Part 7

PRIMARY PRODUCTION

Land Settlement and Irrigation

Historical Development

The history of agriculture in every country is a record of changes brought about by the local population, its number and its food habits, by improvement in transport facilities both internal and external, by the opportunities for an export trade, by increasing skill of its farmers and improvement in their equipment through the work of engineers and scientists and, most important of all, by the attitude of the people themselves, their industry, their consciousness of a need for law and order, their readiness to accept new ideas, and their attitude toward life on the land which inevitably lacks some of the amenities a city can offer.

The earliest stage of successful occupation of Victoria was part of the great pastoral expansion which started in New South Wales when the world need for fine wool had been demonstrated. The Hentys who landed at Portland (1834) and Batman at Port Philip (1835) both came from Tasmania where unoccupied sheep country was by that time scarce. Others came overland from Sydney. The stream of settlers with their small flocks and herds was continually pressing onwards in search of grazing lands where water was available. The political and legislative struggles, which occurred before this occupation was converted into a legal tenure, lasted a quarter of a century.

Early attempts at agriculture were widespread because the cost of transporting flour, grain, and hay over the long distances by bullock dray was sufficiently high to encourage many pastoralists to try to be self-supporting. So small mills were erected at many centres. Naturally, the chief market was at Melbourne, and wherever the stone was not too great an obstacle, the basalt plains were cropped for wheat, oats or oaten hay ; the flats of the Plenty Valley formed another small pocket of arable land. Guano was imported and animal residues had to be used as fertilizer, for few of the soils were very fertile.

The gold rushes of the 1850's led to a big increase in population and stimulated agriculture especially in the immediate vicinity of the various " strikes ". Most of these were soon worked out, but the more permanent fields at Bendigo and Ballarat led to the construction of railways across the ranges. Other lines were constructed to the Murray at Echuca (1864), Albury (1873), and Swan Hill (1890), while the line through the Wimmera reached the South Australian border in 1887.

With cheaper transport came the possibility of growing wheat on the northern plains. The introduction of the stripper and the application of the stump-jump principle to cultivating machinery made the work manageable, although the task of initial clearing was heavy and the ground was very uneven in many places, especially on the blackish soils of the Wimmera. Wheat growing (despite low yields) expanded steadily because it gave the promise of independent ownership. Yields declined further with prolonged cropping. Thus in the 1890's in many districts the average seldom exceeded 10 bushels per acre. The use of superphosphate and the introduction of new varieties bred by Farrer in New South Wales gave some relief. Fallowing was adopted fairly generally and by improving the control of weeds and increasing the nitrate available to the crop also increased yields.

These improvements in method carried the industry forward into new areas and the development of Mallee lands for wheat growing advanced with the railways through much of the north-western part of the State. This advance continued until about 1928 when low prices, rising costs, and the uncertainty of the rainfall brought the industry to a crisis which lasted through the 1930's. Wheat was always the main cereal because it was the most profitable grain to export. Barley was grown mainly for the local market and oat crops were raised in all districts as convenient for fodder or for grain.

Dairying was originally a local affair. Small farms near centres of population produced milk for sale to those householders who did not keep cows ; in addition, butter was made on the farms—in quantity when pasture growth was good—and in smaller amounts at other times. The introduction of refrigeration and its installation in the holds of ships brought the possibility of an export market. During the 1890's this developed rapidly, thanks to the cream separator, the pasteurizer, and the Babcock tester. Dairy factories were erected at many centres in some of the districts with well-distributed rainfall. In particular, the Blue-gum forests of the Western Strzeleckis and the Otways were attractive because the soils were fairly fertile. Some of the more productive areas of the Western District, where pastures were rather too dense for sheep, were gradually turned over to dairying.

From the human standpoint, the labour of clearing the forests was heavy, but these districts with their better rainfall gave some opportunity of growing vegetables and fruit for the home. The area of land necessary for a dairy farm was usually only 160 acres and this made dairying attractive to the authorities responsible for land settlement—the Lands Department and, later, the Closer Settlement Board. The First World War saw high prices for exported dairy products and additional areas were settled for dairying in the 1920's. But many of the cows were of low quality ; the study of pastures had scarcely begun ; yields were low and, as prices declined, the industry was in grave difficulties by 1930, despite the inauguration of a price-support plan on the local market.

