941–42	9·109
1942–43	9·906
1943–44	10·164
1944–45	10·118
1945–46	10·875

The figures given for 1944-45 and 1945-46 are interim only, as final equalizations have not been completed for those two years. The figures from 1942-43 onwards are exclusive of Commonwealth subsidy.

Subsidy.

Commonwealth Government subsidy payments were distributed throughout the year by the Commonwealth Dairy Produce Equalization Committee. Subsidy payments to Queensland cheese manufacturers totalled £190,606, representing an average rate of approximately 1.7d. per lb. of cheese produced.

The following is a summary of all subsidy rates paid to cheese manufacturers since the commencement of this form of assistance on 1st July, 1942:—

Period.	Type of Subsidy.	Rate of Subsidy.
July, 1942, to March, 1943	General	4s. 10d. per cwt. cheese (*a*)
April, 1943, to March, 1944	General	16s. 6·147d. per cwt. cheese (*a*)
April to May, 1944	General	6·379453d. per lb. butterfat
June to November, 1944	General	6·375d. per lb. butterfat
December, 1944, to March, 1945	General	4·25d. per lb. butterfat
April, 1945	General Seasonal	10s. 3·25d. per cwt. cheese (*b*) 2·66d. per lb. butterfat
May to August, 1945	General Seasonal and Special	10s. 3·25d. per cwt. cheese (*b*) 5·0914d. per lb. butterfat
September, 1945	General Seasonal and Special	10s. 3·25d. per cwt. cheese (*b*) 3·8757d. per lb. butterfat
October, 1945	General Special	10s. 3·25d. per cwt. cheese (*b*) 1·2157d. per lb. butterfat
November, 1945, to February, 1946	General Special (representing increase of 0·44d. Commercial Butter)	10s. 3·25d. per cwt. cheese (*b*) 0·5349d. per lb. butterfat
March, 1946	General Seasonal Special (representing increase of 0·44d. Commercial Butter)	10s. 3·25d. per cwt. cheese (*b*) 2·66d. per lb. butterfat 0·5349d. per lb. butterfat
April to June, 1946	General	16s. 7·5d. per cwt. cheese (*b*)

(*a*) Paid on actual green weight of cheese manufactured by factories.
(*b*) Cheese weights calculated from butterfat content of milk received at factories, using the conversion factor 1 lb. butterfat = 2·55 lb. cheese.

The actual amounts paid to Queensland cheese manufacturers by way of subsidy are shown below:—

	£	s.	d.
1942–43	83,849	4	9
1943–44	185,229	6	8
1944–45	194,190	13	7
1945–46	190,606	6	0
Total	£653,875	11	0

Value of Production.

The figures in the following table, showing the approximate annual value of all cheese produced in Queensland over the past eight years, are arrived at by applying to the green weight of cheese produced (less 4 per cent. to cover shrinkage) the net average equalisation prices, and in the case of the last four years, adding subsidy payments:—

	Approximate Value. £
1938–39	484,291
1939–40	452,237
1940–41	389,476
1941–42	602,539
1942–43	1,213,183
1943–44	1,162,215
1944–45	1,109,975
1945–46	1,362,619

Cheese Supplies to Fighting Forces.

The business of supplying cheese to military camps, and naval and air force establishments in and around Brisbane, which was commenced by the Board on 1st October, 1942, was continued in 1945-46. Quantities involved having fallen to a very low figure, the arrangement was discontinued from 30th June, 1946. The following is a summary of the transactions. The profits realised have been distributed amongst manufacturers on a *pro rata* production basis.

Period.	Cheese Sold.	Realizations.	Profit.
	Lb.	£ s. d.	£ s. d.
1st October, 1942, to 30th June, 1943	862,130	43,130 18 1	305 9 2
1st July, 1943, to 30th June, 1944	576,220	29,142 5 2	824 18 11
1st July, 1944, to 30th June, 1945	436,808	22,183 1 1	122 4 2
	Crates	107 17 3	
1st July, 1945, to 30th June, 1946	349,286	17,545 4 5	156 15 7
	Crates	235 1 6	
Totals	2,224,444	£112,344 7 6	£1,409 7 10

DAIRY PRODUCTS STABILISATION BOARD.

The Board was originally constituted in January, 1933.

The principal function of the Board, which operates under the authority of "*The Dairy Products Stabilisation Acts*, 1933 *to* 1936," is to determine, for promulgation by the Minister, quotas of butter and cheese which may be sold by manufacturers in the course of their intrastate trade in these commodities.

The Board, which is composed of the members from time to time of the Butter and Cheese Boards and the Director of Marketing, is one link in the chain of the Commonwealth-wide stabilisation plan for dairy products.

Because of the constitutional inability of the Commonwealth Government to enact complementary legislation, the plan is completed by the operation of The Commonwealth Dairy Produce Equalisation Committee Limited (with its associated State Equalisation Committees), a body representative of the butter and cheese manufacturers in the various States. The Committee is registered as a company under *The Companies Acts* of New South Wales.

The monthly quotas as promulgated for the intrastate trade in butter and cheese are shown in the following table:—

QUOTAS OF BUTTER AND CHEESE FOR SALE WITHIN THE STATE.

Month.	Percentage of Quantity Manufactured.	
	Butter.	Cheese.
1945.		
July	96·3	96·8
August	84·4	68
September	60	48·65
October	44·25	35·5
November	48·27	40·82
December	45·76	42·86
1946.		
January	46·43	58·06
February	57·95	75
March	59·76	78·26
April	70·59	96·04
May	81·05	96·66
June	75·97	94·94

During the year South Australia, which formerly participated in the equalisation scheme only for cheese, came into the butter equalisation scheme also; while Western Australia, which had never previously participated in the Commonwealth scheme, has now come into the equalisation scheme for butter only.

COTTON BOARD.

The Board was originally constituted on 11th March, 1926.

1944-45 *Season.*—Because of labour shortages and unfavourable growing conditions production during this season was the lowest on record since the inauguration of the Board. A total of 7,100 acres was harvested by 646 growers and the total production of seed cotton was 1,820,246 lb., which produced 650,749 lb. of raw cotton lint, equivalent to 1,305 bales. The whole of the crop was sold to Australian spinners and manufacturers.

The following table gives a record of production since 1939:—

Season.	Production.	
	Seed Cotton.	Raw Cotton Lint.
	Lb.	Lb.
1939–40	12,108,491	4,127,823
1940–41	15,869,159	5,631,374
1941–42	14,057,690	4,924,816
1942–43	9,539,697	3,345,622
1943–44	8,515,581	2,946,478
1944–45	1,820,246	650,749

Commonwealth Bounty.—Under the provisions of the Commonwealth Raw Cotton Bounty Act, as amended in 1941, growers were guaranteed an average net return of 15d. per lb. of raw cotton of or above a stipulated grade, for the duration of the war and one year thereafter. Because of the low production during the 1944-45 season, the Board's overhead expenses were relatively high and the Commonwealth Government was called upon to pay a total bounty of £11,886 15s. 6d., equivalent to 4·384d. per lb. of raw cotton. However, profits on the treatment of peanut kernels at the Board's oil mill augmented the returns payable to growers for raw cotton lint from 15d. per lb. to 16·583d. per lb., equivalent to 5·928d. per lb. of seed cotton. This is the highest price which has been paid to growers since the Board was established.

The following table shows the net returns to growers and payments of bounty made by the Commonwealth Government since 1939. The returns to growers shown in this table include profits on milling and pressing of oil-bearing seeds other than cotton.

Season.	Commonwealth Bounty Paid Per Lb. Raw Cotton Lint.	Returns to Growers. (Including Bounty.)	
		Per Lb. Raw Cotton Lint.	Per Lb. Seed Cotton.
	d.	*d.*	*d.*
1939–40 ..	2·46	11·47	3·91
1940–41 ..	3·15	12·51	4·44
1941–42 ..	4·54	15·07	5·28
1942–43 ..	Nil	15·53	5·45
1943–44 ..	Nil	15·48	5·36
1944–45 ..	4·38	16·58	5·93

Revolving Fund.—The sum of £619 17s., representing .3392d. per lb. of raw cotton lint produced, was deducted from growers' accounts during the 1944-45 season and placed to their credit in the Working Account Reserve Revolving Fund. A sum of £3,305 14s. was withdrawn from the fund and returned to growers on account of the 1934 season, leaving a credit balance in the fund of £40,597 16s. 6d. The Board's Order in Council does not permit the distribution of any moneys from the fund if the amount standing to the credit of the latter is less than £40,000.

1945-46 *Season.*—Sufficient seed to plant 10,249 acres was distributed to 717 growers, but owing to adverse weather conditions and a shortage of necessary labour the total planting amounted to only 6,700 acres by 630 growers.

The quantity of seed cotton received to 30th June, 1946, was 2,724,553 lb. The estimated production for the season is 2,300 bales of raw cotton, an increase of approximately 77 per cent. on the quantity harvested in 1944-45, which will give nearly twice the average yield per acre in that year.

EGG BOARD.

The Board was originally constituted on 19th June, 1923.

Commonwealth Control.—By virtue of an order issued under the National Security (Egg Industry) Regulations, the Commonwealth Government, as from the 5th July, 1943, assumed control of egg supplies in that portion of Queensland comprising the whole of the territory under the jurisdiction of the Queensland Egg Board, together with the remainder of the Shires of Gooburrum, Kolan, Perry, Gayndah, Wondai, Kingaroy, Wambo, Tara and Waggamba; and the Shires of Murilla, Chinchilla, Mundubbera, Eidsvold and Monto.

The Egg Board is handling eggs produced in the area described above, as agent for the Commonwealth Controller of Egg Supplies, through the Deputy Controller in Queensland.

Controlled producers are not permitted to sell eggs except to the Controller, unless they have obtained the authority of the Controller to otherwise dispose of them. The Controller actually purchases the eggs from producers and sells them to consumers, whereas, previously, the Board received and marketed eggs on growers' behalf.

The qualities and grades of eggs for sale within Australia are now prescribed by the Controller of Egg Supplies, and provide for two qualities of fowl eggs—viz., "first quality" and "second quality," each being divided into two grades according to weight, designated "hen" and "medium." There is only one quality and one grade for duck eggs.

The wholesale selling prices of eggs are fixed by the Commonwealth Prices Commissioner. Prices are uniform throughout the Commonwealth, with the exception of that part of Queensland north of the Tropic of Capricorn (but not inclusive of Rockhampton), where a 2d. per dozen higher rate is allowed.

The prices paid to the producer by the Controller through his agents are the current wholesale selling prices for the various grades less (*a*) handling and selling commission, and (*b*) Commonwealth Control Fund charges. During the period under review, handling and selling commission was fixed at 1¾d. per dozen eggs; and the Commonwealth Control Fund charge was fixed at 1d. per dozen.

Though it was originally intended that Commonwealth control should terminate on the 30th June, 1946, circumstances have made it necessary to extend it to the 31st December, 1946.

Agents of the Board.—Country agencies of the Board are in operation at Ipswich, Dalby, Warwick Maryborough, Bundaberg, Gympie, and Murgon.

On the 1st September, 1945, the Board established its own depot at Toowoomba in leased premises. Candling and grading operations are carried out at this depot, as well as at the country agencies. Eggs surplus to local requirements are transferred from the Toowoomba depot and from country agencies to the Board's main floors in Brisbane for disposal in the shell or for manufacture into pulp.

Supplies.—Receivals by the Board during 1945-46 reached an all time record of 11,094,812 dozen, which was more than double the pre-war yearly average, and 25 per cent, greater than in 1944-45.

The following table gives some indication of the increase of production which has taken place over the past two years:—

Annual Receivals by the Queensland Egg Board and its Agents from 1941-42 *to* 1945-46.

1941–42	7,044,029	
1942–43	7,223,676	Increase on previous year by 2·5 per cent.
1943–44	6,419,554	Decrease on previous year by 11·2 per cent.
1944–45	8,862,842	Increase on previous year by 38·1 per cent.
1945–46	11,094,812	Increase on previous year by 25·1 per cent.

In connection with the above table, it should be noted that, from 1943-44 onwards, supplies were drawn from a somewhat larger area than in previous years, due to the inclusion by the Controller of the additional territory mentioned at the beginning of this report.

Grading.—The results of grading for size and quality during the 1944-45 and 1945-46 seasons were as follows:—

—	Receivals 1944–45.		Receivals 1945–46.	
	Dozens.	Percentage.	Dozens.	Percentage.
1st hen ..	6,404,918	72·27	7,729,238	69·67
1st medium ..	661,525	7·46	746,070	6·72
2nd hen ..	1,568,107	17·69	2,378,107	21·44
2nd medium	150,204	1·7	140,982	1·27
Duck.. ..	14,201	0·16	21,511	0·19
Broken ..	883	0·01	2,620	0·02
Bad	63,004	0·71	76,284	0·69
	8,862,842	100·0	11,094,812	100·0

The following comparisons for the years 1943-44, 1944-45, and 1945-46 show the percentages of the various grades received as between metropolitan and country suppliers:—

—	1st Quality Hen.		1st Quality Medium.		2nd Quality Hen.		2nd Quality Medium.	
	No.	Percentage.	No.	Percentage.	No.	Percentage.	No.	Percentage.
1943–44.								
Metropolitan	2,765,077	82·4	279,038	8·3	261,609	7·8	49,905	1·5
Country	1,816,972	59·8	159,003	5·2	1,014,434	33·4	49,494	1·6
Total ..	4,582,049	71·6	438,041	6·8	1,276,043	20·0	99,399	1·6
1944–45.								
Metropolitan	3,884,899	83·9	401,730	8·7	287,523	6·2	55,538	1·2
Country	2,512,011	60·7	264,789	6·4	1,280,589	31·0	78,313	1·9
Total ..	6,396,910	73·0	666,519	7·6	1,568,112	17·9	133,851	1·5
1945–46.								
Metropolitan	4,679,976	80·0	475,266	8·1	665,812	11·4	29,613	0·5
Country	3,048,265	59·9	270,810	5·3	1,703,292	33·4	71,373	1·4
Total ..	7,728,241	70·6	746,076	6·8	2,369,104	21·7	100,986	0·9

The increased percentage of second quality eggs received during 1945-46, compared with the previous year, as well as the very much higher proportion of second quality eggs received from country suppliers relative to receivals from metropolitan suppliers are disturbing considerations in view of the necessity to dispose of surplus production overseas, for which markets only eggs of first quality are suitable.

Sales.—Sales during 1945-46 were as under, figures relating to the previous year being quoted alongside for purposes of comparison:—

As Eggs in Shell.	1944–45.	Per-centage.	1945–46.	Per-centage.
Civilians ..	5,348,399	60·3	4,812,332	43·4
Services ..	2,181,876	24·7	3,022,763	27·2
Export ..	..	..	266,520	2·4
Manufactured into pulp ..	1,268,680	14·38	2,160,432	19·49
Broken and bad or useless ..	63,887	0·62	78,904	0·71
Manufactured into powder N.S.W. ..	..	..	753,861	6·8
Totals ..	8,862,842	100·0	11,094,812	100·0

The percentage increase in the quantity of eggs converted into pulp in 1945-46, compared with the previous year, is accounted for by the increased quantities of second quality eggs handled by the Board (see preceding table). Moreover, because of heavier demands by the services, the quantity of eggs which could be made available for civilian consumption in 1945-46 was substantially less than in the preceding year despite greatly increased production.

Most of the sales to the Services took place during the first half of the financial year; from January to June, 1946, these sales represented only 12.7 per cent. of the total eggs received (as against 27.2 per cent. for the whole year) while in June they were no more than 8 per cent. of eggs received in that month.

Allocations of supplies as between the Services and civilians have been made in accordance with instructions issued by the Controller of Egg Supplies. Because of the demand by the Services, combined with a seasonal decline in production, there was a shortage of eggs for civilians during the last three months of the year.

Exports.—Overseas exports to the United Kingdom were made during 1945-46 for the first time since 1942. Due to heavy demands by the Services, however, and the difficulty in arranging refrigerated shipping space, the quantity exported was small, amounting to only 8,884 cases. With the impending cessation of purchases by the Services, the quantity available for export will be considerably greater than at any period in the Board's history. During the latter half of 1946, for example it has been estimated by the Controller that the Board will have an export surplus of 120,000 cases of eggs-in-shell (3,600,000 dozen) and 90,000 40lb. tins of frozen pulp (equivalent to approximately 3,000,000 dozen eggs).

Return to Producers.—The average price per dozen eggs, including all grades, received by producers for eggs delivered to the Board during 1945-46 was 19.74d. (gross), and 17.03d. net (i.e., after deduction of Controller's charges), as compared with the average gross return for the year 1944-45 of 20.59d. and net 18.1d.

The wholesale selling price for 1944-45 and 1945-46 for first quality hen eggs, ranged from 1s. 7d. to 2s. per dozen, the latter price being maintained for 8 months of 1944-45 and 7 months of 1945-46.