Meat production occurred automatically from the early days of pastoral settlement. Surplus sheep were slaughtered for meat and bullocks were raised in numbers in the rougher country, although the

chief value of many lay in their hides and tallow. Refrigeration opened the way for meat export and for a time beef was shipped from Victoria. Merino mutton was not held in high esteem, so British breeds of sheep were introduced to provide better meat and especially lamb. The industry gradually differentiated into flocks which were used to produce rams for mating with merino ewes. The crossbred flocks had good wool and also larger frames. The ewes of the latter would then be crossed in other flocks with rams of " Down " breeds to produce high-quality lambs.

Irrigation began with small private ventures. Their success in mitigating the effects of the recurrent droughts stimulated the formation of numerous Irrigation Trusts on the Murray during the 1880's. The brothers Chaffey started the Mildura scheme (1887–91). The science of irrigation was not understood, the trust schemes were badly planned and soon failed. Finally, the State Government took them over and re-acquired the control of irrigation by expropriating the beds and banks of all streams. River gaugings were taken and the new State Rivers and Water Supply Commission started its long series of irrigation schemes by the construction of works on the Goulburn River. The control of Murray waters was vested in a Commission set up by the Commonwealth with the agreement of New South Wales, Victoria, and South Australia.

The efficiency of irrigation has improved immensely with the gradual appreciation of the need for drainage and soil study, so that the factors of plant, soil, and water can be adjusted to give high productivity. The first idea was to use the water for avoiding the effects of drought on pastures, but the success of irrigated orchards on the Goulburn and of irrigated vines and citrus at Mildura developed new industries for these areas. Latterly, with greater pasture knowledge, dairying has found a firm place in some districts. Moderate amounts of water are used on cereal crops while mixed farming and fat lamb production have become attractive where the water rights are limited.

Small orchards were developed at many places south of the Divide in the early days and a considerable industry grew up round the metropolis. Refrigeration opened the possibility of exporting fresh fruit, especially apples. The Mornington Peninsula became an apple district, but the 1930's showed that the oversea market for apples had many difficulties and was limited in extent.

The economic depression of the 1930's was in many ways a turning point in Victorian agriculture. It forced home the fact that expansion of production beyond the capacity of markets was foolish. It made many rural industries turn to the results of scientific research for improving their practices and it drew attention to soil erosion and other unfortunate results of too hasty expansion. The greatest single improvement came from a better appreciation of the importance of maintaining soil fertility in both pasture and crop land. Under the title of " pasture improvement " this produced much greater efficiency in the dairy industry, while the introduction of the " ley farming system " made cereal cropping more stable.

The war brought many difficulties and shortages, but in the main it led to the closure or aggregation of many of the less efficient small dairies and orchards. It forced mechanization in the conservation of fodder and provided high enough prices for products to enable farmers to buy the machines. The post-war period of prices, especially of wool, encouraged a large expansion of carrying capacity for livestock and the demonstration of the importance of trace elements encouraged attacks on some of the areas of poorer soils near the coast and in the hills. The spread of individual irrigation schemes encouraged increased production of intensive crops such as tobacco and vegetables. Behind all these advances is an improved awareness of the possibility of further developments of farming in the State when the world, or local, markets require it.

Alienation and Transfer

The total area of the State is 56,245,760 acres. On 31st December, 1958, this comprised :—

	Acres
Lands alienated in fee-simple	31,178,175
Lands in process of alienation	1,664,777
Crown lands	23,402,808
Total	56,245,760

The Crown lands comprise:—

	Acres
Permanent forests (under Forests Act)	4,845,784
Timber reserves (under Forests Act)	710,558
State Forest and timber reserves (under Land Act)	151,559
Water reserves	317,591
Reserves in the Mallee	410,000
Other reserves	542,784
Roads	1,642,148
Water frontages, beds of rivers, lakes, &c., unsold land in cities, towns, and boroughs	3,846,642
Land in occupation under—	
Perpetual leases	1,095,076
Leases of former agricultural college lands	31,650
Other leases and licences	2,216
Temporary grazing licences and leases	*5,694,531
Unoccupied	4,112,269
Total	23,402,808

* In addition, 77,631 acres of land listed under Reserves are held under grazing licences.

In the following table are shown the area of Crown lands sold absolutely and conditionally, and the area of lands alienated in fee-simple during the three years 1956–58. A portion of the area conditionally sold reverts to the Crown each year in consequence of the non-fulfilment of conditions by the selectors. The lands alienated each year include areas selected in previous years.

VICTORIA—ALIENATION OF CROWN LANDS

Year Ended 31st December—	Area of Crown Lands Sold			Crown Lands Alienated in Fee-simple	
	Absolutely, at Auction, &c.	Conditionally to Selectors	Total	Area	Purchase Money
	acres	acres	acres	acres	£
1956	3,475	4,901	8,376	96,010	130,775
1957	2,070	1,120	3,190	123,726	141,545
1958	5,480	23,763	29,243	51,396	151,672

Transfer of Land Act

The " Torrens System ",* whereby a person becomes registered as the proprietor of land by means of a Certificate of Title, indefeasible and guaranteed by the State, was introduced into Victoria in 1862. The system has been the means of simplifying procedure in, and reducing the cost of, dealing in real estate, and gives a title to the registered owner free of any latent defect. The original Crown grant or subsequent Certificate of Title in lieu thereof issues through the Titles Office.

In order to bring under the Transfer of Land Act, land that was alienated by the Crown prior to 1862 (5,142,321 acres), application must be made accompanied by the deeds in the claim of title or, if adverse possession is relied on, strict proofs of the applicant's interest in the property. During 1959 there were submitted 189 such applications in respect of land amounting in area to 3,581 acres, and in value to £1,829,866 ; while the land actually brought under the Act as a result of applications was 7,466 acres valued at £2,027,495. Up to the end of 1959 there had been brought under the Act 3,340,000 acres valued at £83,346,834. The area of land still under the Old Law System at the end of 1959 was 1,802,321 acres. A summary of dealings under the Transfer of Land Acts will be found on page 653.

Assurance Fund

In granting an application to bring land under the *Transfer of Land Act* 1958, the Registrar is concerned to issue an indefeasible title save as to certain matters such as fraud, public rights-of-way, or other overriding interests set out in section 42 of the Act.

In order to indemnify the Government against claims for loss or damage by reason of bringing land under the Act, an Assurance Fund has been constituted out of which successful claims are paid. Contributions to that Fund consist of payments by the applicants of not more than ½d. in the £1 on the value of the land applied for. During 1958–59 receipts of the Fund comprised contributions, £7,881, and interest on stock, £3,269. A claim of £615 was met from the Fund during the year. The sum of £5,095 was paid out in accordance with

* See also page 651.

section 3 of the *Special Funds Act* 1920 to provide for the interest on loan moneys expended on University buildings. The balance at the credit of the Assurance Fund on 30th June, 1959, was £146,711. The amount paid up to 30th June, 1959, as compensation and for judgments recovered, including costs, was £13,454 in respect of 97 claims.

Soil Conservation Authority

Functions

The Authority is responsible for the mitigation and prevention of soil erosion ; promotion of soil conservation ; and the determination of land use to achieve these objectives.

To perform these functions, the Authority conducts surveys and investigations into the nature and extent of soil erosion. It investigates and designs preventive and remedial measures, and carries out soil conservation works, experiments and demonstrations of soil conservation and reclamation of eroded lands.

It co-ordinates the policies and activities of Government departments and public authorities for the alienation and use of Crown lands and has powers to remove stone, gravel, and soil. The Act provides wide powers for soil conservation works with penalties for failure to comply. Grants and loans to assist in the carrying out of approved specific projects may be made to any Government department, public authority or private individual on such terms as the Authority may decide.

The Chairman of the Authority is also Chairman of the Land Utilization Advisory Council, which operates under the same Act. The Council consists of the Director of Agriculture, Secretary for Lands, Chairman of the Forests Commission and the Chairman of the State Rivers and Water Supply Commission. The Secretary of the Authority is also Secretary of the Land Utilization Advisory Council.

The Council's functions are to make recommendations to the Authority on the constitution and definition of catchment areas and to advise the Minister and the Authority concerning policy of all land use in any catchment area.

After consultation with the Land Utilization Advisory Council, the Authority determines the most suitable use in the public interest of all lands in catchment areas, and which lands should be permanently used for forests, pasture, agriculture, and other purposes.

Research

One of the Authority's most important functions is to determine why certain situations arise in the use of land and how the best curative results can be obtained in the most efficient way.

A group of research workers is engaged on conservation ecology—the study of areas to determine the amount and kinds of erosion that have occurred or might occur and the reasons due to the environment, i.e., soils, climate, vegetation, topography, and land use ; soil chemistry and physics—the study of the chemical and physical properties of soils

in relation to soil erosion, soil conservation, and land use ; conservation economics—the economics of erosion control measures and of soil conservation ; agronomy—the study of plant materials and their value and use for erosion control, reclamation and conservation generally ; and hydrology—the study of run-off in relation to rainfall under different forms of land use in various types of country.

Engineering

The Engineering Division provides an advisory service to shire councils and others in the control of roadside erosion. It also advises on, and provides designs for, the building of erosion control structures on private land and to protect public utilities.