Handling Costs.—Because of the very sharp rise in production and acute shortages in the supply of labour, packing material and cases, the Board experienced great difficulty in handling the quantities of eggs delivered to its floors during the peak of the 1945-46 season. In order to cope with the position, it became necessary to lease additional floor space for the grading of eggs and for the storage of cases, while the warehouse staff was required to work overtime for many weeks. Despite all that could be done to relieve the position, however, periods occurred when receivals were in excess of the capacity of the Board to handle them and ungraded eggs accumulated on the warehouse floors.

Early in the year, action to prevent a recurrence of the congested conditions which obtained during the 1945-46 season was taken by the Board in two ways, namely, by the acquisition of a property at Normanby (further referred to later in this Report) and by retention of trained warehouse staff throughout the slack season in anticipation of a record intake during the spring of 1946. Inevitably, this policy, together with the increased wages which became payable to female employees resulted in a sharp rise in handling costs during 1945-46, compared with the preceding twelve months and, as the anticipated increase in receivals will not now materialise because of the drought, its effects are likely to be reflected in the 1946-47 accounts also.

During 1944-45, handling costs averaged 1.37d. per dozen, while in 1945-46 they were 1.98d. per dozen or 0.23d. more than the handling and selling commission allowed by the Controller. Consequent on the increased handling costs, operations for the year resulted in a loss of £8,843 8s. 8d. compared with a surplus during 1944-45 of £23,729 1s. 10d., a decline of£32,572 10s. 6d. The amount paid in wages in 1945-46 was £31,892 9s. 8d. greater than in the preceding year. This heavy expenditure has endangered the Board's financial position which can only be restored by a drastic reduction in handling costs during the ensuing twelve months.

New Premises.—Construction of the three-storey steel and concrete annexe to the Board's Makerston street warehouse was continued throughout the year. It is expected that this building, originally intended for an egg-drying plant but subsequently redesigned for egg pulping and other purposes, will be completed during August, 1946.

With the modern pulping and refrigeration equipment which is being installed in this building, the Board should be in a position to meet any demands which may be made on it for the manufacture of pulp for export to the United Kingdom. In addition, the building will provide some of the additional floor space which the Board now needs to cope with its greatly increased turnover.

In January, 1946, the Board acquired a property at Normanby with the object of relieving the serious congestion which has occurred at its

Makerston street premises during past seasons. Sufficient space is available at this new property to take care of the Board's requirements for a long time to come. For the time being, however, only such structural alterations and additions are being undertaken as are necessary for the forthcoming season's operations, during which it is proposed to carry out the major part of the grading and packing at the Normanby premises.

Market Stabilisation Proposals.—In August, 1945, a conference of State Egg Boards was held at Lapstone, New South Wales, for the purpose of formulating plans for the setting-up of a central organisation to undertake the marketing of eggs on an Australian-wide basis after the cessation of Commonwealth control. The principal objective of the proposed organisation was to stabilise prices by ensuring that all production surplus to domestic requirements in each State would be marketed in an orderly manner through the equalisation of home consumption and export prices.

The first scheme which was worked out on the basis of the Lapstone proposals provided for the purchase of the total Australian production by a central company. This scheme proved unacceptable to large sections of the industry in the Southern States, but efforts are still being made to devise a workable plan which will deal with surplus production only.

The Queensland Board, with the assistance of officers of this division, has actively participated in discussions with other State Boards and Departments of Agriculture on the market stabilisation proposals.

THE FRUIT INDUSTRY

(1) The Committee of Direction of Fruit Marketing.

The Committee of Direction of Fruit Marketing comprising growers' representatives elected by the six Sectional Group Committees provided for under the Act for pineapples, bananas, citrus, deciduous, "other fruits" and vegetables with the Director of Marketing as Government representative has been established under *The Fruit Marketing Organisation Acts*, 1923 *to* 1945.

By the 1945 amendment to the Acts, the organisation was given an indefinite tenure of life and a section group was established for vegetables. In the amendment the Government took power to require the Committee of Direction of Fruit Marketing to carry on as principal the business of supplying fruit and vegetables by retail or wholesale, or both, in any part of the State. The amendment also provides that if the Committee of Direction satisfies the Secretary for Public Lands that it requires any land for any purpose relating to the marketing of fruit and/or vegetables and that it is unable to obtain such land by agreement, the Minister may, with the prior approval of the Governor in Council, take such land, under and subject to the provisions of *The Public Works Land Resumption Acts*, 1906 *to* 1940.

Pineapple Section.

Harvested production during the period 1st May, 1945, to 30th April, 1946, totalled 1,322,327 cases, an increase of 387,233, or 41.4 per cent., over the 1944-45 total of 935,094. The increased production was the result of the heavy plantings made in 1944, which were 47·6 per cent. greater than those in 1943. The 1945 plantings, which will commence to crop in 1947, were 80.4 per cent. greater than the 1943 plantings.

Fresh Fruit Markets.—Queensland and interstate markets received 929,381 cases as compared with 658,326 cases in the previous year. Although deliveries to these markets were 41 per cent. greater than in 1944-45, market prices remained firm. The average interstate selling price was 19s. per case as compared with the 1944-45 average of 19s. 7d. Ceiling prices wholesale per pound were as follows:—Brisbane 3½d., Sydney 4½d., Melbourne 4¾d., Adelaide 5½d. The distribution to, and the calculated per capita consumption of the various States was as follows:

State.	Cases.	Per Capita Consumption.
		Lb.
Queensland	226,252	12½
New South Wales	384,957	8
Victoria	247,750	7½
South Australia	49,708	4¾
Tasmania	17,468	4¼

Shipments to New Zealand ex the Sydney market were 3,246 cases.

Cannery Deliveries.—Canners received 392,946 cases as compared with 276,768 for the previous year. Of this quantity 104,501 cases, which represented 26.6 per cent., were "smalls." Production of canned pineapple products was as follows:

	30 Oz. Eq. Dozen.
Canned pineapple	291,084
Tropical fruit salad	60,654
Pineapple juice	133,512

This was distributed as follows:

	Canned Pine. 30 Oz. Eq.	Fruit Salad. 30 Oz. Eq.	Pine Juice. 30 Oz. Eq.
	Dozen.	Dozen.	Dozen.
Service Orders ..	72,616	29,201	28,174
Queensland	41,685	15,766	8,032
New South Wales ..	62,377	4,977	31,477
Victoria and Tasmania	62,267	5,409	29,584
South Australia ..	31,349	2,093	8,275
Western Australia ..	20,790	3,208	5,887
Export to Canada ..	..	..	22,083
	291,084	60,654	133,512

Diversion to Cannery.—A voluntary diversion to canneries was adopted for the summer crop. This canning scheme was introduced to build up cannery intake prior to the peak so as to give canneries an opportunity to train staff to handle heavy factory loadings expected during the peak. The scheme also had the effect of regulating interstate loadings to the fresh fruit markets during the heavy loading weeks, and thus stabilized prices.

Factory Prices.—The Fruit Industry Sugar Commission Committee agreed to a continuance of the factory price of £15 per ton f.o.r. grower's station for large grade fruit—4 inches in diameter and 5 inches in length. The price paid for small grade fruit—less than 4 inches in diameter—was £10 10s. for the winter crop, but the price was reduced to £8 10s. f.o.r. grower's station for the summer crop.

Cannery Labour.—Although the C.O.D. instituted on behalf of canners an intensive advertising drive, female labour was insufficient for cannery needs. Ample male labour was available, and men were engaged on work normally done by women. Canners reported that the work was done satisfactorily.

Cool Storage Experiments.—During the period of the summer crop, the C.O.D. co-operated with officers of the Department of Agriculture, under the supervision of Dr. S. A. Trout, Assistant Director of Horticulture, in carrying out a preliminary small scale experiment on the cool storage of factory pineapples. The purpose of this experiment was to test the practicability of holding factory pineapples in cool store for periods up to three weeks. The successful cool storing of cannery pineapples would enable an extension of the canning period and would very materially assist in solving the problem of coping with the heavy summer crops which will have to be handled in the near future. The result of the experiment was very encouraging. It was intended to carry out further tests with up to 2,000 cases, but cool storage space was not available. Further experiments are to be carried out next summer.

Queensland Canneries Pty. Ltd., in which the C.O.D. holds a half share on behalf of the pineapple growers, declared a profit of £6,773 8s. 10d. for 1944-45. Growers' share of this profit was £3,386 14s. 5d. This amount was distributed to growers at the rate of 9s. 7d. per ton factory fruit supplied in the financial year 1944-45.

In accordance with the terms of the Queensland Cannery Agreement, the C.O.D. exercised its right to give notice of withdrawal from the link-up with the Victoria Cross Manufacturing Company at the expiration of twelve months from 31st July, 1946. Under the terms of the agreement, on receipt of the notice of intention to withdraw, the Victoria Cross Company has an option, to be exercised within three months, of purchasing the C.O.D.'s share. Should this option lapse, the C.O.D. then has the option during the following three months of purchasing the Victoria Cross Company's share. This period of option had not expired at the end of the financial year. Should either of these options be exercised the agreement would terminate on the transfer of the vacating party's shares to the purchaser.

C.O.D. Cannery, Northgate.—Concurrently with its decision to withdraw from the Queensland Cannery Agreement, the C.O.D. decided to establish a fruit processing factory at Northgate, Brisbane, at a cost of approximately £330,000. The cannery is primarily designed to handle pineapples, but provision will be made for the processing of all other varieties of Queensland processable fruits. The cannery is necessary to provide for a considerable increase in production of pineapples and other fruits expected from 1947 onwards.

Freight Rebate.—For the purpose of equalising interstate price ceilings, an arrangement was entered into with the Prices Branch whereby the C.O.D. rail freight to Melbourne was increased by 5d. per case. The fund so created amounted to £4,920 9s. 6d. This was rebated to all interstate consignors on the basis of 2d. per case.

Production Trend.—Annual planting figures supplied by growers south of Bundaberg indicate that pineapple production will increase considerably during the next few years. Comparative planting figures furnished by factory suppliers are as follows:—

	Acres.
1941	988
1942	781
1943	869
1944	1,283
1945	1,568

Banana Section.

Production.—The year was marked by an almost 50 per cent. increase in production as compared with the previous year, the total production of 477,000 cases (equivalent) being the highest since 1940-41. Planting figures suggest that a further increase will take place during the coming year. A notable feature was the spectacular increase in the Far North. For many years this area had been unable to supply local requirements, but this year during the early summer sent upwards of 1,000 cases per week to the Brisbane market. Production, however, has since been temporarily reduced by widespread floods and cyclone damage. Comparative production figures are:—

—	1944–45.	1945–46.	Increase.
			Per cent.
Queensland cases (equivalent) ..	326,860	476,837	46

Disease.—The incidence of rust during the period January to May was very severe. There is little or no demand for rust-affected fruit, and growers' returns were reduced seriously as a result. With the anticipated increase in production of clean bananas in New South Wales, it is probable that rusty fruit next year will be practically unsaleable. This problem is being tackled by the Department of Agriculture, and it is hoped that experimental work now being undertaken with D.D.T. will yield effective control measures.

Rubbery condition in bananas also was more widespread than for some years. This trouble, which has a very detrimental effect on sales, is regarded as a physiological condition, and research work is being carried out on this problem by the C.O.D. ripening staff. Some progress has been made, and it is hoped that the problem will eventually be overcome by special ripening methods.

Brisbane Ripe Department.

Case Section.—This department is continuing to render valuable service. The cases sold represent an increase of 17.52 per cent. on 1944-45 figures, but reduced values resulted in a decrease of 2.21 per cent. in value. Comparative figures are:—

—	No. Cases Sold.	Value.	Average Per Case.
		£	£ s. d.
1944–45 ..	89,751	192,078	2 2 9
1945–46 ..	105,473	187,827	1 15 8

Bunch Section.—The general satisfaction this section has given is indicated by the quantity handled, which is an increase of 51 per cent. on the previous year's figure:—

—	1944–45.	1945–46.	Increase.
			Per Cent.
Bunches handled ..	139,366	210,376	51
Value.. ..	£70,213	£97,621	39

Combined turnover for the case and bunch wholesale sections increased from £262,291 in 1944-45 to £285,448.

Banana Ripening.

Each year brings more and more into prominence the necessity for the provision in all centres of modern ripening rooms of adequate capacity, embodying up-to-date equipment. This policy has long been recognised by the C.O.D., and as a further step towards its fulfilment it has now established modern ripening plants in both Cairns and Townsville. Although these plants have been in operation for a relatively short period, the improved quality of the scientifically ripened fruit has resulted in a great increase in consumption in those centres. The C.O.D. has already had a number of discussions with the Brisbane City Council with a view to the establishment of modern central ripening rooms as part of the equipment of the proposed new markets in Brisbane. It is intended this plant should combine both the latest ripening facilities and air-conditioned handling and selling floors. The first step also has been taken towards the erection of similar facilities in the Southern States.

Brisbane Banana Rooms.—The Brisbane banana ripening plant now comprises 44 ripening rooms with a summer peak weekly capacity of 5,800 (1½ bushel) cases. During last summer this capacity proved inadequate, and at the close of the term five more rooms were in the course of construction. When completed, the extra rooms will enable 800 more cases to be handled per week. To meet expanding production, further rooms should be added to the Brisbane plant, but congestion in the buildings now occupied by the C.O.D. is such that the banana plant cannot be extended until additional premises are obtained.

Comparative figures of bananas ripened in Brisbane by the C.O.D. are:—

—	1944–45.	1945–46.	Increase.
			Per Cent.
Cases ripened ..	97,820	110,298	12·75
Bunches ripened	174,705	224,227	28·34

Citrus Section.

An industry conference was held in Melbourne early in February, 1946, to conduct discussions with the Prices Branch and to examine the possibility of forming an Australian citrus association. All of the producing States, that is those of the mainland, were represented, but no finality was reached on the suggested formation of an Australian organisation as New South Wales at the time did not have a State citrus organisation, but was taking steps to form one. This organisation was later formed, when the several States were advised that New South Wales was not prepared to join an Australian organisation, but would be prepared to discuss citrus problems at interstate conferences.

At the conference with representatives of the Prices Commissioner, it was announced that Food Control would not exercise its control powers to obtain citrus fruit for processing, and that its requirements would be sought through the usual channels. Representations were made to the Prices Branch for a cancellation of ceiling prices. The Prices Branch promised to consider the matter after obtaining crop estimates from all the States, and the ceilings were lifted during May, 1946. For a brief period after the lifting of the ceiling, very high prices were realized for Queensland navels until heavy deliveries of new season fruit came on the market from New South Wales.

The 1945 citrus crop was very light and far short of requirements. There was an excellent setting of the 1946 crop, with the exception of that of North Queensland where a substantial proportion of the fruit was blown from the trees by cyclones, and the crop was still further reduced by severe fly attacks. All districts in South Queensland have heavy crops, but continued drought conditions have resulted in an unduly high proportion of small fruit, for which there is little demand.

Queensland again found a very profitable market in Melbourne for early grapefruit, oranges and mandarins, and Sydney took substantial quantities of mandarins (Glens) and lemons at attractive rates.

With large quantities of oranges offering for factory purposes and low rates ruling on the fresh fruit market, it was necessary to adjust the 1946 factory price of juice oranges, and the price was reduced from £26 5s. to £18 per ton delivered canner's station.

Although the lemon crop promised to be heavy, it was possible to maintain last year's price of £21 5s. per ton, largely because of an anticipated shortage in the Victorian crop. Last year's prices for grapefruit and Seville oranges of £28 15s. and £21 5s. respectively were also maintained. Unfortunately, the 1946 lemon crop has been substantially reduced by very heavy frosts in the Gayndah district, the main centre of production of this variety.

The citrus industry in general, and the Howard and Burrum growers in particular, have been assisted by the operations of Warry's Ltd., of Maryborough, who draw the whole of their requirements of juice oranges through the C.O.D. from the Howard-Burrum district, and their lemons from Gayndah.

The following quantities of citrus fruits were handled by factories during the 1945 season:—

	Tons.
Lemons..	574½
Oranges	155¾
Grape fruit	103¼
Sevilles	85¾
Poorman's oranges	6¾
Citrons	1½
Bush lemons	½
Total	928

Deciduous Section.

The early forecasts of the 1945-46 crop were that it would be light, but these estimates were unreliable as the tonnage of fruit and vegetables railed from the district proved to be the second highest recorded to date.

The following summary shows the tonnages despatched to the three main markets over the past four years:—

—	1942-43.	1943-44.	1944-45.	1945-46.
	Tons.	Tons.	Tons.	Tons.
Brisbane (including factory) ..	15,873	25,328	18,688	21,722
New South Wales	1,278	426	1,212	2,866
North Queensland	1,319	3,009	1,687	1,841
	18,470	28,763	21,587	26,429

There were periods when the supply of certain varieties was in excess of the demand, but these periods were, fortunately, of short duration.

Over all, the realizations for the Stanthorpe crop were very satisfactory. It was anticipated that with the reduction in the amount of Army buying, market realizations would be seriously affected. While there was some reduction in price, it did not prove as severe as anticipated and as a result growers generally had a good season.

It was again necessary for the C.O.D. to organize the unloading of fruit and vegetables from the Stanthorpe train at Roma Street Station. Once more full co-operation was received from the Railway Department, Storemen and Packers' Union, and fruit trade employers and employees.