Operation

The first aims of educating the landholder both by example and precept have attained considerable success during the ten years the Authority has been in existence. Over 5,000 farmers have received advice and assistance.

From a small nucleus the Authority's staff now totals approximately 100 ; many of these officers have necessarily to undergo lengthy specialized training in soil conservation.

There are currently, however, 57 co-operative projects and demonstration areas throughout the State. Co-operative schemes include conservation measures involving one or more Government departments, shire councils, numbers of landholders, and the Authority.

In some reclamation schemes the Authority enters share-farming agreements with individual farmers to reclaim formerly abandoned eroded land.

The district conservation officers of the Field Division provide readily available assistance and advice to landholders, and specialist officers at Head Office are called upon as required.

The Authority's services and advice are free and, so far as possible, erosion control measures on individual properties which require mechanical equipment are planned so that the landholder can carry out the work with his own farm plant.

Soil conservation competitions which were formerly held annually in each of five localities have proved so successful that they are to be held in every district in the State once every four years. Prizes are awarded for the best effort towards soil conservation by farmers, but this is not a " best-farm " competition in any other sense. Up to 500 attend field days on winning properties.

Public Relations

Despite wide compulsory powers, the Authority practices a policy of co-operation and devotes considerable attention to education and information as well as practical demonstrations of soil conservation techniques.

Publications issued by the Authority range from publicity material at agricultural shows to recognized works on soil conservation and engineering connected with erosion control.

Country film tours with the accent on soil conservation are popular with landholders.

Soldier Settlement

Soldier Settlement Commission

Prior to the end of the Second World War, the Commonwealth Government and various State Governments made arrangements for the settlement of discharged soldiers on the land as part of a general scheme of rehabilitation of ex-members of the Services.

An Agreement was finally concluded between the Commonwealth and the various States in 1945 on this matter. This Agreement provided that Victoria, New South Wales, and Queensland would act as principal States and that Western Australia, South Australia, and Tasmania would act as agents for the Commonwealth Government.

In 1945, the Victorian Government completed an Agreement with the Commonwealth Government. The State Parliament ratified the Agreement and also passed legislation constituting the Soldier Settlement Commission which was to have three full-time members and was given the necessary authority to appoint staff.

Following the acquisition of a farm property or the setting apart of suitable Crown land, the Commission prepared a subdivisional plan. The holdings were advertised and settlers chosen after careful scrutiny of all applicants.

The Commission was charged with the responsibility of developing the holding to a point where the settler could anticipate earning a living from the holding within a reasonable time. This development programme included the erection of a farm dwelling, farm outbuildings, water supply (dams or bores), fencing, as well as pasture improvement work to lift the production of the holding.

In the initial stages the Commission provided suitable temporary accommodation pending erection of the farm house, and the settler entered into occupation of the holding and assisted in the development programme, such as erection of fencing, for which he was paid appropriate wages or contract rates.

When the stage was reached where the settler could expect a reasonable living from the holding, he was regarded as being in " effective occupation ". From this time his career as a soldier-settler farmer commenced.

The Commission then determined an individual valuation of his block and was required by the Act to consider the yields and prices over a long-term period of the products which the holding was capable of producing.

The Agreement provided that the difference between this valuation and the total cost of acquiring, developing and improving the holding would be written off and shared equally between the Commonwealth and State Governments.

The settler is issued with a lease at the time the valuation is determined and the capital liability is repayable over a period of 55 years, including interest at the rate of 2 per cent. per annum. When the whole of the capital repayment is made, a negotiable freehold title issues.

However, for a limited period not exceeding the first seven years of the lease—but usually limited to the first three years—the settler is not required to make any capital repayment on his land.

Land Acquired and Allocated

Since the inception of soldier settlement the Commission has acquired, by voluntary negotiation or compulsory acquisition, land as follows :—

	Acres	Price Paid
Land Acquired prior to 1st July, 1954	960,661	£12,084,418
Land Acquired from 1st July, 1954, to 30th June, 1959	245,899	£7,874,634
	1,206,560	£19,959,052

In addition to the land acquired, 119,663 acres of Crown lands have been set apart for settlement purposes at 30th June, 1959. Of the land acquired and set apart, 1,157,335 acres have been subdivided into 2,994 holdings and made available for application and up to 30th June, 1959, 2,964 of these holdings have been allocated to settlers.