Fortunately, hail damage was on a moderate scale.

The most serious problem for the district was the shortage of cases which at times was very acute, and this resulted in an enforced spreading of the marketing of some varieties. With the Granny Smith variety, in particular, this was to the growers' advantage. If cases had been available the market would have been seriously over-supplied with Granny Smiths.

It was fortunate for the Stanthorpe district that the Second-hand Cases Committee continued to function. The cases despatched by the committee to the Stanthorpe district were a valuable contribution to the industry and prevented serious financial losses.

The Deciduous Sectional Group Committee, after giving the matter of the cold store site further consideration, decided to build the store at Thulimbah, and not at Applethorpe as originally intended. Tenders were called for the erection of the cold store and the installation of the refrigeration machinery, and these have been let. At one stage it was thought that it might not be possible to have a supply of electric current available at the site at the time it would be required. It now seems that there is a reasonable probability of the current being available.

It is hoped that the store will be ready by February, 1947, but under the present conditions there are many factors which may prevent this objective being achieved.

During the season an iced wagon containing plums, peaches, cabbage, pears and grapes was dispatched to Townsville. With this wagon the C.O.D. combined with Mr. A. Barlow in supplying the fruit and vegetables, while the Department of Agriculture and Stock supervised the whole consignment from the picking of the varieties until delivery was made in Townsville. The whole consignment was pre-cooled in Mr. Barlow's cold store at Applethorpe. The Railway Department also gave every possible assistance and made available a CMI wagon which is normally used for meat.

An interesting and instructive report was submitted by the departmental officers who accompanied the wagon on the journey from Applethorpe to Townsville. This report indicated the necessity for a special type of iced wagon for the carriage of fruit and vegetables, as it became obvious that some form of air circulation was necessary to obtain a maximum result. Generally, the consignment was a success, and indicated that when a special type of wagon can be provided many of our transport problems to northern centres in the hot summer months will be overcome.

The shortage of labour in the Stanthorpe district caused packing difficulties for growers, with the result that more use was made of the existing packing houses. They proved inadequate to cope with the demand. Undoubtedly this labour shortage has made growers more packing-house minded, with the result that there has been a larger demand for packing houses. This resulted in the decision by the Deciduous Sectional Group Committee towards the close of the year to provide an additional packing house at Passmore, the preliminary arrangements for which are now in hand.

Other Fruits Section.

Tomatoes.—During the year the purchase was completed of an old three-storied brick building in Sussex Street, Sydney, in which tomato ripening rooms are to be installed to give Queensland growers a complete service to retailers with repacked, ripened tomatoes. At the close of the year, reconstruction work on the building had commenced. This activity is being sponsored by the Other Fruits Sectional Group Committee.

Despite greatly reduced interstate loadings of tomatoes in the last few months of the year as a result of heavy losses from floods, drought and frost, interstate loadings again increased. Interstate loadings for the last seven years have been as follows:—

	Cases.
1939–40	606,653
1940–41	695,862
1941–42	513,385
1942–43	496,647
1943–44	435,975
1944–45	717,785
1945–46	773,844

Had favourable weather conditions prevailed in the latter half of the year, southern loadings for 1945-46 would have greatly exceeded the above total.

The reputation of Queensland tomatoes has not been improved by the advent of many new growers to the industry during the war years

and by the effects of price fixing, which frequently resulted in growers being discouraged through inability to obtain a premium for good-quality, well-packed lines. Wholesale ceiling prices were removed on 25th October, 1945.

Papaws.—High prices during the war years led to substantial increases in production, and but for the drought a very big increase in production would have taken place in 1946-47.

Interstate loadings for 1945-46 were a record, as indicated in the following schedule:—

INTERSTATE LOADINGS OF PAPAWS.

—	Melbourne.	Sydney.	Newcastle.	Total.
1940–41	7,528	22,051	652	30,231
1941–42	7,237	22,491	581	30,309
1942–43	7,791	23,227	241	31,259
1943–44	4,818	20,778	174	25,770
1944–45	6,385	26,495	263	33,143
1945–46	10,965	50,510	1,119	62,594
	44,724	165,552	3,030	213,306

These figures show a remarkable increase in loadings to Sydney, where the C.O.D. Branch specializes in this fruit.

Some progress has been made by the C.O.D. branch in Newcastle in popularizing papaws, but much remains to be done. Maximum interstate outlets can only be secured by growers concentrating on the problem of landing fruit on the southern markets in ripe or near-ripe condition during the winter months. Green or slightly coloured fruit will not ripen satisfactorily in the winter, and its marketing only militates against the success of the efforts of the C.O.D. to popularize this fruit in the South.

Relatively few papaws were available for factory purposes, the total quantity delivered during the year being only 338 tons, compared with 403 tons in 1944-45. The quantity of green papaws supplied to factory and used for chutney was 87 tons compared with 83 tons last year. Canners' requirements could not be supplied. Only 251 tons of ripe papaws were delivered in comparison with 320 tons during 1944-45. This quantity fell far short of canners' requirements of this fruit for tropical fruit salad.

Strawberries.—During the year Messrs. Cottees Passiona Ltd., of Sydney, approached the Queensland Department of Agriculture and the C.O.D. with a plan for five-year contracts with growers for the production of up to 500 tons of strawberries annually.

Serious objection was taken to the proposed contracts by South Coast strawberry growers on the grounds that the fresh fruit markets, on which growers mainly rely for their returns, would be hopelessly oversupplied by the introduction of a substantial number of new men to the industry. This difficulty was overcome by an arrangement with Cottees by which the contracts would provide a price acceptable to growers for the whole of their crops, and by which growers would contract for the delivery to this firm of the whole of their crops. A number of contracts were written up on the North Coast. Payments to growers will be made through the C.O.D.

A census of plantings taken by the C.O.D. showed an increase of 71 per cent. on 1944-45, but continued drought conditions will greatly reduce the crop.

Discussions were held with Australian National Airways to inaugurate the delivery of berries by air to Melbourne. Special lightweight containers were designed, and it is anticipated that a substantial quantity of Queensland berries will be marketed in Melbourne this season.

Figs.—Before the commencement of the crop, negotiations were well advanced with factories for the placing of the fig crop, estimated at 120 to 130 tons, with factories at a price of 3d. per lb. for a five-year period.

Unfortunately, the Sunnybank district, where almost the whole of the Queensland fig crop is produced, suffered from a severe hail storm, with the result that factory deliveries dropped from 106 tons in 1944-45 to 22 tons in 1945-46. In view of this disaster, it was decided to postpone negotiations for a long-term contract.

Passionfruit.—Growers have found considerable difficulty in producing this crop, and relatively few are now grown at Mt. Cotton, a district which previously, in addition to sending large quantities to Sydney, kept the Brisbane market well supplied during most of the year, and delivered substantial quantities to factories.

High prices have ruled on the fresh fruit markets throughout the year, and only 22 tons were delivered to factories. This, however, showed a substantial increase on the six tons of 1944-45.

Avocadoes.—It has been found that when avocadoes are in heavy supply there is no demand for seedling varieties, and that buyers concentrate on the Fuerte variety.

VEGETABLE SECTION.

Following the amendment of the *Fruit Marketing Organisation Act* in November, 1945, the first meeting of the Provisional Vegetable Sectional Group Committee was held on 8th March, 1946. This committee consisted of members nominated by the Minister for Agriculture and Stock on the recommendation of the C.O.D.

The committee confirmed arrangements tentatively entered into by the C.O.D. to assist in the formation of an Australian federation of vegetable growers, preliminary discussions on which took place in Melbourne in October, 1945. At this conference the C.O.D. had present representatives of both the Deciduous and Other Fruits Sectional Group Committees.

The Vegetable Sectional Group Committee decided to postpone until the first meeting of the elected committee in August, 1946, the question of levies to finance its operations. In the meantime it was able to carry on through the generosity of the Other Fruits Sectional Group Committee, which agreed to transfer from its funds to those of the Vegetable Sectional Group the amount of £2,000, representing the estimated revenue derived by the Other Fruits Sectional Group Committee in earlier years on the interstate transport of vegetables.

Bean Section.

Record loadings were made interstate, as shown in the following schedule:—

Comparative Interstate Loadings.

—	Melbourne.	Sydney.	Newcastle.	Total.
	Packages.	Packages.	Packages.	Packages.
1941–42	34,006	21,389	29	55,424
1942–43	39,588	29,198	569	69,355
1943–44	26,155	27,309	220	53,684
1944–45	50,435	36,407	709	87,551
1945–46	33,936	54,716	2,774	91,426
	184,120	169,019	4,301	357,440

These figures indicate very clearly the advantage to the bean industry of the C.O.D. wholesale branch in Newcastle, which commenced operations in February, 1945.

Preparations were made for record plantings for the 1946 season, but the torrential rains of the two cyclones destroyed almost the whole of the early plantings. The crop from the later plantings was very seriously reduced by drought conditions, while heavy losses from frost were incurred on the lower levels.

The annual conference of representatives of Bean Associations was held in October, 1945. This conference strongly supported an amendment of the *Fruit Marketing Organisation Acts* to provide for a Vegetable Sectional Group Committee, which was subsequently realized. It was decided by the first meeting of the new committee to continue with the bean organisation, through which excellent work has been done on behalf of the bean industry of Queensland.

Further representations were made to the Prices Commissioner for an increase in the price of certified Brown Beauty bean seed grown under the supervision of the Department of Agriculture and Stock. When the price was reduced to 55s. per bushel to the grower it ended certified bean seed production in Queensland, which, in present circumstances, cannot hope to compete with a similar industry in Victoria. The Victorian seed, however, has not proved as suitable as the Queensland certified seed, and leading growers are anxious to revive the local industry. Price is considered of secondary importance to reliability. By the end of the year no word had been received from Prices Branch of its intentions.

A canvassing agreement was again arranged with the southern agents, on this occasion the agreement being signed by the Melbourne trade which previously had accepted it on a verbal basis only. Serious opposition to the signing of the agreement was demonstrated by an influential section of the Sydney bean trade, and it is evident that greater difficulty will be encountered in the future in completing such agreements.

Wholesale ceiling prices on beans were cancelled on 4th February, 1946. As a result of cyclones and droughts, bean supplies were so short that prices quickly exceeded the old ceilings. One favourable result of ceiling prices has been the general acceptance in Queensland of the principle of sale of beans by weight, an objective for which growers had pressed unsuccessfully for many years.

Sydney Branch.

Records were again broken, both in turnover and the number of packages sold. Consignment sales amounted to £533,399, compared with £459,638 the previous year when a record was established. Purchase sales dropped from £59,113 the previous year to £31,041. These figures are healthy, as the objective of the C.O.D. is to encourage consignments, and only to purchase when and where adequate supplies of consignment goods are not available. Total turnover on the sales floors was £564,440 compared with £518,752 in 1944-45.

The following schedule indicates the very substantial progress made by the Sydney branch since 1932-33:—

	Turnover.	Packages Handled.
	£	
1932–33	27,256	..
1933–34	32,788	..
1934–35	37,921	..
1935–36	40,384	..
1936–37	62,630	132,294
1937–38	82,959	185,325
1938–39	105,944	243,576
1939–40	110,153	241,125
1940–41	123,082	292,162
1941–42	190,816	345,296
1942–43	318,680	386,983
1943–44	418,999	459,119
1944–45	518,753	579,299
1945–46	564,440	646,806

Pineapples constituted the main variety handled, the total for the year being 187,115 cases, followed by tomatoes with 142,966 cases—a record. Papaws showed a very big increase, with 32,445 cases compared with 18,062 cases for 1944-45, which at that time was a record. There was a substantial increase in the quantity of beans handled, the figures being 16,466 packages compared with 10,403 in 1944-45 and 8,063 in 1943-44. There was a falling away in oranges, which decreased from 87,141 cases in 1944-45 to 55,932 cases in 1945-46. The lower figure was mainly due to a light crop.

Of Queensland deliveries, the branch handled:—

	Per Cent.
Custard apples	78·56
Papaws	67·54
Avocadoes	65·98
Citrus	63·99
Pineapples	52·74
Strawberries (trays)	45·32
Strawberries (cases)	26·6
Beans	26·5
Bananas	24·9
Cucumbers	21·42
Tomatoes	14·54

Of the total Queensland deliveries, the branch handled 26.71 per cent., clearly demonstrating the influence that the growers' own floor has in the Sydney markets.

On the C.O.D. train for the twelve months 1,324,392 packages were delivered to the Sydney market, of which the C.O.D. Sydney floor received 431,453 packages, a percentage of 32.5 per cent.

During the year action was taken to alleviate the congested conditions under which the branch has operated for some years with

rapidly increasing quantities to handle. The C.O.D. was successful in purchasing the lease of sections in the vegetable markets and also in the produce market where potatoes, pumpkins, carrots, beetroot and other bagged lines are handled.

At the close of the year work had commenced in the renovation of the Sussex street building for the establishment of a cool room and tomato ripening rooms and space for the country order department, which is developing satisfactorily.

A valuable block of vacant land facing Harris street, with streets on three sides, was purchased during the year. This land is located close to the markets, and will be held by the C.O.D. as a reserve on which to build a warehouse if it is found impossible to secure sufficient space in the markets for future business.

Newcastle Branch.

The Newcastle Branch, which commenced operations late in February, 1945, is now very firmly established, and has proved an excellent distributing point for Queensland fruit. Turnover for the year was £123,200 (approximately). The branch has been the means of greatly increasing direct consignments to Newcastle which, prior to the C.O.D. opening a branch, drew most of its supplies from Sydney, thus increasing distribution costs unnecessarily. This trend towards direct consignments is emphasized in the following table of deliveries from Queensland and the percentage of direct consignments to the Newcastle markets from Queensland:—

	Packages to C.O.D.	Percentage.
Strawberries ..	4,589	100
Papaws	1,011	96
Bananas	8,565	85
Beans	2,087	83
Apples	5,674	79
Pineapples	18,043	64
Tomatoes	19,614	54

Only in the case of grapes did the C.O.D. receive a small percentage of Queensland railings.

Towards the end of the year an experiment was made in the direct delivery from Newcastle of fruit and vegetables by truck to retailers between Newcastle and Cessnock, with a small depot complete with cool room at Cessnock.

The C.O.D. has been successful in co-operating very closely with the retailers of the coal fields.

Brisbane Wholesale Floor.

From 1942 onwards, the Brisbane wholesale floor handled large quantities of bagged vegetables such as beetroot and carrots for distribution to the Services. This was partly responsible for the spectacular increase in turnover figures, culminating in a record of £523,900 for 1944-45.

Last year's turnover of £446,400 (estimated) showed a very substantial drop, although assisted by big quantities of beetroot and carrots in the first half of the year. With the loss of the Service demand, there will be no outlet for any substantial quantity of bagged beetroot and carrots, and growers of these lines have already mostly switched over to other forms of production. It is expected, therefore, that next year's figures will show a further decline.

Turnover since 1936-37 was as follows:—

	£
1936–37	48,600
1937–38	63,700
1938–38	70,900
1939–40	84,900
1940–41	96,200
1941–42	147,000
1942–43	307,200
1943–44	445,300
1944–45	523,900
1945–46	446,400 (Estimated)

Brisbane is the only branch where banana sales are conducted as a separate activity, and combining banana sales with the wholesale fruit and vegetable floors, Brisbane had a turnover for 1945-46 of £731,800.

Efforts made during the year to obtain additional space in the markets were unsuccessful.

Rockhampton Branch.

The year 1944-45 was one of depression in the vegetable industry of Central Queensland following the boom conditions of 1943-44 when the presence of large numbers of United States troops established a phenomenal demand which led to many new growers entering the industry. There was every promise of a revival of the industry in 1945-46, particularly with tomatoes, and papaws in the Yeppoon district.

Unfortunately, Central Queensland missed the rains of the two cyclones, and at the end of the year all districts, including Yarwun, were suffering severely from drought. The only areas with fair crops were those under irrigation, but these lost heavily by probably the severest frost in thirty years which occurred early in June.

Despite the reduction in local crops in the latter half of the year, the Rockhampton branch showed a considerable improvement on its turnover figures of the previous year.

Comparative turnover figures were:—

	£
1941–42	28,000
1942–43	92,300
1943–44	186,600
1944–45	89,000
1945–46	97,800

The Rockhampton branch conducts operations in two adjoining buildings. In these there are two banana ripening rooms and one cool room. These are urgently in need of renewal and are inadequate to cope with the volume of business offering.

At the latter end of the year negotiations were satisfactorily concluded with the Rockhampton City Council for the C.O.D. to receive a long term lease of the two buildings, in return for which the C.O.D. undertook to modernise the front of the buildings, instal cantilever awnings, modern ripening and cool rooms in brick, and up-to-date offices.

Bowen Branch.

Bowen had a particularly satisfactory season in 1945 when growing conditions were excellent, but the 1946 season opened disastrously with serious floods which caused heavy losses. The floods were followed by a drought with frosts in June.