An analysis of the blocks made available for soldier settlement is as follows:—

Irrigation Holdings—	
Dairying	674
Soft Fruit Orchards	68
Dried Vine Fruits	246
Rainfall Holdings—	
Dairying, and Dairying and Mixed Farming ..	622
Grazing, and Grazing and Mixed Farming ..	1,253
Cereal Growing and Grazing	126
Miscellaneous (Berries, Vegetables) ..	5
	2,994

Classification of Applicants

To the 30th June, 1959, 16,673 ex-servicemen had lodged applications for classification of their eligibility and suitability for settlement.

Following interviews by classification committees set up by the Commission, these applicants were grouped in the following categories:—

Suitable for Farm Ownership	11,267
Suitable with Further Training	1,564
Unsuitable, Withdrawn, Deferred, and Ineligible ..	3,842
	16,673

Single-unit Farm Loans

As distinct from the general subdivisional scheme, the Soldier Settlement Act also provided for the Commission to make loans to assist suitable and qualified ex-servicemen to purchase farms of their own choosing or to discharge existing encumbrances on farm properties already owned by them.

The interest rate on these loans, which were secured by first mortgage on the land, is 2 per cent. per annum and the Act authorized the Commission to advance up to 90 per cent. of its valuation of the farm to a maximum of £9,000. The period of repayment was similar to the general scheme, but varied according to the type of primary production involved.

This form of rehabilitation which has proved an outstanding success is solely a State responsibility and has been keenly sought after by ex-servicemen possessing some capital, as it enabled them to get into production quickly and also possibly to remain in districts with which they are familiar.

Up to the 30th June, 1959, 2,876 ex-servicemen had been granted loans amounting to £11,963,337.

Commonwealth Agricultural Loans and Allowances

The Commission, on behalf of the Commonwealth, administered that portion of the *Commonwealth Re-establishment and Employment Act* 1945 which related to the granting of agricultural allowances and the making of agricultural loans.

These loans were limited to £1,000 in each case and were designed to assist ex-servicemen to rehabilitate themselves in the farming industry they had left to join the forces. The loans were used either to assist in the purchase of a farm property or to help in restocking, acquiring plant, &c., so that an ex-serviceman could re-establish himself on his farm.

Loans totalling £1,796,787 have been made to 2,970 cases, including 548 applicants who have been assisted in purchasing farm properties.

Agricultural allowances to 2,311 applicants have been granted at an estimated cost of £296,013. These allowances, which were not repayable and were made in the form of a weekly sum for a period of twelve months, aimed to assist the ex-serviceman again to find his feet in his pre-war farming occupation.

Summary

The total number of former members of the Forces who have received rural rehabilitation on the land is as follows :—

Soldier Settlement Act—	
Number allotted a holding under the general subdivisional scheme	2,964
Number allotted a holding under the general subdivisional scheme, but for various reasons (ill health, death, compulsory forfeiture, &c.) have relinquished holdings allotted to them ..	201
Number granted single-unit farm loans ..	2,876
Total Soldier Settlement Act	6,041

Commonwealth Re-establishment and Employment Act 1945—	
Number granted agricultural loans for purchase of land	548
Number granted agricultural loans for purchase of stock, plant, &c., to work properties . .	979
Total	7,568

Other Land Settlement

Introduction

The *Land Settlement Act* 1953, which was repealed and replaced by the *Land Settlement Act* 1959, envisaged a general civilian settlement scheme (on similar lines to that provided under the Soldier Settlement Act) which would come into operation as soldier settlement tapered off.

The 1959 Act lays down the principles under which this scheme is to operate.

The Commission is given authority to purchase privately owned land or set apart suitable Crown land for development and subdivision.

Generally speaking, any male British subject over the age of 21 years will be eligible to apply for land made available, but the actual allocation will be made having regard to a number of factors laid down in the Act, including the applicant's experience and prospects of success.

Tenure

After a settler is allocated a holding, he may in the first instance be employed by the Commission on wages, or he may be granted a temporary lease of his holding. It has been necessary to provide for a wide range of contingencies in the temporary lease stage to cover a wide range of circumstances, such as the allocation of a more or less ready made farm as compared to a farm where considerable developmental work is still required. The minimum period for a temporary lease is one year and the maximum period is five years. A settler under temporary lease will be required to pay such rent as the Commission thinks fit and reasonable, taking into account differing circumstances, particularly those connected with production.

When a farm has been developed to a stage where the settler of average efficiency can successfully carry on, provision is made for the grant of a purchase lease. This purchase lease provides for the determination of a capital liability on which the settler pays 5 per cent. per annum, which includes interest at 4 per cent. per annum on the liability from time to time outstanding. This means that in about 41 years a settler would freehold his farm although it can be freeholded earlier if larger amounts are paid against the capital liability. The purchase lease is not negotiable for a period of six years, but this six-year period may be reduced by up to three years if he has been in occupation under temporary lease up to three years. In determining the capital liability under the lease, the Commission will have regard to market values of the holdings, but will disregard any abnormality in seasonal or economic conditions which may affect current market value.

Settlers' Credit Account

Under the Act settlers will be encouraged to make additional payments in excess of those required under the lease. These excess payments would earn interest in a special credit account at a rate equal to long-term bond rates, at present 5 per cent. per annum.

Advances to Settlers

Advances may be made to settlers for stock, plant, seasonal requirements, living and working expenses and for permanent improvements. Interest at the rate of 4 per cent. per annum will be charged on the amount of the advance from time to time outstanding, and the repayment of the advance with interest will be made over such period and in such manner as is determined by the Commission in any particular case.

In June, 1960, the first allotment of holdings was made to 24 settlers from a large field of applicants, and the Commission hopes that the large demand from young, experienced farmers will be met as speedily as possible.

Water Supply and Land Settlement

History

For practical purposes, the history of water supply in Victoria can be taken up in the early 1880's when the miners who had left the goldfields to settle on the northern plains began to realize, after a few exceptionally favourable years, the true nature of the arid lands which they were pioneering. It was their agitation which led to the *Irrigation Act* 1886 providing for elected local trusts to construct water supply works with Government loan funds.

Between 1886 and 1900, about 90 trusts were set up under this Act, but for a variety of reasons they all proved a failure. By 1900, the need for a State wide attack on the water supply problem was apparent and in 1905, the Water Act was passed. This revolutionary Act, which has since provided the basis for practically all of Australia's water supply development, had three main features :—

(1) It abolished all but one of the trusts and wrote off their debts ;
(2) it set up the State Rivers and Water Supply Commission to develop and control water supply and conservation throughout the State ; and
(3) it vested in the Crown the right to the use of the water in all of the State's rivers, streams, &c., thus avoiding the litigation which has clouded the history of water supply in the U.S.A.

Irrigation

The Commission's most important function is to promote the development of irrigation and at 30th June, 1959, it had spent on this work about £65,000,000 or 60 per cent. of its total capital expenditure on water supply and conservation generally.

Most irrigation is carried out in districts directly controlled by the Commission, although there is an increasingly large proportion of " private diverters ", i.e., irrigators who are licensed to take water from streams, lakes, &c., but who do not come within the boundaries of an irrigation district.

A feature of the districts is the system of " water rights " in operation. Under this system a certain quantity of water is assigned to each district and allotted to the lands suitable for irrigation. The irrigators pay a fixed sum for this water each year, whether they use it or not, and also pay a general rate. The irrigators get this water right in all except the very driest years, but they can also buy water in excess of the water right in the great majority of seasons.

This method assures irrigators of a definite quantity of water each year, and the Commission can rely on fairly constant revenue to meet its costs of operation. Since water usage varies greatly from year to year according to the weather, paying solely in accordance with water used would bring in widely fluctuating returns.

Another feature of Victorian irrigation policy has been the development of closer settlement by intensive irrigation, that is, by allocating relatively large quantities of water per block instead of limiting the allocation of water to a portion of each block. This has meant that Victorian irrigation is predominantly devoted to dairying, fruit and vegetables rather than sheep-raising. The advantage of intensive irrigation is that much higher returns are available from a given quantity of water and, consequently, a much bigger rural population can be supported.

The use of the water of the Murray River is shared equally with New South Wales after certain quantities have been reserved for the use of South Australia. This vital principle was established after many years of controversy by the River Murray Agreement of 1915, under which a Commission comprising representatives of the three States and the Commonwealth was formed to administer the Agreement. The four parties share equally the cost of all works on the River Murray.

Major storages devoted principally to irrigation are shown in the following table :—

VICTORIA—MAJOR IRRIGATION STORAGE SYSTEMS

River	Name	Capacity	System or District Served
		acre-feet	
Goulburn ..	Eildon Reservoir	2,750,000	Goulburn
	Goulburn Weir	20,700	Goulburn
	Waranga Reservoir ..	333,400	Goulburn
Loddon ..	Cairn Curran	120,600	Goulburn
	Tullaroop	60,000	Diverters
Murray ..	Hume	1,000,000*	Murray
	Murray River Weirs ..	111,420*	Murray
Macalister ..	Glenmaggie	154,300	Gippsland
Pykes Creek ..	Pykes Creek	19,400	Bacchus Marsh
Werribee ..	Melton	15,500	Werribee
	Total	4,797,480†	

* Victoria's half share of River Murray storages under the River Murray Agreement. When completed, Hume will have a total capacity of 2,500,000 acre-feet.