Loadings on the C.O.D. transport system showed a big increase, totalling 417,361 packages in addition to 22 tons of water melons. The main varieties constituting these loadings were:—

	Packages.
Tomatoes	285,769
Cucumbers	72,717
Pumpkins	23,130
Mangoes	14,733
Pineapples	6,905
Rock melons	5,151
Egg fruit	1,929
Chillies	1,767

Despite every effort by the C.O.D. to lay in heavy stocks of cases before the commencement of the 1945 season, there was an acute shortage, accentuated by a strike in the northern timber industry. The district was saved from heavy losses by the free use of second-hand cases secured by the C.O.D. in Brisbane to the extent of approximately 100,000. The 1946 season opened late and promised to be so small that there was a surplus of cases in May and June, with millers unable to place all available stocks.

The retail branch was strengthened with the construction of a cool room, which should prove invaluable in minimizing losses.

During the year a block of land adjoining the C.O.D. premises was purchased, and it is proposed to extend the present building as soon as possible.

Townsville Branch.

The effect of troop concentrations in North Queensland is very clearly demonstrated in the following schedule of turnover figures of this Branch of the C.O.D.:—

	£
1938–39	13,931
1939–40	15,671
1940–41	21,459
1941–42	37,400
1942–43	115,100
1943–44	143,400
1944–45	163,400
1945–46	101,115

During the year the banana ripening plant and cool rooms were completed, and the ripening rooms commenced operations in March, 1946. The effect of the rooms in stimulating consumption is demonstrated in the following table:—

Number of Cases (Equivalent) Sold by the C.O.D.

—	1943.	1944.	1945.	1946.
March ..	420	480	351	809
April ..	461	465	640	1,236
May ..	343	438	508	1,041
June ..	170	268	229	697

Much greater quantities would have been ripened and sold in May and June but for the disastrous effects of the cyclones on the northern banana industry.

In March, the branch was seriously embarrassed through having to absorb large quantities of fruit and vegetables intended for other markets and which were held up with floods.

Cairns Branch.

The number of packages handled by the wholesale floor in Cairns for the year 1945-46 was 143,438.

Because of heavy troop concentrations in the North, turnover in Cairns for the years 1943-44 and 1944-45 was abnormally high, with a peak in 1944-45 of £142,600. With the movement of troops overseas, demand rapidly slackened, which was reflected in the year's turnover of £84,298, quite a high figure for a country branch.

Comparative turnover figures were:—

	£
1942–43 (7 months only)	34,000
1943–44	129,200
1944–45	142,600
1945–46	84,300

To cope with the over-supplies resulting from the sudden cessation of Army demands, this Branch tried two new avenues of distribution:—

Road Delivery Service.—A road delivery service to retailers which commenced in July, 1945, was continued throughout the year and has had very encouraging results. Direct deliveries were made to retailers' shops in Babinda, Innisfail, South Johnstone, Silkwood, EI-Arish and Tully until the Innisfail Branch was opened early in June, 1046. The road delivery service from Cairns was then confined solely to Babinda, while Innisfail supplied the towns as far south as Tully.

Distribution Scheme.—Regular advertisements were inserted in district newspapers quoting cases of straight fruit, mixed vegetables and mixed fruit and vegetables delivered to country centres, consequently a regular clientele of customers was established and proved of assistance in minimizing gluts of oranges, mandarins and bananas.

The banana ripening rooms have proved very successful, and before supplies of bananas dwindled as a result of cyclones, it is estimated that consumption had been increased in Cairns by from 300 per cent. to 400 per cent.

Supplies to Cairns from the South were seriously delayed when cyclones caused washaways on a considerable portion of the railway line north of Townsville. During the rail hold-up, supplies were first delivered to Cairns by road transport from Townsville with the co-operation of the Townsville Branch of the C.O.D., and later were delivered by road to Mutarnee and thence by rail to Cairns.

Atherton Branch.

The Atherton Branch was closed on 31st October, 1945, after doing a very valuable war job servicing Army on the Tableland and at Mareeba with vegetables. This Branch was operated on a non-profit making basis. Included in its work was the transport of Land Army girls both to and from the vegetable farms producing for Army.

Consignment Turnover.

Comparative turnover of all wholesale floors for the last three years was:—

—	1943–44.	1944–45.	1945–46.
	£	£	£
Sydney	323,600	459,600	533,400
Newcastle	..	37,000	123,200 (approx.)
Brisbane	445,300	523,900	446,400 (est.)
Bananas (Brisbane) ..	230,200	262,300	285,400
Rockhampton ..	186,600	89,000	97,800
Townsville	143,400	163,400	101,100
Cairns	129,200	142,600	84,300
	£1,458,300	1,677,800	1,671,600

Bonus Distribution (Sections).

In November, 1945, a bonus distribution of 33⅓ per cent. of commissions on consignments to the C.O.D. floors for 1944-45 was made. The amount distributed was £35,600 as compared with £43,890 the previous year at the rate of 45 per cent.

Merchandise Department.

Turnover again increased for the year 1945-46 and was £166,600 as compared with £151,700 for 1944-45 and £127,600 for 1943-44. A bonus at the rate of 4½ per cent. was paid to growers on their previous year's purchases, and absorbed £4,860.

Country Order Department.

The following table shows the comparative railings by the Country Order Department:—

—	1942–43.	1943–44.	1944–45.	1945–46.
Packages	57,042	125,876	214,429	203,974
F.O.R. Value ..	£50,666	109,600	198,296	182,198

Total purchases from the wholesale floors during 1945-46 amounted to 91,993 packages, representing 45·02 per cent. of the total.

Retail Distribution.

Very substantial progress was made towards the establishment of a chain of retail branches in country districts, the first plans for which were laid late in 1944-45.

For many years, particularly during the war years, numerous complaints were made by the public of unduly high retail rates in country districts and inability to secure quality fruit and vegetables. It was established that this state of affairs existed in Nambour, and the Committee decided to open an experimental retail branch to determine the extent, if any, to which the public would respond to quality fruit and vegetables at reasonable retail rates in relation to wholesale prices. The Committee also desired to test the possibility of increasing distribution of fruit in case lots by giving the public the opportunity to purchase at relatively low rates when market prices were depressed.

The Nambour Branch was opened early in July, 1945, and was an immediate success. Local supplies were purchased wherever possible, and the branch also assisted in securing supplies for the country order department, thus reducing double handing to a minimum. Public support of the retail branch was so strong throughout the year that it is conservatively estimated that consumption has been increased in the Nambour district by upwards of 25 per cent.

Armed with this experience, and inundated with requests from other country towns to open similar branches, the C.O.D. decided to enter on a programme of expansion of retail/wholesale units wherever suitable premises could be secured and as staff became available. The Nambour Branch has proved invaluable as a training ground for staff. This objective was greatly strengthened by the amendment of the *Fruit Marketing Organisation Act* in 1945 which provided, *inter alia*, for the Government to have the right to direct the C.O.D. to open in any local authority area and also to have the power to acquire premises on behalf of the C.O.D. for fruit and vegetable marketing. The latter provision was very necessary, as the C.O.D. has frequently found the most serious obstacles placed in its way when it endeavoured to purchase or even lease buildings.

The next move was to test the possibilities of increasing consumption in the Far West, and Charleville was chosen for this experiment. Premises were leased and a cool room and refrigerated display windows installed. This branch was opened on 1st April. As with Nambour, the public response was excellent. All local prices were immediately reduced and consumption stimulated. The early sales figures have not been maintained during the winter months, which was to be anticipated in a district such as Charleville which produces both citrus and vegetables during the winter. A considerable country order business is being conducted with mixed cases of fruit and vegetables. Invaluable experience has been gained by the C.O.D. in the problems to be overcome in meeting the requirements of the western public.

The next branch was opened on 1st May at Gympie in leased premises. Competition from the established retail trade proved keen as local retailers reduced their margins of profit when the opening date of the C.O.D. was known. A certain amount of under-cutting occurred, and the branch was handicapped by not being in the heart of the business centre. It has made steady progress, and there is every promise of its proving very successful. While such a branch operates the Gympie public will have an assurance that retail prices will be kept in line with wholesale rates.

Innisfail was chosen for the establishment of a branch mainly as the result of an effort to keep prices at prohibitively high levels. Business commenced in leased premises on 5th June, and by the end of the month the branch was conducting a substantial wholesale business in addition to retail. Land is being bought by the C.O.D. where a building, equipped with cool stores, will be erected before May, 1948.

Future Plans.

Longreach.—A building site has been secured by the C.O.D. which proposes to construct, in concrete, a branch to handle fruit and vegetables on a wholesale and retail basis. The building will be equipped with cool rooms, and will probably be air-conditioned.

Mackay.—Action has been taken to acquire premises in Mackay which will be suitable for both wholesale and retail trade. Banana-ripening rooms and cool rooms will be installed.

Roma.—At the end of the year negotiations were well advanced for the purchase by the C.O.D. of a building favourably situated in the heart of the business centre. It is hoped to open before the end of September, with the later establishment of a cool room.

Dalby.—Action is being taken to acquire a vacant piece of land in the business centre on which the C.O.D. will build.

Maryborough and Bundaberg.—By the end of the year it had not been possible to secure suitable premises for retail/wholesale branches, but enquiries are being pursued.

Other Centres.—When premises are available, the C.O.D. has agreed to open retail branches in Stanthorpe and Southport. Surveys have been made of a number of other towns, and it is the Committee's intention to continue such surveys.

Army Servicing.

Since the termination of the war, with the consequent demobilization of the Australian Forces, and the departure of all United States Army and Navy personnel, there has naturally been a decrease in the C.O.D's. activities in Army servicing. There has been a progressively rapid closing down of Army supply depots both in Brisbane and in country districts, with the result that at the close of the financial year the C.O.D. was supplying only one metropolitan Army depot and two country depots.

There has, however, been a heavy, though spasmodic call for the crating of vegetables and wiring of fruit for shipping orders, almost continuous throughout the year, and small rush orders for air transport have been handled. Statistics of crating show a greater number of packages handled than in the previous year. In fact, in November, 1945, when just on 17,000 packages of vegetables were crated, a record was established which was not attained during any month of the war years.

Comparative Statistics.

—	1944–45.	1945–46.
No. packages crated and wired	104,677	110,888
Packages—wired only	133,961	49,485
Wire used	2,145,102 ft.	1,562,237 ft.
Nails used	11 tons 13 cwt.	11 tons

The figures for 1945-46 would have been higher but for the shortages in both vegetables and fruit, which were accentuated when heavy supplies for shipping were required. In previous years, when Army demand was consistently heavy, the C.O.D. operated extensively in the importation of carrots, beetroot and swedes particularly, drawing these vegetables from the contract production of New South Wales, Victoria and Tasmania. Because of the spasmodic nature of shipments and frequent last moment cancellations, no vegetables were imported by the C.O.D. for the Services in 1945-46, and each time shiping orders were placed the supply of locally produced vegetables proved inadequate. In October-November, 1945, there were heavy calls by Army for oranges for supply to Prisoner of War staging camps at Moratai and Labuan, and to Service hospitals in the Islands. The co-operation of the Brisbane trade had to be sought for a voluntary surrender of portion of the supplies being received from southern packing sheds, but the quantities forthcoming were quite inadequate.

Since the beginning of 1946, shipments have been made of vegetables and fruit to the British Commonwealth Occupation Forces in Japan and to Australian garrison troops at Rabual. The first of the 1946 Stanthorpe Jonathan apples to the extent of 7,000 cases, 5,000 of which were purchased direct from growers, were included in shipments of foodstuffs to Japan in February.

The C.O.D. has been advised that the Minister for Commerce and Agriculture has agreed to the recommendation of the Department that the C.O.D. should continue servicing Army on the same basis until 31st December, 1946. Despite the greatly reduced demand from Army, which will make the business a losing proposition on a commission of 2½ per cent., the C.O.D. is willing to continue while required to do so, but hopes it will be able to retain possession of an "igloo" building at least while it is still engaged in Army servicing. This building has recently been declared surplus and has has been handed over to the Commonwealth Disposals Commission.

Opening of Brisbane Markets on Monday Holidays.

For many years, the C.O.D. has endeavoured unsuccessfully to arrange for the opening of the Brisbane markets on Monday holidays to avoid congestion and consequential losses to growers on each Tuesday following such a holiday.

No progress, however, was made, as most of the agents were opposed to the opening of the markets, and in the Municipal markets were given the right by a City Council Ordinance to determine by ballot those days on which the markets should be closed.

When the agents again rejected the C.O.D. approach, advantage was taken by the C.O.D. of a public announcement by the City Council that the markets could be opened at any time for receiving. The C.O.D. wholesale floors were accordingly opened for receiving on the Monday afternoon, and a very substantial quantity of loose pineapples and grapes was delivered, thus reducing congestion in the C.O.D. section of the markets on the Tuesday.

In the meantime the City Council had been approached by the C.O.D. for an alteration of the by-law to take from agents the sole right of determining the holidays. This move was successful, and the City Council Ordinance has now been amended to provide for any decision in respect to the closing of the markets on any holidays to be made by the Establishment and Co-ordination Committee.

Interstate Transport.

All fruit and vegetables loaded on the coast for transport by rail interstate have to be transshipped into New South Wales wagons at Clapham. With interstate trains clearing South Queensland stations on Mondays and Fridays, the bulk of the loadings have been made on the Friday trains which are transhipped at Clapham the same night. Because of labour difficulties and scarcity of suitable New South Wales wagons, this has, from time to time, caused congestion and delay at Clapham and has proved an embarrassment to the Queensland Railway Department. The matter was brought

to a head in the winter of 1945 when, in addition to congestion at Clapham, serious delays were incurred in Sydney in delivering from Darling Harbour railway yards to the markets. Some of the fruit had at times to be held in the wagons in Darling Harbour as long as two days, and demurrage charges were incurred by the C.O.D. At the time, the bulk of the loadings consisted of tomatoes from Bowen, where for years interstate loadings had been made only once a week to connect with the Friday trains in South Queensland. Bowen growers generally had previously opposed all recommendations to increase the loading days to two a week, but on this occasion the proposal was accepted and a Friday loading was introduced to connect with the Monday loading in South Queensland. The new train was given excellent support, and has assisted very materially in relieving the congestion both at Clapham and at Darling Harbour.

Another innovation introduced in May, 1946, was the running of an extra train to Melbourne with loadings in South Queensland each Thursday. This train is transhipped at Clapham during the daylight hours on the Friday, clears Clapham for Melbourne at 5.15 p.m., arriving at 2.30 a.m., ready for the Tuesday market—a day earlier than the loadings made in South Queensland on the Friday.

Northern Fruit Trains.

Cyclonic gales and rains early in March disorganised northern traffic and caused heavy washaways in the area between Mackay and Cairns. The northern fruit train from Roma Street on the 1st March was marooned at Bowen. As the steamship "Burwah" was at Bowen at the time, the Railway arranged to transfer the consignments on this fruit train to this vessel for transport to Townsville. The C.O.D., Townsville, sold on growers' behalf all the fruit and vegetables consigned to them and to C.O.D., Cairns. The Railway Department auctioned private orders and other consignments for various parts of North Queensland.

The action of the Railway Department in loading the steamship "Burwah" is appreciated; otherwise the train would have been a complete loss as repairs were not effected on the section north of Bowen until well over a week later. The northern fruit train due to clear from Roma Street on the 5th March was cancelled. The next train ex Roma Street on the 8th March was able to go as far as Townsville. The train following, Tuesday, 12th March, went through to its destination.

The C.O.D. has run two northern fruit trains weekly from Roma Street for the past twelve months.

Factory Activities for 12 Months ended 30th June, 1946.

The following quantities of the various fruits have been handled for factory: Stanthorpe fruits, 708 tons; citrus fruits, 1,341 tons; figs, 22 tons; papaws, 338 tons; passion fruit, 22 tons; metropolitan tomatoes, 92 tons; strawberries, 21 tons, and pineapples—

	Tons.
Winter crop 1945	3,141
Summer crop 1946	6,684

making a grand total of all factory fruits, 12,369 tons.

Interstate Transport.

There was a very substantial increase in interstate railings:—

To—	1944–45. Packages.	1945–46. Packages.
Victoria	406,398	565,089
New South Wales	1,369,088	1,464,301
	1,775,486	2,029,390

Increases were most marked in—

Bananas	74,005	cases
Pineapples	68,361	cases
Papaws	29,451	cases
Beetroot	24,119	sacks
Tomatoes	16,193	cases
Beans	3,875	cases

Strawberry consignments interstate by passenger train during the last two years were:—

To—	1944–45. Equiv. Pint Boxes.	1945–46. Equiv. Pint Boxes.
New South Wales	195,520	291,926

Directions.

The following fruits have been under the control of the Committee of Direction for the year ended 30th June, 1946, by direction:—

For factory purposes—		
Deciduous	extended to	21–1–47
Fig	extended to	9–2–47
Papaw	extended to	30–3–47
Citrus	extended to	12–6–47
Tomatoes ..	extended to	26–5–47
Pineapple ..	extended to	12–6–47
Strawberries ..	extended to	23–7–47
Passion fruit ..	extended to	30–11–46
Tomato restriction reintroduced 6–2–46 for twelve months to		6–2–47

Levies.

The following levies have been in operation during the year ended 30th June, 1946:—

Banana Levy.—South of Proserpine: 1d. for every £1 or part thereof of the gross proceeds realised from sale in Queensland of bunched bananas and ½d. per 1½ bushel case of bananas. Extended to 31st December, 1946.

Proserpine and Northwards: 4d. for every £1 or part thereof of the gross proceeds realised from sales in Queensland of bunched bananas and 3½d. per 1½ bushel case of bananas. Extended to 31st December, 1946.

Citrus Levy.—1d. per case (irrespective of size) to be expended in the interests of the citrus section. Extended to 31st December, 1946.

Pineapple Levy.—(*a*) Fresh fruit: 1d. per case or 21 loose on Smooths, and ½d. per case or 42 loose on Rough and Ripley varieties, the moneys collected to be for advertising, administrative, and stabilisation purposes. Extended to 30th June, 1946. Increased as from 1th July, 1946, to—Smooths 3d. per case or 21 loose, Ripleys and Roughs 1d. per case or 42 loose. Extended to 31st December, 1947.

(*b*) Factory fruit: 1d. per case. Extended to 30th June, 1946. Amendment to 6s. 8d. per ton. Extended to 31st December, 1947.

(*c*) Cannery Revolving Fund: Levy 10s. per ton or 3d. per case on factory fruit only, for the purchase of half-interest in Queensland canneries. The purchase has now been completed and this fund will commence to revolve when the amount available is sufficient to refund to all growers the total levies for the first year of contribution.

Stanthorpe Levy.—3s. 4d. per ton on all fruit and vegetables marketed from the Stanthorpe District, the fund so created to be for administrative purposes. Extended to 31st December,

1945. Increased to 5s. per ton as from 1st January, 1946. Extended to 31st December, 1946.

Hail Insurance Levy.—7s. 6d. per ton in the instance of apples and 6s. 8d. per ton on fruit other than apples, only grown in the northern portion of the Granite Belt, being the contribution of the growers concerned to a hail insurance fund. Continuous, subject to demand for a ballot by growers.

Papaw Levy.—At the rate of 1d. per every two cases or part thereof, half the fund so created (with a minimum of £124 and maximum of £175 per annum) to be used to subsidise the appointment by the Department of Agriculture and Stock of a papaw research officer; the balance of the funds to be used for advertising purposes. Extended to 31st December, 1946.

Tomato Levy.—¼d. per case, but no levy on consignments of less than four cases, to be used for administrative purposes. Extended to 31st December, 1946.

Fig Levy.—5s. per ton on factory figs, the fund created to be used for advertising purposes. Discontinued as from 31st December, 1945.

Avocado Levy.—1d. per case, gazetted 15th July, 1941, the funds to be expended in advertising. No specified time for termination.

Refunds to Growers.

Refunds to growers under various systems of finance during the period of twelve months ended 30th June, 1946, were:—

FREIGHT REBATES.

Citrus.—A rebate at the rate of 1d. per case on interstate consignments during the year ended 30th June, 1945, absorbed £65 11s. 1d.

Deciduous—Northern and Interstate.—A rebate of 14s. per ton was distributed to growers consigning interstate and to the C.O.D. branches in Rockhampton, Townsville, and Cairns. This rebate was paid in December, 1945, and totalled £1,930 0s. 3d.

Deciduous—Brisbane.—A rebate at the rate of 2s. 4d. per ton was paid in May, 1946, on consignments to Brisbane during the year 1943-44. This amounted to £2,787 3s. 5d.

Bowen.—A rebate on consignments forwarded during the season 1944-45 was paid at the following rates:—

	Per Case. d.
Half bushel	2
Bushel	3
One and a-half bushel	4
Pumpkins..	4

Total rebated £2,559 18s. 7d.

Stanthorpe Co-operative Hail Insurance Fund.

Claims have been paid on 2,353.3 bushels damaged by hail during the season 1945-46. Payments amounted to £210 13s.

Summary of Monies Returned to Growers during 1945–46.

	£	£
Freights—		
Citrus	65	
Deciduous	4,717	
Bowen	2,560	
		7,342
Fruit sections		35,647
Merchandise..		4,860
Hail claims		211
		£48,060

(2) Apple and Pear Marketing Board.

From 1943-44 onwards, the acquisition of apples and pears has applied only to crops produced in Western Australia and Tasmania. Queensland growers have been free to dispose of their fruit on the open market.

Sales in Queensland by the Apple and Pear Marketing Board for the twelve months ended 30th June, 1946, were as follows:—

	Cases.
Apples from Western Australia	11,378
Apples from Tasmania	280,822
Total	292,200
Pears from Tasmania	7,255

(3) Fruit Cases.

General.—The shortage of fruit cases was one of the major problems encountered during the year in relation to the marketing of fruit. The shortage was most acutely felt in the Stanthorpe district where great difficulty was experienced during the harvesting season in obtaining adequate supplies of containers.

The case problem has been a recurring one throughout the war years and, because of the high demand for timber for the housing programme, the cessation of hostilities did not relieve the position.

It is generally expected that some years will elapse before it can be hoped to overtake the lag in normal building operations caused by the necessity in the war years to divert the bulk of timber to works essentially required for the prosecution of the war, and until this has been achieved the problem of case shortages is not likely to be alleviated entirely.

In the course of the year conferences between representatives of the Department of Agriculture and Stock, Sub-Department of Forestry, Timber Control, Committee of Direction of Fruit Marketing and case millers and distributors were held with a view to formulating a plan designed to ensure that the Stanthorpe fruit harvest would not be interrupted by lack of cases required to market the fruit.

As the outcome of these conferences a committee has been set up in the Stanthorpe district with the object of ensuring continuous cutting of cases throughout the year. The committee is composed of an officer of the Department of Agriculture and Stock, representatives of the Deciduous Sectional Group Committee of the Committee of Direction of Fruit Marketing and representatives of the case millers and distributors. The Deciduous Sectional Group Committee has guaranteed to the millers an immediate market for all cases cut, and growers have been encouraged to place early orders instead of waiting until just before harvesting commences to order their requirements.

As available supplies of pine logs are not sufficient for the making of cases containing all pine timber, it has been necessary to use considerable quantities of scrub woods which are not as suitable as pine for storage. The Forestry Department has arranged to supply the Stanthorpe case millers with their annual quota of pine spread over the eight months of the "off" season. Agreement has been reached that pine will be used for ends only and sheeting will be entirely of scrub woods. During the harvesting season, when cases are put into use almost

immediately after cutting, both ends and sheeting will be of scrub wood. This plan will ensure that all the available pine, which is the most suitable timber for storing, will be milled for those case ends which are cut in the "off" season and which therefore require to be held by growers until harvest time. Reserves of sheeting cut from those types of scrub woods which can be stored satisfactorily will also be built up during the "off" season.

The committee will also exercise general supervision over the distribution of cases to growers in the district with the object of enabling each grower to obtain his fair share of the cases available. In arranging distribution, the committee will take into account the supplies of second-hand cases available.

Second-hand Fruit Cases.—The Second-hand Fruit Cases Committee, which is constituted under "*The Second-hand Fruit Cases Act of* 1940," has been responsible for the distribution of 1,300,472 second-hand cases to growers of fruit and vegetables in the period 1st July, 1945, to 30th June, 1946.

There has been a steady demand for most types of cases throughout the year and the committee's licensed dealers have been very active in clearing retail stores in order to fulfil orders received from growers.

The following table showing sales of second-hand fruit cases from the commencement of the committee's operations on 31st March, 1941, to 30th June, 1946, gives some measure of the value of the service which has been rendered to the fruit and vegetable growers of Queensland by the committee's operations:—

Sales of Second-hand Fruit Cases.

Year ending 30th June—	Cases Sold.
*1941	172,863
1942	679,832
1943	1,007,303
1944	1,448,545
1945	1,274,953
1946	1,300,472

* From 31st March only.

The sales for 1945-46 have been dissected on a district basis as shown hereunder:—

District.	Number of Cases.
Brisbane Metropolitan	616,369
Stanthorpe	210,977
Cleveland	124,665
Ipswich	40,369
Manly	40,664
Woombye	46,748
Islands	32,538
Toowoomba	18,351
North Coast	30,283
South Coast	18,274
Bowen	94,374
Roma	1,700
Injune	400
Dirranbandi	880
New South Wales	2,510
Permits	21,370
Total	1,300,472

The above table shows that the Stanthorpe district was supplied with 210,977 cases. This represents an increase of 75,174 cases over the number supplied to Stanthorpe in the previous year, and was a valuable contribution to the relief of the shortage in that district during the 1945-46 harvest.

The number of cases released by the committee for use in other industries showed a substantial drop from 68,888 in 1944-45 to 21,370 in 1945-46. It is the committee's policy not to grant releases of any types of cases unless there is no demand for them by the fruit and vegetable growers. The types of cases released were those that are unpopular with Queensland growers, mainly quarter-bushel cherry cases and pear flats. The pear flats were released at a time when dealers' stores were becoming overcrowded and when orders from growers were very slow. Since then, however, lettuce growers have begun to use pear flats for the marketing of their produce, and from October, 1945, no pear flats have been released to persons other than fruit or vegetable growers.

The cases supplied to New South Wales were released at a time when surplus supplies were available in dealers' stores. A further request in October, 1945, for the supply of cases to New South Wales growers was refused in order to ensure that the demands of Queensland growers could be fully met.

It will be noted from the table showing district sales that almost one-half of the total number of second-hand cases distributed were purchased by growers in the metropolitan area. These growers have always been heavy users of second-hand cases and in normal times, before the Second-hand Cases Act was in operation, metropolitan growers marketed their fruit in second-hand cases when growers in other districts insisted on using new cases.

At the close of the year licences issued by the committee to dealers in second-hand cases numbered 18, consisting of 12 in Brisbane, 3 in Warwick, and one each in Toowoomba, Oakey and Ipswich.

Unless the provisions of the Second-hand Fruit Cases Act are extended by Parliament, the Second-hand Fruit Cases Committee will continue to function for a limited period only after the duration of the war. In view of the certainty that fruit case shortages will be experienced for quite a number of years to come, and in view of the valuable service which the committee has rendered to the fruit and vegetable industry, all sections of the industry, as well as the Director of Forests and the Chief Timber Controller, have expressed the opinion that the operations of the Act should be extended indefinitely. The introduction of amending legislation to give effect to this suggestion is under consideration.

GINGER BOARD.

The Board was originally constituted on 16th July, 1942.

The Board's receivals of green ginger in the 1945-46 season totalled 576 tons, supplied by 151 growers. Realisations of the 1945-46 pool are not yet complete. Up to the 30th June growers had received 3½d. per lb. for green ginger delivered to the pool.

Industrial disturbances in the southern States and difficulty in obtaining storage facilities at Buderim caused a prolongation of the harvesting period. The Board's processors in Sydney were unable to cope with the increased quantities of ginger available and, towards the end of 1945, the Board, at the request of the processors, terminated its agreement with them and subsequently appointed Messrs. Gollin & Co. Pty. Ltd. as distributing agents.

When harvesting of the 1946-47 crop was commenced, 100 tons of ginger from the 1945-46 crop were still left in the vats at Buderim and, although a contract was made for the disposal of this ginger, the purchasers were unable to provide sufficient barrels to effect rapid clearance, with the result that the shortage of storage space has considerably slowed up the intake of the new crop.

Plantings in the spring of 1945 for the 1946-47 crops showed a further increase, and the crop is expected to yield 1,000 tons of green ginger. Deliveries to 30th June, 1946, totalled 400 tons.

Deliveries of green ginger to the Board since its inception are as follows:—

	Tons.
1941–42	14
1942–43	77
1943–44	180
1944–45	297
1945–46	576
1946–47	1,000 (Estimated)

The Ginger Board has continued to employ The Buderim Ginger Growers' Co-operative Association Limited as its agent to receive and handle ginger and to engage in its pre-treatment. During the year alterations and additions were made to the buildings and plant of the association with the object of taking the ginger past the pre-treatment stage to the "cargo" stage (*i.e.*, ginger in syrup).

The Board has made application to the Tariff Board for protection in respect of green ginger, ginger in brine and syrup and crystallised ginger. The application has yet to be heard.

HONEY BOARD.

The Board was originally constituted on 7th March, 1929.

The Board has continued the arrangement of marketing honey through agents—two in Brisbane and one in Maryborough. Sales made by these agents from 1st July, 1945, to 30th June, 1946, aggregated 27,473 (60 lb.) tins of honey and 10,674 lb. of beeswax. Sales for the previous year were 18,023 tins of honey and 13,092 lb. beeswax.

Selling prices for honey ranged from 7½d. to 4d. per lb., according to quality. The bulk of the beeswax was sold at 2s. 6d. per lb., with odd lots at 2s. 3d. and 2s. per lb.

The following table sets out the quantity of honey and beeswax sold by the Board's agents in each of the years from 1941-42 to 1945-46:—

Year.	Honey.	Beeswax.
	Lb.	Lb.
1941–42	456,000	19,337
1942–43	491,400	13,415
1943–44	1,536,780	10,518
1944–45	1,081,380	13,092
1945–46	1,648,380	10,674

The Board has levied growers for administrative purposes at the rate of 1 per cent. of the proceeds of sales. Permits have been granted to producers exempting them, in respect of small quantities of honey for sale locally, from the requirement to deliver their product to the Board. These producers have been levied at the rate of 1 per cent. of the proceeds of such local sales.

PEANUT BOARD.

The Board was originally constituted on 22nd August, 1924.

1944 *Season.*—Transactions in respect of the 1944 season pool were finalised on 10th November, 1945, by the payment of 1·5d. per lb. to growers, for all grades and varieties of peanuts received into the pool. Receivals were:—Virginia, 17,194,412 lb.; Spanish, 3,893,012 lb.; San Jose, 11,554 lb.; Valencia, 1,046 lb.; total, 21,100,024 lb., equivalent to 9,419·65 tons. This was a record production for Queensland.

The crop was disposed of in the following manner.

—	Virginia.	Spanish, &c.	Total.
	Lb.	Lb.	Lb.
Sales in shell ..	1,599	280	1,879
Sales in kernels ..	11,008,549½	2,960,605½	13,969,155
Loss in de-shelling	6,184,263½	944,726½	7,100,024
Total ..	17,194,412	3,905,612	21,100,024

The loss in deshelling represents 35·9 per cent. of the weight of Virginia bunch nuts deshelled, and 24·2 per cent. of the weight of Spanish nuts deshelled. These losses show a slight increase over the percentage losses for 1943 season, which were 33·8 and 22·2 respectively.

Sales.—The 1944 season crop realised a total of £395,426 11s. 10d., an average of 4.498d. per lb. on receivals.

Proceeds of sales were distributed as shown hereunder:—

—	—	Per Lb. on Receivals.
	£ s. d.	d.
Payments to growers—		
First advance	184,789 11 6	2·102
Final payment	131,874 12 10	1·5
Levy collected	21,977 9 3	·25
Expenses	56,319 4 2	·641
Transferred to Reserve Account	465 14 1	·005
Total	395,426 11 10	4·498

1945 *Season.*—Receivals into the 1945 Pool up to 30th June, 1946, were: Virginia, 19,910,411 lb.; Spanish, 5,435,144 lb.; total, 25,345,555 lb., equivalent to 11,314.98 tons.

First advances have been made to growers at a flat rate of 2.5d. per lb. in shell, irrespective of variety, from which has been deducted levy at the rate of .25d. per lb.

This crop had practically all been sold and delivered by the 30th June, 1946, although receivals by the Board were much later than usual, due to the late planting of 1944, and unsettled and rainy conditions at the time of harvesting in 1945. Following an improvement in the weather, the intake of the crop in July and August, 1945, constituted record receivals for that period of the year.

1946 *Season.*—Up to the 30th June, 1946, the total quantity of peanuts received by the Board, and against which advances had been made,

amounted to 13,313,216 lb., an equivalent of 5,943.4 tons, made up as follows:—

	Lb.
Virginia	10,364,396
Spanish	2,948,178
Valroy	642
	13,313,216

The total area planted for the 1946 crop was 32,000 acres. Early anticipations were for a yield of up to 20,000 tons, but dry weather conditions which prevailed during the period when the crop was growing and maturing, have reduced expectations to about 13,000 tons. It is estimated that approximately 7,000 tons of peanuts have been lost to growers in the South Burnett area by lack of sufficient moisture to enable the crop to mature.

On the other hand, weather conditions for the harvesting of the crop could not have been better, and harvesting and threshing have continued without interruption. This has had the effect of severely straining the Board's intake capacity, and at periods many thousands of bags of peanuts were lying in the field awaiting reception by the Board at their silos. Fortunately, the Board was able to obtain additional electric power and manpower, so that a double shift was operated on the receiving of the crop, but nevertheless the intake had to be regulated to the capacity of the Board's cleaning plant.

The 1946 crop went into practically empty silos, and, with the additional output which the Board has obtained by adding a new unit to their shelling plant, and also by increasing the production of their other units, it has been possible to handle the crop much more rapidly than would have been the case had there been a carry-over of the 1945 crop, or had the shelling machine capacity not been increased to its present standard.