† In addition to the storages named, the total includes a system of natural lakes in the Kerang-Swan Hill area and the Coliban River storages used for both irrigation and town supply around Bendigo.

A large storage, mainly for irrigation which has recently been completed, is the Tullaroop Reservoir on Tullaroop Creek, a tributary of the Loddon River. This storage, which has a capacity of 60,000 acre-feet, will provide 20,000 acre-feet for irrigation by private diverters along the river as well as satisfying all the demands of Maryborough.

Victoria will also benefit by enlargement works now being carried out at Hume Reservoir for the River Murray Commission by the N.S.W. Department of Public Works. This will raise the total storage capacity of Hume to 2,500,000 acre-feet, the principal advantage to Victoria being that it will give greater security of supply to the irrigation districts which now draw from the Murray River.

The most important irrigation works under construction, however, are those concerned with the enlargement and remodelling of the channel system of the Goulburn irrigation system which has become necessary as a result of the enlargement of Eildon Reservoir from 306,000 acre-feet to 2,750,000 acre-feet. Ultimately, this whole project will double the quantity of water that was possible from the original storage and reduce to a minimum water restrictions resulting from drought. The water of the enlarged Eildon Reservoir will lift the value of primary production in the area according to the State Rivers and Water Supply Commission by some £15 mill. per year. A substantial proportion of this work has already been carried out.

Domestic and Stock Supply

A system of storages in the Grampians, on the Wimmera and Glenelg Rivers, provides a domestic and stock supply for 10,000 square miles of land in the Wimmera and Mallee Districts. Another 1,300 square miles in the Mallee are served by water pumped direct from the Murray River and 400 square miles in the Walpeup area are served by sub-artesian bores. The total area in the Wimmera and Mallee given a domestic stock supply is thus 11,700 square miles —more than one eighth of the State.

The Wimmera–Mallee Domestic and Stock Supply System is the largest scheme of its kind in the world. Without this water supply, development of the area would be meagre in most parts, and in some areas it would be impossible. With the water supply, however, the area can support about 65,000 persons, and yield primary production worth about £30 mill. or about ten per cent. of Victoria's total primary production.

Some attempt was made to provide an artificial supply of water to the Wimmera as early as 1844, but nothing much was done until the 1880's when Wartook Reservoir was built for a local trust (see pages 391 and 392 for description of trusts). However, this storage proved inadequate in the disastrous drought of 1902. The trust system was taken over by the State Rivers and Water Supply Commission in 1909 and since that date a series of extensive improvements have been carried out, largely necessitated by ever-increasing development in the area and usually receiving impetus or authorization from a drought or a threatened failure of supply. However, with the completion of Rocklands Reservoir on the Glenelg River in 1953, the security of

the water supply was assured. The capacity of the Grampians storages now totals 538,900 acre-feet (Rocklands 272,000) and even a limited amount of irrigation can be carried on. The problems of the area now centre round the distribution of water with maximum efficiency.

As with irrigation, the area is divided into districts. Water is channelled into farmers' dams each winter and spring—the seasons of minimum evaporation—total deliveries being 100,000 acre-feet in a normal year. Another feature shared with the irrigation districts is that interest on the capital cost of the system (£7,500,000) is carried by the State; the farmers pay for operation and maintenance only. The average farmer pays about £5 per year for his water supply.

The removal of sand drifting into the channels used to be a very great problem, but has now been reduced to reasonable proportions by better farming, regulations governing fallowing and burning near channels, and planting rye corn to stop drift.

The following table compiled by the Commission shows the total areas of the various irrigation systems and the areas under irrigated culture during 1958–59 :—

VICTORIA—AREAS OF SYSTEMS AND OF LANDS UNDER IRRIGATED CULTURE, 1958–59

System or District	Total Area	Area Irrigated (Acres)							
		Pastures		Lucerne, Sorghum, &c.	Vineyards	Orchards	Market Gardens	Other	Total
		Native	Sown						
Goulburn System	1,256,953	21,647	336,819	17,131	197	18,356	2,118	10,489	406,757
River Murray System—									
Torrumbarry System ..	377,544	30,437	156,272	7,157	4,860	1,086	1,400	5,587	206,799
Murray Valley District ..	267,812	4,455	81,080	10,955	32	4,375	374	88	101,359
Pumped Supply* ..	80,727	527	569	686	36,027	2,382	262	996	41,449
Total River Murray ..	726,083	35,419	237,921	18,798	40,919	7,843	2,036	6,671	349,607
Other Northern Systems ..	19,735	3,341	24,500	3,325	..	3,585	361	2,865	37,977
Werribee–Bacchus Marsh ..	16,392	..	6,437	905	..	538	5,109	1,489	14,478
Gippsland	130,301	2,812	48,441	1,794	..	..	76	873	53,996
Other Southern Systems ..	‡	..	..	10	..	40	1,128	185	1,363
Private Diversions† ..	‡	9,683	62,833	12,017	3,151	4,987	7,767	1,150	101,588
Total	2,149,464§	72,902	716,951	53,980	44,267	35,349	18,595	23,722	965,766