Sales.—Sales of 1946 crop peanuts to 30th June, 1946, amounted to £124,480 9s. 2d. This crop was intended for sale during the period 1st July, 1946, to 30th June, 1947, but as there are not sufficient peanuts in the country to meet Australia's demands, a considerable portion of the 1946 crop had to be sold prior to the official date for the commencement of sales of that crop.

Revolving Levy Fund.—By Order in Council dated 28th January, 1943, the Peanut Board was empowered to increase the levy of $\frac{1}{8}$d. per lb. to $\frac{1}{4}$d. per lb. on all peanuts received. The object of increasing the levy was to create a revolving fund for the purpose of enabling the Board to repay to growers the moneys contributed by them by way of levy, and used by the Board for the payment of interest and redemption on capital sums raised by the Board to provide silos, treatment plant and other assets.

The levy of $\frac{1}{4}$d. per lb. has been collected from the proceeds of the 1942 and subsequent season's crops.

The levy moneys which have now been collected and transferred to that fund amount to £39,388 1s. 11d., made up as follows:—

	£	s.	d.
1942 season	6,091	11	4
1943 season	9,107	17	10
1944 season	10,988	14	8
1945 season	13,199	18	1
	£39,388	1	11

Growers of the 1927 and 1928 seasons were the first to participate in the repayments under the revolving levy fund scheme.

The amount of levy received during these two seasons was £12,567 16s. 3d., of which amount £10,652 1s. 2d. has been refunded. The balance, £1,915 15s. 1d., represents partly refunds due on which action is still being taken by the Board, but mainly repayments to which the growers concerned have forfeited all rights, due to their failure to surrender or transfer their shares in the association within six months. It is understood that the Board intends to apply for discretionary powers to allow payment of certain amounts to which the grower's rights are at present forfeited.

Statements are now in course of preparation in respect to seasons 1929, 1930, 1931, and 1932, and it is expected that these statements will be forwarded to growers in these seasons at an early date.

Storage.—The continued increase in production of peanuts is such that the Board was forced to give consideration to the provision of additional storage accommodation. It is proposed to proceed with the erection of another nest of twenty-seven large concrete silos similar to the No. 2 silos at present at Kingaroy. The additional storage accommodation will be 5,200 tons of Virginia peanuts, thus raising the total silos accommodation at Kingaroy to 12,600 tons.

General.—The Board has, during the past twelve months, instituted legal proceedings against individuals suspected of having contravened the provisions of "*The Peanut Industry Protection and Preservation Acts, 1939 to 1941.*" In each case the verdict has been given in favour of the Board.

PIG INDUSTRY.

(1) Acquisition of Pig Meats.

The marketing of pigs and pig meats was brought under the control of the Australian Meat Industry Commission in terms of *The National Security (Meat Industry Control) Regulations* issued in March, 1943, and administered by the Controller of Meat Supplies appointed under the Regulations, with the assistance of Deputy Controllers in the several States.

A pig meats committee was appointed towards the end of 1943 to act in an advisory capacity to the Deputy Controller for Queensland, consisting of two representatives of pig producers, two representatives of bacon factories, and a representative of the Department of Agriculture and Stock, with the Deputy Controller as chairman. The Department was represented on the committee by the Director of Marketing.

During June, 1943, the Commonwealth Government introduced the Pigmeat Acquisition Plan in terms of which pig carcasses of 100 lb. and over, chilled weight, were acquired at guaranteed prices based on 8d. per lb. at export port for first quality baconers within the weight range of 100 lb. to 180 lb. Producers were assured that the guaranteed prices would operate for at least two years, and that twelve months' notice would be given of any withdrawal of the guarantee,

During September, 1943, in consequence of the need to increase the output of bacon and hams for the services and for overseas commitments, the price for first quality baconer carcasses was raised to 9d. per lb. and the upper weight range lifted from 180 lb. to 200 lb. Restriction was placed on the sale of pork, bacon and ham which could only be disposed of at the direction of the Controller of Meat Supplies. Meanwhile, a total ban was imposed on the slaughter of porker pigs of less than 100 lb. carcass weight, but this was subsequently modified to the extent that pig carcasses of export quality within the range 82 lb. to 100 lb. were accepted for export.

Because of the shortage of feed early in 1945, arising from drought and the rationing of feed wheat, a further amendment was adopted by which the minimum dressed weight of carcasses was reduced from 100 lb. to 60 lb. This enabled lighter pigs to be marketed at the same scale of prices as for heavier weights.

This scale operated throughout the whole of the year ended 30th June, 1946, prices under the plan being:—First grade, 9d.; second grade, 8½d.; third grade, 7d.; extra fat, 6½d.; choppers, 5d.; stags and milky sows, 3d.

With the cessation of war, and the reduced demand from Allied services for bacon and ham, the question of reducing the upper limit of 200 lb arose. It was realised that peacetime markets would require a reduction in dressed weight of pigs, and Queensland would be well advised to concentrate on the production of a first-class bacon pig suitable for home trade and export.

However, the prolonged strike of bacon factory workers this year resulted in a large supply of over-fat pigs, and the Commonwealth Government agreed to accept pigs up to 200 lb. until 3rd August, 1946.

An amendment to the plan, covering a reduction in the price of pigs within the weight range 180 lb. to 200 lb., has been announced, to operate as from 3rd August, 1946. Under the amended plan prices to producers for pigs 60 lb. to 180 lb. will remain unchanged. Prices for pigs between 180 lb. and 200 lb. will be:—First grade, 8d.; second grade, 7½d.; third grade, 6d.

(2) Northern Pig Board.

The Board was originally constituted on 18th July, 1923.

The following table shows the number of pigs handled by the Board during the 1945-46 season. For purposes of comparison, the figures for the previous two years are also shown.

—	1943–44.		1944–45.		1945–46.	
	No.	Lb.	No.	Lb.	No.	Lb.
Sold to North Queensland Co-operative Bacon Association ..	12,278	1,783,406	12,953	1,985,839	11,802	1,468,714
Other Sales	208	8,608	170	4,150	165	6,205
Paid from Insurance Fund for Losses in Transit	49	8,428	48	9,252	31	5,144
Total	12,535	1,800,442	13,171	1,999,241	11,998	1,480,063

Purchases and sales for the last two years are as follows:—

—	1944–45.			1945–46.			Decrease.		
	£	s.	d.	£	s.	d.	£	s.	d.
Purchases	66,413	15	3	50,240	2	3	16,173	13	0
Sales ..	67,066	14	6	50,845	13	5	16,221	1	1

The above decrease is due to a drop in the average weight of pigs handled (132 lb. for June, 1945, 118 lb. for June, 1946) and the reduction of 1,173 pigs handled, which was mainly caused through strike conditions which existed for part of the period under review.

Equalisation costs to an amount of £123 13s. 9d. were collected from butchers on the pigs purchased by them direct from growers. The Commonwealth ban on the sale of pork does not operate in the Mossman, Daintree and Mount Garnet areas. The charge previously made by the Board for equalisation in respect of Mossman and Daintree has been discontinued, as action taken by the price control authorities to relate the retail price of pork at these two places to the price of pigs under the Pig Acquisition Scheme has removed the necessity for equalisation charges.

The Board collects 2s. per pig on sales of small goods pigs and 1d. per lb. on the dressed weight of pigs killed for pork by the butcher at Mount Garnet.

The Board has co-operated during the year with the Atherton Tableland Maize Board in the distribution of subsidised grains to pig producers on the Tableland.

PLYWOOD AND VENEER BOARDS
(Northern and Southern).

The Southern Board was originally constituted on 3rd May, 1934, and the Northern Board on 18th April, 1935.

Mainly because of log shortages and manpower conditions, the total output of plywood manufacturers in 1945-46 showed a decrease of 4,166,698 square feet of plywood, as compared with the previous year. Deliveries through the Northern Board increased by 2,267,169 square feet, whilst those through the Southern Board decreased by 6,433,867 square feet.

Deliveries to the Southern Board were 44,339,514 square feet, valued at £369,496, and to the Northern Board 19,763,035 square feet, valued at £164,692, giving a combined total of 64,102,549 square feet, valued at £534,188.

The following table sets out the quantity and value of plywood delivered to both Boards in each of the five years from 1941-42 to 1945-46 :—

Year.	Southern Board.		Northern Board.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Sq. ft.	£	Sq. ft.	£	Sq. ft.	£
1941–42	54,446,080	446,642	17,162,280	140,158	71,608,360	584,000
1942–43	47,571,965	392,468	18,110,984	149,416	65,682,949	541,884
1943–44	46,896,337	381,033	18,504,317	150,347	65,400,654	531,380
1944–45	50,773,381	412,533	17,495,866	142,154	68,269,247	554,687
1945–46	44,339,514	369,496	19,763,035	164,692	64,102,549	534,188

Distribution of sales in each of the years 1941-42 to 1945-46 is tabulated hereunder.

Year.	Southern Board.		Northern Board.		Total.	
	Queensland.	Interstate.	Queensland.	Interstate.	Queensland.	Interstate.
*1941–42	8,980,825	43,857,225	889,360	13,498,170	9,870,185	57,355,395
*1942–43	17,048,380	30,229,028	8,932,701	9,030,374	25,981,081	39,259,402
1943–44	21,719,113	25,177,224	9,208,774	9,295,543	30,927,887	34,472,767
1944–45	21,096,622	29,676,759	6,219,667	11,276,199	27,316,289	40,952,958
1945–46	17,186,790	27,152,724	8,679,889	11,083,146	25,866,679	38,235,870

* During these years quantities of plywood was also exported overseas as follows :—

Year.	Southern Board.	Northern Board.	Total.
	Sq. ft.	Sq. ft.	Sq. ft.
1941–42	1,608,030	2,774,750	4,382,780
1942–43	294,557	147,909	441,466

The Board's administrative levy has been maintained at ¾d. per 100 square feet. The cost of administration for the year averaged .945d. per 100 square feet, and quantity discount to Queensland distributors .101d. per 100 square feet.

Figures in all cases are based on the equivalent of 3/16 inch thickness.

THE WHEAT INDUSTRY.

The Wheat Acquisition Regulations under The National Security Act have continued to operate and the marketing of the wheat thus acquired by the Commonwealth Government has been the responsibility of the Australian Wheat Board. The State Wheat Board, established under *The Wheat Pools Acts*, 1920-1930, has continued to act as the sole licensed receiver and agent in Queensland for the Australian Wheat Board.

Queensland-grown wheat was marketed in accordance with the Queensland Board's system of wheat classification, and the usual premiums of 3d. a bushel for Q1 and 1½d. a bushel for Q2 over the basic price payable to the Australian Wheat Board were retained by the Queensland Board from the proceeds of sales for distribution to the growers of these higher grades. No finality has been reached on the question of a special premium for supplies of specified varieties of hard wheats, which has been the subject of discussion between the Board and representatives of the millers during the past two seasons.

The compulsory co-operative hail insurance scheme was maintained in operation, as in other seasons of Commonwealth acquisition, by deducting premiums from amounts payable by the State Wheat Board to growers from profits on commissions earned by the Board as agent and licensed receiver and from other activities. This scheme proved its value to the industry during the 1945 season when the serious hail losses to individual growers' crops were spread over the whole industry. The position in respect to Queensland wheat in Australian pools is now as follows:—

1940-41 Season (No. 4 Pool)—5,286,538 bushels.—After payment of a fifth advance in November, 1942, this pool was finally wound up by a sixth advance paid on 8th August, 1945, of 1⅛d. per bushel. This final payment brought the total of A.W.B. payments to 4s. 0⅜d. per bushel for bagged wheat, less an averaged Queensland freight of 4.7d. per bushel, or 3s. 7·67d. per bushel at growers' sidings. The Queensland Wheat Board has already made payments on account of quality premiums and distribution of profits on the basis of 4½d. per bushel for Q1 wheat. A grand total, Q1 basis, of 4s. 0⅛d. per bushel at growers' sidings.

1941-42 Season (No. 5 Pool)—2,679,897 bushels.—Payments to date, including Queensland Wheat Board payments, remain at a total of 3s. 11⅜d. per bushel at growers' sidings for first quality (Q1) bagged milling wheat.

1942-43 Season (No. 6 Pool)—4,402,845 bushels.—This was the first of the wartime pools to which the bushelage quota scheme applied—i.e., a guaranteed first advance of 4s. per bushel at growers' siding for the first 3,000 bushels of a grower's crop. A further advance of 7½d. per bushel, less rail freight of 4·8d. per bushel, or 2·7d. per bushel at growers' sidings, was paid for quota wheat by the A.W.B. on 12th December, 1945. This makes a total of 4s. 6·95d. per bushel for Q1 bagged wheat at growers' sidings inclusive of Queensland Wheat Board's payments of 4¼d. per bushel previously made.

At the same time a fifth advance was made on excess quota wheat of 9½d. per bushel, less rail freight of 4·8d. per bushel or 4·7d. per bushel net. This with previous advances of 2s., 1s., 6d. and 5d. per bushel respectively brings the total of A.W.B. payments on excess-quota wheat to 4s. 3·7d. per bushel, and the grand total, inclusive of Q.W.B. payments, to 4s. 7·95d. per bushel for Q1 wheat at growers' sidings.

1943-44 Season (No. 7 Pool)—4,599,178 bushels.—Payments under the quota plan had been increased by 1⅓d. per bushel on both quota and excess wheat, following on an investigation by a Commonwealth board of inquiry which had been set up to determine the added costs of harvesting arising out of the application of the harvest workers' award made in October, 1943.

A fourth advance at a flat rate of 5d. per bushel on excess wheat paid on 4th June, 1946, brought the A.W.B. payments on excess wheat to the same total as the guaranteed price which had been paid on delivery for quota wheat, namely, 4s. 1⅓d. per bushel, growers' sidings. On the same date further payment was made as a second advance on quota wheat and as a fifth advance on excess wheat, in each instance, 1s. 0½d. per bushel less railage of 4·4d. per bushel, or 8·1d. per bushel net. The ½d. in this advance represented an increase in the allowance for bagged over bulk wheat, bringing the allowance to 3d. per bushel. A.W.B. payments to date on both quota and excess wheat thus total 4s. 9·43d. per bushel at growers' sidings, which added to the payments of 4½d. per bushel previously made by the Q.W.B. is a grand total of 5s. 1·93d. per bushel Q1 basis.

1944-45 Season (No. 8 Pool)—5,827,777 bushels.—The Commonwealth Government, to encourage an increase in wheat production, had announced in January, 1944, that the first advance on excess wheat delivered to the pool would be 3s. per bushel, as compared with 2s. 1⅓d. in the previous season. Widespread drought in the winter rainfall portion of Australia reduced the Australian crop to 38,727,547 bushels, compared with 94,928,241 bushels in the previous season. The guaranteed first advance on quota wheat remained at 4s. 1⅓d. per bushel at growers' sidings. A second advance of 9d. per bushel was paid on excess wheat on 10th July, 1945. These payments were supplemented on the 16th July, 1946, with a third advance on excess wheat of 4⅓d. per bushel and a further payment on all wheat of 10d. per bushel, less freight of 4.43d. per bushel. These various advances make a total payment by the A.W.B. to date of 4s. 6·9d. per bushel at growers' sidings for both quota and excess wheat.

Queensland Wheat Board payments representing quality premiums and distribution of profits totalled £81,238 16s. 8d. These payments were made on the basis of 3½d. per bushel for Q1 and 2d. per bushel for Q2.

Classification of Queensland deliveries as compared with the previous season are tabulated below:—

Classification.	1943–44 Season.		1944–45 Season.	
	Deliveries.	Percentage.	Deliveries.	Percentage.
	Bushels.		Bushels.	
Milling–				
Q 1 ..	2,818,025	61·27	5,448,967	93·50
Q. 2 ..	1,297,148	28·20	224,058	3·84
Q. 2A ..	395,040	8·59	154,752	2·66
Feed ..	88,965	1·94	..	..
	4,599,178	100·00	5,827,777	100·00

Because of the excellent quality of the crop the millers, in addition to the quality premiums averaged at 2¾d. per bushel on 4,815,270 bushels delivered to them, paid on that quantity of wheat a compensatory quality premium of ·1d. per bushel. The usual "Downs premium" of 2½d. per bushel was paid by millers on 531,737 bushels of wheat milled by Darling Downs mills.

In addition to the payment of quality premiums the millers, under their agreement with the Board, are liable for weight loss up to ·64 per cent. Weight loss payments totalling £29,971 represented ·64 per cent. of deliveries to the mills at mill intake rates.

The levy for the hail insurance reserve fund was at the rate of ½d. per bushel on all wheat of the season's harvest, including seed retained by growers in excess of 20 per cent. of their crops. The levy yielded £12,589 6s. 5d. which, when added to the balance brought forward from previous pools, made a total credit balance in the fund of £41,188 11s. 4d.

Hail compensation paid to growers amounted to £339 10s. 6d., and hail assessors' fees and expenses totalled £15 9s. 9d., leaving a balance in the fund of £40,833 11s. 1d.

The tabluation below sets out the uses to which the wheat available in Queensland during the four seasons up to 1944-45 was put. The small discrepancy with Pool receivals is accounted for by weight loss.

—	1941–42.	1942–43.	1943–44.	1944–45.
	Bushels.	Bushels.	Bushels.	Bushels.
Queensland Wheat—				
Sales for Milling	2,431,505	4,098,943	4,122,904	4,815,270
Sales for Fodder	150,769	81,155	273,116	972,465
Sales for Seed—				
Board	Not available	Not available	Not available	160,252
Merchants	78,910	191,081	126,279	48,135
Total	2,661,184	4,371,179	4,522,299	5,996,122
Other States—				
Sales for Milling	1,849,950	2,200,864	2,370,697	3,260,900
Sales for Fodder	1,117,710	1,836,836	3,127,344	996,645
Total	2,967,660	4,037,701	5,498,041	4,257,545
Total Sales	5,628,844	8,408,880	10,020,340	10,253,667

1945-46 Season (No. 9 Pool).—Total deliveries to the Australian Wheat Board amounted to 122,360,000 bushels. Queensland deliveries to date total 7,491,290 bushels. The Commonwealth Government suspended the operation of the bushelage quota plan and acreage restrictions and announced a guaranteed first advance of 4s. 3d. per bushel country sidings for all wheat delivered to the pool.

The crop suffered extensively from hail damage and payments of compensation to growers for hail damage totalled £35,900. In order to restore the hail insurance reserve fund, the usual levy was doubled and 1d. per bushel was levied against deliveries and 1d. per bushel deduction was made against compensation paid to growers. Balance in the fund at 30th June, 1946, was £36,801 12s. Wheat-growers are anxious that the continuance of the hail insurance scheme should not be jeopardised by Queensland's adherence to a scheme of post-war Commonwealth Wheat Industry Stabilisation.

Seed Wheat.—As in past years the Board has made a selection of wheat for planting purposes and the Queensland Government has continued the guarantee of up to £5,000 covering seed wheat supplied on credit by the Board to growers in necessitous circumstances. The Board is obliged to make deductions in those cases where any wheat is supplied to the Board by the debtors concerned. Interest at the rate of 3 per cent. per annum shall apply to accounts outstanding for two years but thereafter the rate of 5 per cent. shall apply.

Flour and Mill Offals.—The rate of flour tax is unchanged as is the price of flour, bran and pollard.

	£	s.	d.	
Flour Tax	2	8	10	per ton
Flour F.O.R. ..	13	1	6	per ton
Bran at Mill.. ..	6	5	0	per ton
Pollard at Mill ..	7	5	0	per ton

Wheat Sacks.—Supplies of sacks were again made available by the Australian Wheat Board with the co-operation of the Queensland State Wheat Board in storing and making the sacks available to growers.

Wheat Industry Stabilization.—Because of the deteriorating grain position in Australia, brought about by widespread and disastrous drought throughout the winter rainfall areas of Australia, and in view of a world-wide grain shortage, the Commonwealth Government suspended all bushelage and acreage restrictions under the National Security (Wheat Industry Stabilisation) Regulations by announcing that all applications for licenses for wheat planting, irrespective of area, would be granted for the seasons 1945-46 and 1946-47. A first advance of 4s. 3d. per bushel country siding was guaranteed for all wheat delivered to the Australian Wheat Board from the 1945 crop.

The following table sets out particulars of licenses and wheat acreage for the seasons 1943-4 to 1945-6, together with progressive figures for the season 1946-7:—

PARTICULARS OF LICENSES AND ACREAGE.

—	Season 1943–44.	Season 1944–45.	Season 1945–46.	Season 1946–47.
1. Licenses Issued—				
(*a*) Original..	3,221	3,141	3,013	2,874
(*b*) Sharefarming	361	395	430	489
(*c*) Temporary	157	372	781	960
2. Number of registered farms on which licenses issued—				
(*a*) Wheat farms	Not available	Not available	2,993	2,867
(*b*) Temporary wheat farms	Not available	Not available	779	939
3. Area licensed for grain (acres)—				
(*a*) Wheat farms	474,277	435,739	453,174	460,290
(*b*) Temporary wheat farms	12,343	..	72,269	113,325
(*c*) Temporarily licensed on wheat farms ..	16,143	54,704	67,533	31,859
4. Total area sown for grain (acres)	296,770	320,507	398,935	Not available .

Commonwealth Wheat Plan.—Since the termination of the war, consideration has been given by the Commonwealth and State Governments and by representatives of wheatgrowers to proposals for a permanent wheat industry stabilization plan to take the place of the existing temporary wartime National Security Act scheme.

These post-war proposals, which aim to preserve the structure of the present scheme including the acreage control measures and with provision for guaranteed prices for an initial period of five years, are designed to enable the Australian wheatgrowing industry to take its place in any world-wide scheme which may be initiated as a result of an International Wheat Agreement.

The proposals provide for a guaranteed home consumption price during the first five years of the plan of 5s. 2d. per bushel f.o.r. ports with any excess realisation on export shared equally between the growers of the season concerned and the equalisation fund, provided that any export realisation over and above 9s. 6d. per bushel shall also be paid to the growers, such scheme to commence with wheat of the 1945-46 season.

The Commonwealth Parliament has passed the necessary *Wheat Industry Stabilization Act*, 1946, and the *Wheat Export Charge Act*, 1946. It now remains for the various States to pass complementary wheat stabilization Acts to complete the scheme, which, because of the constitutional position, must rest chiefly upon a basis of State law. Queensland has sought to retain its wheat marketing scheme intact as an integral part of the proposed Commonwealth scheme and in particular to preserve the scheme of wheat classification and quality premiums which are peculiar to Queensland and to continue the hail insurance scheme. Queensland's request that any provision for acreage limitation should not apply to a State which is not producing sufficient wheat for its own domestic needs was met by an assurance from the Commonwealth that Queensland would be permitted natural expansion of wheat growing up to one million acres.

FEED GRAINS DISTRIBUTION.

The committee set up in Queensland for the purpose of controlling the distribution of subsidised wheat, which includes representatives of the State Department of Agriculture, the Commonwealth Directorate of Agriculture, the Queensland State Wheat Board and Food Control, under the chairmanship of the Director of Marketing, continued operations during the year.

The functions of the committee were extended during the year to cover the distribution of subsidised sorghum and barley imported from overseas and the distribution of subsidised oats from southern States.

The main stocks of wheat were located in Western Australia, and early in the period under review transport difficulties hampered the Commonwealth in supplying to Queensland the wheat required to fulfil feed quotas. In order to provide an alternative grain and to relieve the immediate shortage in Eastern States, arrangements were made (as noted in my last report) by the Commonwealth Government for importation from the United States of America under lend-lease of grain sorghum and barley which was made available for sale at a subsidised price of 3s. per bushel ex wharf Brisbane. The Australian Wheat Board erected a bulkhead at Hamilton in which to store the sorghum on arrival as it was delivered as bulk cargo. The barley was delivered bagged.

As a precaution against the introduction of seeds of noxious plants, the imported sorghum was gristed in Brisbane before disposal. The bagged barley was unconditionally released by quarantine authorities, and it was therefore possible to utilise it to relieve the shortage of whole grain, but as a precaution its distribution was limited as far as practicable to coastal areas and to North Queensland.

The imported grain delivered to Queensland under the lend-lease arrangement included 146,320 bushels of sorghum and 360,665 bushels of barley.

In December, as the world wheat situation deteriorated and Australia was subject to heavy commitments for the supply of wheat and flour overseas, the allocation of wheat for feeding to live stock and poultry in Australia was reduced from 30,000,000 bushels per annum to 25,000,000 bushels per annum, and Queensland's feed wheat quota was limited to 300,000 bushels per month as against 360,000 bushels per month prior to this period. Subsequently further reductions were made in April to 270,000 bushels per month and in June to 250,000 bushels per month. All distribution quotas had to be reduced accordingly.

An emergency quota scheme was instituted to enable anomalous cases and returned soldiers entering the industry to be taken care of. Approximately 1,400 applications of this kind were dealt with during the year by the committee, and the allotment of a quota of grain in these cases undoubtedly saved considerable hardship.

The following table shows sales of subsidised wheat, barley, and grain sorghum during the period.—

Quota Period.	Feed Wheat.	Imported Sorghum.	Imported Barley.	Total Subsidised Grain.
	Bus.	Bus.	Bus.	Bus.
1st Jan., 1945–30th Nov., 1945 (11 Months) ..	3,829,483	133,690	330,000	4,293,173
1st Dec., 1945–30th June, 1946 (7 Months) ..	2,084,960	12,630	30,665	2,128,255

The Price of Subsidised Grains.—On and from 28th November the price of wheat sold for stock and poultry feeding was raised from 3s. 6¾d. per bushel bagged to 4s. 6d. per bushel. The concession equivalent to the full railway freight was reduced to a rebate not exceeding 6d. per bushel. From this date also the price for imported barley was increased to 3s. 6d. per bushel with a maximum freight concession of 4d. per bushel, and the price of imported sorghum increased to 4s. per bushel with a maximum freight concession of 6d. per bushel.

Grain Distribution in North Queensland.—At the beginning of the year maize stocks on the Atherton Tableland were very low and the 1,000 tons available were required for the manufacture of mashes by the Atherton Tableland Maize Board until the new crop in June. It was therefore deemed expedient to eliminate the Cairns and Innisfail districts from the area of maize distribution and to supply wheat. Quotas of wheat totalling 12,656 bushels per month were therefore allotted to merchants in the Cairns, Innisfail, Mossman, and South Johnstone areas from January to June.

Sorghum Subsidy.—In order to counteract the disability of insufficient domestic production of wheat and transport difficulties from southern States, the Commonwealth Government continued the subsidy on grain sorghum, and a guarantee was offered to growers of a price of 3s. 7d. per bushel of 60 lb. as at growers' sending station plus transport cost, if any, from transport station to receiving depot for grain sorghum that conformed to prescribed standards of fair average quality grain. However, growers were reluctant to undertake delivery to the Commonwealth as the increasing shortage of feed grains was tending towards very much higher prices for grain sorghum than those offered by the guarantee.

With a view to avoiding a repetition of last season's experience, when, owing to the black market prices offered for grain sorghum not under contract, reputable buyers in the State were unable to enter the market for the grain, the Feed Grains Distribution Committee sought the removal of the ceiling price of 3s. 7d. per bushel on sorghum. The position had been aggravated by the revocation of the National Security (Land Transport) Regulations, by means of which the leakage of grain over the border may have been prevented. It was pointed out that the ceiling price on grain sorghum was not being observed in any case, and that the ceiling price on maize, together with the import of oats at 3s. 3d. per bushel, would suffice to keep sorghum prices at least within the limits

of maize prices. The request was not acceded to and the subsequent lifting of the ceiling price to 4s. 6d. per bushel was ineffective.

As anticipated, speculators were enabled to buy up the sorghum crop at prices with which law-abiding buyers could not compete, and have it transported to southern States. Part of these consignments was destined for overseas markets at high export prices. Representations were made, therefore, to have a ban placed on the export of grain sorghum, and this was effected by the Commonwealth Government. By the time action had been taken, however, much grain had been lost to Queensland.

The total recorded export of sorghum to southern States, from 1st January, 1946, to 31st July, 1946, was 459,386 bushels.

Subsidised Oats from South Australia.—The acute position arising from the shortage of wheat and the loss to Queensland of much of the grain sorghum crop necessitated a considerably modified feeding programme. Some relief was afforded by the Commonwealth Government in making oats available from South Australia and Victoria at a subsidised price of 3s. 3d. per bushel ex wharf Brisbane with a maximum rail freight concession in Queensland of 4d. per bushel.

When by midwinter the supply of other grains had deteriorated seriously, a large volume of orders was placed for oats with the Australian Barley Board in Adelaide. Unfortunately, the wharf strike and transport difficulties have seriously delayed the arrival of the grain. A total of 18,000 tons of oats has been ordered by various merchants, gristers and other distributors and deliveries are coming forward in small parcels.

Wheat Imports.—Quite apart from any question of drought and the failure of Queensland's wheat crop it became necessary in June to commence the importation of three-quarter million bushels of wheat from northern New South Wales to make up the lag between total requirements for milling and feed and stocks of Queensland wheat held ex the 1945-46 harvest.

An importation of 300 tons daily was considered necessary, but unfortunately a breakdown in the New South railway system, owing to shortages of coal and rolling stock, resulted in deliveries at Wallangarra at an average rate of less than 100 tons per day. The position as regards feed was then further complicated by the indication of a total failure of Queensland's 1946-47 wheat crop, which meant that stocks in Queensland were sufficient only to supply milling requirements to the end of November, 1946.

Arrangements were accordingly initiated for a regular shuttle service to be operated between Adelaide and Brisbane for the importation of Queensland's total wheat supplies for flour and feed purposes in 1947.

GENERAL.

Following upon the Departmental reorganisation of 31st May, 1945, Mr. H. K. Lewcock, M.Sc., B.Sc.Agr., who was appointed Acting Assistant Director of Marketing, took up duty with the Division on 1st October, 1945.

Difficulties in the dairying, pig-raising, and poultry industries arising out of fodder shortages have necessitated the devotion of much time to the administration of emergency measures.

The Marketing Division has assisted the Egg Board in its administration and in coping with an intensification of egg marketing problems arising from the sudden termination of the war. Assistance has been given the Board also in connection with consideration of Commonwealth-wide schemes for the post-war marketing of eggs. Interstate conferences have been attended on behalf of the egg industry by the Director and the Assistant Director with a view to perfecting machinery for the implementation of proposals outlined at Lapstone in August, 1945.

During the year officers of the Division were associated with the activities of an advisory panel set up by the Secondary Industries Advisory Committee to report upon the possibilities for an expansion of canning of pineapples and other fruits.

In addition the Director of Marketing was appointed during the year to represent the State Government on the Queensland Export Advisory Committee. Similar committees have been set up by the Commonwealth Government in all States to act in collaboration with the Federal Export Advisory Committee. The Advisory Committees are comprised of representatives of Commonwealth and State Governments, Chambers of Commerce and Manufacturers, and shipping and exporting interests. The main object of the committees is to assist in the restoration and further development of our export trade.

With the termination of the war, primary producers who for the first time experienced organised marketing conditions during the war years have displayed apprehension of a return to conditions under which growers compete one with the other for a market for their commodities. This concern has been reflected in Queensland by the initiation by the growers of efforts to organise their respective industries under statutory marketing boards. Growers have petitioned the Governor in Council for marketing boards under *The Primary Producers' Organisation and Marketing Acts* in respect to potatoes, navy beans, Central Queensland pigs, Central Queensland eggs, North Queensland eggs, and North Queensland milk. During the year conferences have been held and numerous meetings of growers and their representatives have been addressed by the Director in connection with these petitions.

The reports of the Standards Officer and of the Registrar of Primary Producers' Co-operative Association are attached.

H. S. HUNTER,
Director of Marketing.

REPORT OF THE STANDARDS BRANCH.

During the first nine months of the period under review a preponderance of the work of the Branch carried out was in connection with rationing of fertilizers, stock foods and pest destroyers, the testing of seeds for the Vegetable Seeds Committee and determination of the value of all navy beans grown by farmers. All of this work may well be considered as necessarily arising out of the war.

With the elimination of some controls and the easement of others, the staff now consists of 20 permanent officers, of whom 10 are engaged in full time duties in connection with work arising out of the war, leaving 10 available for normal duties.

The following table sets out the work of the year (other than the large volume of emergency war-time work) with comparative total figures for the last two years:—

	1946.					Total.		
	Seeds.	Fertilizers.	Pest Destroyers.	Veterinary Medicines.	Stock Foods.	1944.	1945.	1946.
Samples received from—								
Inspectors of this Branch	946	..	1	..	3	370	429	950
Chief Quarantine Officer (Plants) ..	1	..	..	..	..	1	..	1
Dealers	1,336	1	285	6	160	1,284	1,401	1,798
Buyers	21	2	..	..	5	25	42	28
Government Departments	1,530	2	..	..	2	155	603	1,534
Referee, repeat, and experimental tests	838	..	..	..	..	432	488	838
Total samples dealt with	4,672	5	286	6	170	2,267	2,963	5,149
Licenses issued	..	223	..	406	..	591	613	629
Registrations effected	..	191	198	355	157	485	322	901
Registrations refused	..	..	2	23	..	3	15	25
Board meetings	..	..	6	4	..	4	6	10
Number of inspectional visits made to localities other than Brisbane	..	..	..	..	..	5	8	..
Analyses carried out for this Branch by the Agricultural Chemist	..	3	19	..	7	27	78	29
Prosecutions..	..	..	..	..	..	..	..	..

Seeds for Sowing.

During the year 4,672 samples were examined at the Seed Testing Station; 946 were samples taken by inspectors of the Branch (of which 233 were samples of navy beans examined for the Department of Commerce and Agriculture), 1,336 were from seed dealers, 21 from farmers, 1,530 from other Government sources, including 929 from the Vegetable Seeds Committee, and 838 representing repeats and experimental work.

Of the 4,672 samples examined, 602 did not comply with the Regulations because of the presence of the prohibited seeds of *Xanthium* sp. 6, *Datura* sp. 15, *Cuscuta* sp. 2, *Sorghum halepense* 2, and insects 72. Fifty-seven samples contained an excess amount of weed seeds and 94 excess inert matter, while 354 samples were below the germination standard.

During the year only 21 farmers, who bought seed for their own sowing, made use of the free examination tests.

Experiments to determine the effects on germination of the use of silver nitrate and tannic acid were conducted on tomato seed for the information of the Science Branch.

The method of germinating garden peas, using blotting paper somewhat on the lines of the rag doll test for maize, was investigated, but so far the indications are that such method does not appear to be as satisfactory as the use of the standard apparatus—i.e., moistened flannelette, with the peas covered.

Experiments to ascertain a satisfactory method for the germination of *Paspalum scrobiculatum* were carried out. These will have to be continued when fresh material is available.

The germination of Rhodes Grass can be carried out in a variety of ways. The quickest method is to remove the caryopses and to place these out to germinate. Often it is possible to get results in a matter of 48 hours, which, when calculated back to the number of commercial seeds in a sample, gives a very reliable test. Unfortunately, this causes great eyestrain. The alternative method is to place out on the germination tray the commercial seeds from the purity, which, while much easier on the personnel, often results in a delay of 14 days or more in obtaining results. The use of light and chemicals often accelerates matters when freshly harvested seed is being handled. This matter is one which has been receiving a considerable amount of attention over many years and is still worthy of more work.

Commerce Act.

3,300 lb. of miscellaneous vegetable and 372 sacks of pea seeds imported from New Zealand as seeds for sowing were examined. Of these, 36 lb. had to be destroyed because of faulty germination.

Eleven samples taken from 1,300 bags of barley imported for stock feed purposes were also examined.

NON-COMPLYING SEEDS FOR SOWING.

The following table sets out the action taken under supervision of an inspector in respect of seeds which were offered for sale as seed for sowing, and were found not to comply with the standards prescribed because of the reasons set out:—

Lots.	Quantity.	Kind of Seeds.	Reasons for Action.	Action Taken.
11	775 lb.	Beans, French	Low germination	Destroyed
2	360 lb.	Beans, French	Low germination	Seized and sealed
1	12 oz.	Brussels sprouts	Low germination	Destroyed
8	38 lb.	Cabbage	Low germination	Destroyed
11	228 lb.	Carrot	Low germination	Destroyed
1	12 oz.	Cauliflower	Low germination	Destroyed
3	8 lb.	Cucumber	Low germination	Destroyed
5	16½ lb.	Lettuce	Low germination	Destroyed
2	20 lb.	Mangel	Low germination	Destroyed
3	26½ lb.	Marrow	Low germination	Destroyed
3	6 lb.	Onion	Low germination	Destroyed
2	6 lb.	Parsnip	Low germination	Destroyed
1	16 lb.	Peas	Low germination	Destroyed
4	111 lb.	Pumpkin	Low germination	Destroyed
3	58 lb.	Radish	Low germination	Destroyed
2	7½ lb.	Rockmelon	Low germination	Destroyed
1	30 lb.	Sorghum	Weevil infested	Destroyed
1	4½ lb.	Squash	Low germination	Destroyed
5	24½ lb.	Tomato	Low germination	Destroyed
4	35 lb.	Turnip	Low germination	Destroyed
1	7 lb.	Watermelon	Low germination	Destroyed
1	305 bags	Millet, Japanese	Contains datura	Seized and sealed

The following summary shows a five-yearly comparison of the seeds seized and sealed—awaiting further action—cleaned under supervision of an inspector, or destroyed:—

——	1941–42.	1942–43.	1943–44.	1944–45.	1945–46.
Seized and sealed—					
Vegetable seeds	174 lb.	720 lb.	..	..	360 lb.
Farm seeds	1,471 bags	4 bags	..	..	305 bags
Cleaned under supervision of an inspector—					
Vegetable seeds	8 lb.	..	..	..	..
Farm seeds	1,086 bags	134 bags	..	..	..
Destroyed—					
Vegetable seeds	938 lb.	1,142 lb.	..	457 lb.	1,662 lb.
Farm seeds	54 bags	..	..	..	30 lb.
Returned to place of origin outside Queensland—					
Vegetable seeds	3 bags	..	..	..	..
Farm seeds	3 bags	2½ bags	..	..	..
Processed for stock food—					
Farm seeds	252 bags	107 bags	..	..	..
Packet seeds 3d. and 6d. destroyed..	892 packets	..	..	..	..

During the years 1943 to 1945, the staff was diverted to other work, which accounts for the absence of figures or the low figures shown.

With the resumption of normal trading, a considerable increase occurred in the number of seeds offered for sale and which the sellers require to be tested. As a result of a conference held in Melbourne last October, practical uniformity between the States as to the standards of purity and germination for seeds has been achieved, and this, when approved by the Australian Agricultural Council, will result in a series of standards being promulgated under the *Seeds Acts Regulations*, which should attain a considerable degree of uniformity throughout Australia, thereby enabling a freer interchange of seeds for sowing by the removal of vexatious differences of standards which have hitherto operated.

Little inspection work was practicable during the first eight months of the year because of the preoccupation of the staff on rationing matters. Since then, however, 358 samples have been obtained from seeds offered for sale, resulting in the destruction of 19 cwt. of vegetable seeds. This is the beginning of a campaign for a general clean-up of all the seed sellers' stocks which have not been subject to inspection during the war years.

A new necessity which has arisen out of the production of navy beans has been the inspection of each farmer's consignment and assessment of its value by analysis for purposes of payment by the Commonwealth for the goods produced. This has necessitated the taking and examination of 233 samples, representing 7,628 bags.

FERTILIZERS.

During the year, 191 fertilizers were registered and 223 fertilizer licenses issued. Three samples of fertilizer were analysed by the Agricultural Chemist. Fertilizer supplies were still inadequate. The increased number of registrations was partly due to registration of

mixtures designed to overcome shortages of a particular ingredient, or to take advantage of a more plentiful supply of some other fertilizer.

Lime production, which had been seriously curtailed for several years past, is now on the increase—a lime burner in the far north has resumed production and a new quarry has commenced operations in Southern Queensland.

Fertilizer Rationing.

The position in respect of the supply of fertilizers for all crops has improved during the period under review.

Nitrate of soda has fortunately been replaced by sulphate of ammonia, and it was possible ultimately to arrange delivery in such a way that most canegrowers had their supplies before Christmas. Unfortunately, during the early part of the current year, a cyclone accompanied by severe floods seriously affected most of the sugar areas. By request of the Cane Growers' Council, applications were received for the issue of permits to cover any fertilizer which was actually lost as a result of the floods, and permits were issued covering 55 tons.

The quality of fertilizer remains unchanged with superphosphate of 18 per cent, grade and potash salts with 60 per cent. potash content.

Because of difficult railway transport conditions, it has not been possible to move into Queensland sufficient fertilizer to satisfy all canegrowers' rations by 30th June, and an endeavour is being made to have the undelivered portion made available in July or August. Failure to achieve this will mean that unsatisfied rations shall have to be cancelled. The allocations for the year 1946/47 have not as yet been made, but it is hoped that they will exceed those for the current year.

Pineapple mixtures have been maintained at 8-6-10 or 8-6-16 grade for the period under review. Permits were issued to 1,394 pineapple growers covering 81,616,490 pineapple plants.

Pest Destroyers.

The year 1946 was the first year in a three-year registration period for pest destroyers; 198 were registered and 2 refused registration. Nineteen analyses were carried out by the Agricultural Chemist and six Board meetings held.

It was possible to put into operation a thorough and comprehensive review of the applications for registration received during the month of January, 1946, particular attention being given to the formulae submitted for pest destroyers which, in the past, have not always been as satisfactory as could be desired. The full effect of this activity cannot be felt for some considerable time, because of the inability of traders to obtain the necessary new printed labels. However, this should be remedied as conditions return to normal, when it will be possible to claim that, so far as the registration portion of the legislation is involved, they are being administered as effectively as possible; this will clarify the subsequent action to maintain the standards set.

A considerable amount of new ground has had to be covered in relation to the new chemicals which are being placed on the market, and it is anticipated that a considerable number of new preparations will be the outcome of chemical research during the war years. Already many applications for registration of preparations containing D.D.T. have been made. The use of this chemical has already reduced the demand on some of the other insecticides.

Veterinary Medicines.

The number of registrations effected was 355, which is a considerable increase on the previous year's figure of 14. Preparations refused registration amounted to 23, as against 14 in 1945. The claims and formulae of the preparations, both approved and otherwise, were reviewed by the Veterinary Medicines Board which held four meetings. The number of licenses issued totalled 406. Most of the applications for registration which were received in January, 1945, should have been dealt with and included in the previous report, but because of the then existing conditions this could not be done. More time has since been devoted to the matter of registration, as made practicable by relief from duties previously connected with rationing of stock foods and the cessation of hostilities. Through this relief, Board meetings were more easily arranged and more time could be given to the consideration of the claims and formulae of the various preparations.

Stock Foods.

Registrations totalled 157, as against 136 for the previous year. Seven samples were analysed by the Agricultural Chemist.

Unfortunately, the quality of the various mixed stock foods offered for sale leaves much to be desired. This is the result of shortage of the various ingredients. Until normal production is resumed, manufacturers will not be able in certain cases to obtain the necessary grains and meals to provide mixtures in conformity with the guarantees.

Rationing of Stock Foods.

Despite many difficulties, the rationing of certain stock foods which had been commenced during the preceding twelve months was continued for varying periods during the current year.

The rationing of crude protein and of commercially prepared mashes ceased on 31st January, 1946, having been in operation for 17 months and 7 months respectively. The rationing of bran and pollard concluded with the revocation of the Control Order by the Commonwealth Government on 25th March, 1946, after being in operation for 14 months.

The following percentage allocations of the respective materials were made to the different classes of livestock approved:—

Average Percentage Allocations for Duration of Rationing.

—	(a) Dairy Cattle supplying Milk for Human Consumption.	Poultry.	Pigs.	Miscellaneous.
	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Crude protein of animal origin ..	2·7	71·9	25·3	0·1
Bran and pollard	40·7	49·2	9·4	0·7

(a) Includes house cows, calves reared on farms supplying milk for human consumption, and calves on farms supplying cheese factories.

The implementation of rationing was fraught with many administrative difficulties. So far as bran and pollard are concerned, unfortunately flour mills have little accommodation for storage of these mill offals, and production temporarily exceeded demand from priority groups of livestock at certain times of the year. This presented considerable difficulty, and in any future rationing scheme consideration would have to be given to the removal of this temporary excess of material from the market and its storage to provide a reserve for seasons of heavy demand.

It is estimated that a minimum of 130,000 application forms was received during the period when rationing was in progress, as a result of which more than a quarter of a million permits and coupons were issued. Unfortunately, some livestock owners did not give much assistance by submitting concise and correct information. In many instances when it was suspected that incorrect information had been given on the application forms, a detailed check had to be made by departmental officers. In a large number of cases persons submitted application forms, but omitted their names and addresses. Identity of any person concerned had to be established by his signature, whereby inquiries could be made through the storekeeper nominated to supply the rationed material. In many cases, even this information was omitted.

Very often, permits issued were not availed of by the livestock owner, resulting in an apparent surplus of material being held by storekeepers throughout the country. As this material could not be sold without authority, it did not help matters when, knowing that these stocks existed, farmers' requests for additional quotas were refused. Undoubtedly, if this material had been reallocated, the person for whom it was previously set aside would have sought delivery of it.

Despite all these and other difficulties, it is felt that rationing proved to be a necessary and successful service in ensuring that the small supplies available were allocated as fairly as possible and to the best advantage in our food production programme. Complaints were received from livestock owners that their allocations were not all that could be desired, but it is significant that since rationing ceased complaints regarding inability to obtain supplies have been more numerous than when rationing was in force.

GENERAL.

In order to ensure that the functions of the Branch are properly carried out, it is necessary that the whole of the State be covered at least twice per year, and at the same time to have available facilities to visit unexpectedly any district from which evidence is forthcoming that a breach of the Acts is being committed. This plan was laid down to be pursued, but when the war broke out it had to be abandoned; plans have now been formulated whereby the increased staff allotted to this Branch will be used in covering the control of the materials under the five Acts over the whole of the State. This work, which is very necessary indeed, has been started in a limited way and will be extended as soon as the necessity for the continuance of rationing fertilizers disappears.

It is hoped that rationing in connection with the need to keep up supplies of materials in short supply will end by January of next year, when it should be possible to put into operation the full post-war activities of the Branch—*i.e.*, the control of the quality of materials purchased by farmers coming within legislative range—which will ultimately include the Seed Certification Schemes postponed due to the prevailing conditions.

F. B. COLEMAN, Standards Officer.

REPORT OF THE REGISTRAR OF PRIMARY PRODUCERS' CO-OPERATIVE ASSOCIATIONS FOR THE YEAR ENDED 30TH JUNE, 1946.

Since the introduction of the original legislation in 1923, 215 associations and 2 federations have been registered under *The Primary Producers' Co-operative Associations Acts*, 1923 *to* 1934. Allowing for the winding up to 20 associations since the Acts came into operation, 195 associations and two federations remain on the register.

No new registrations were effected during the year but some associations amended their rules to meet circumstances associated with the administration and conduct of their affairs.

Licenses have been issued to 250 auditors, an increase of 5 for the year.

In the course of the year exemption from the provisions of section 22 and/or 23 of the Acts was granted to 16 societies. These societies are all registered under the Industrial and Provident Societies Acts and, although genuinely co-operative, are not eligible to register under the Primary Producers' Co-operative Associations Acts, as their members are not primary producers supplying their produce to respective societies.

The exemption granted made it legal for these societies to use the word "Co-operative" as part of their respective names and/or engage in trading activities associated with agricultural produce.

A. J. EVERIST,
Registrar of Primary Producers' Co-operative Associations.

REPORT OF THE EDITOR OF PUBLICATIONS.

An extensive departmental information service was maintained throughout the year. The chief channels of communication were departmental publications, the Press, and radio services.

The Queensland Agricultural Journal.—The *Journal* has entered on its fiftieth year of publication, having been established in July, 1897, and continues as a medium through which the results of scientific research and field investigations, as well as seasonal information, are conveyed to the farmer from month to month. Regular contributions by officers of the research and field staffs have assured its value as a link between the Department and every branch of rural industry. Nearly 100 special papers and articles, many based on original laboratory and field work, were contributed by these officers in the course of the year. Seasonal notes on farm practice, equipment and general management also were published regularly. The circulation of the *Journal* increased steadily, the distribution for the year aggregating 115,000 copies.

The Queensland Journal of Agricultural Science.—Technical papers written by officers of the several Divisions continued to be published by the Department in its scientific quarterly, *The Queensland Journal of Agricultural Science*, which is circulated amongst scientific institutions throughout the world.

Bulletin Service.—Considerable additions were made to the bulletin, pamphlet, and advisory leaflet series of publications in the course of the year, and as the paper position improves and wartime limitations and restrictions are progressively eased a wider range of extension literature will become available for general distribution.

The Queensland Agricultural and Pastoral Handbook.—All volumes of the *Handbook* series are now out of print. In the course of the year one volume was revised and a second edition is now in the Press. Second editions of other volumes will be published in due course. Volumes on various branches of animal husbandry, including dairying, are planned and, when published, will complete the series.

Rural Broadcasts.—Through the co-operation of the Australian Broadcasting Commission, broadcast talks on matters of importance to primary producers were continued throughout the year from national and associated regional radio stations. In December last, the "Country Hour" was inaugurated by the Commission and since then a weekly talk has been contributed by technical officers of the Department, in addition to other practical broadcasts over the national network from time to time. From experience it can be stated that this form of departmental extension work is proving very effective in its provision for discussion of a diversity of subjects relative to current agricultural practice and problems. There is ample evidence that primary producers are generally appreciative of this service.

Photographic Service.—The Photographic Section had a very busy year. In addition to routine work, the services of this Section were made available, as required, to other public departments. The demand for prints and process blocks remained constant.

Central Library.—In the course of the year many important additions were made to the central library which now contains a valuable collection of literature on the science and practice of agriculture and animal husbandry. In exchange for departmental publications, particularly the monthly and quarterly *Journals*, the central library is kept supplied with contemporary literature from other States of the Commonwealth and from other countries. Through the monthly circulation of an accession list, all concerned are kept informed of the availability of the latest literature on the results of research and cognate matters. This list is particularly useful to country officers for whom a regular circulation system has been instituted. Sectional libraries also have been well maintained.

General Information Service.—Conditions of land settlement in Queensland and rural prospects generally were subjects of numerous requests, in compliance with which the knowledge and practical experience of divisional advisers proved invaluable. Practical notes of seasonal and educational value and recommendations in respect of specific remedies and their application have been disseminated regularly in the form of agricultural news. In addition, numerous special articles on farming and related subjects, also material for Press contributors and other writers, have been supplied as required. This material included illustrations, as well as authoritative information on the status, progress, and prospects of rural industry in Queensland. An important aspect of this service is the assurance of authenticity, accuracy, and suitability of articles eventually published. Other information on the general agricultural situation has been prepared and circulated through appropriate channels.

J. F. F. REID,
Editor of Publications.

By Authority: A. H. TUCKER, Government Printer, Brisbane.