* Including the First Mildura Irrigation Trust, an area of 15,000 irrigable acres outside the control of the Commission.

† Area authorized to be irrigated. Excludes 38,418 acres irrigated by private diverters in the Torrumbarry System.

‡ Not available.

§ Excludes other Southern Systems and Private Diversions.

*Flood Protection, River Improvement, and Drainage**

The major flood protection work in Victoria has been the drainage of the Koo-wee-rup Swamp, a depression of 80,000 acres along the seaboard of Westernport Bay, south of the main Gippsland railway. Once useless, this area supports a population of about 4,000 and yields primary production of approximately £3 mill. annually.

* Drainage works are also needed in most irrigation districts.

Another important area controlled by the Commission is the Carrum Drainage District comprising 30 square miles of low lying land extending four to five miles inland from Port Phillip Bay and separated from the sea by a broad sand ridge on which are established six bayside towns from Aspendale to Seaford. 6,000 persons benefit to some degree from flood protection works in this district and plans are under way to bring in further areas and provide still greater assurance against flooding. This new work will involve an expenditure of approximately £500.000 over a period of years.

A comparatively recent development has been in the field of river improvement—the removal of obstructions and the prevention of erosion and siltation. Under the *River Improvement Act* 1948, provision was made for the formation of local trusts operating under the supervision of the Commission and with power to carry out works and levy rates. Sixteen trusts have since been established and are assisted by grants from the Government amounting to about £150,000 annually. In addition, river improvement work is helped by grants from the Rivers and Streams Fund (about £40,000 annually) which comprises mainly licence and permit fees paid for the right to divert water from streams.

A major work recently completed at a cost of about £500,000 is the Lake Corangamite project, north-west of Colac. About 12,500 square miles of private land was flooded between 1952–56 and as there is no outlet from the Lake, it would have been necessary to rely on evaporation for relief by natural agencies. Accordingly, work was undertaken to divert floodwaters, which would otherwise have entered Lake Corangamite, by a channel leading 24½ miles into the Warrambine Creek, which is a tributary of the Barwon River. Besides relieving flooding, this scheme will free a large part of the area around the Lake for agricultural use in most years.

Agricultural Research and Education

Department of Agriculture

General

This Department is controlled by the Minister of Agriculture with the Director of Agriculture as Permanent Head. The staff in 1959 comprised 97 administrative, 241 professional and 429 technical officers with an additional 344 employees. The Department is actively engaged in research, advisory and regulatory activities relating to the agricultural, horticultural, dairying and livestock industries of the State.

Research Stations

Research and experimental work is conducted at the State Research Farm, Werribee ; the Rutherglen Research Station ; the Mallee Research Station, Walpeup ; Horticultural Research Stations at Tatura, Scoresby, and Mildura ; the Viticultural Station, Rutherglen ; the Potato Research Station, Healesville ; the Tobacco Research Station, Myrtleford ; the School of Dairy Technology and Dairy Research Institute, Werribee ; and the Plant Research Laboratory, Burnley.

A Pasture Research Station and Plant Breeding Centre are also situated at Burnley. Cereal experimental centres are located at Longerenong and Dookie Agricultural Colleges. In recent years, the Department has further established a Dairy Research Station at Ellinbank near Warragul, a pastoral Research Station near Hamilton, and an Irrigation Pasture Research Station at Kyabram. The Animal Husbandry Research Centre is situated at Werribee.

Crop and pasture investigations have been initiated at Glenormiston in the Western District. Experimental work and demonstrations are also conducted on numerous selected private farms and orchards throughout Victoria.

The work in progress at the State Research Farm, Werribee, is directed towards the production of improved varieties of wheat, oats, barley, linseed, and other crops. Investigations are also being made into soil fertility problems, irrigated pastures and irrigation techniques. At the School of Dairy Technology, the training of dairy factory operatives, and research and investigation into problems arising in the manufacture of dairy products are also carried out.

The Animal Husbandry Research Centre at Werribee is the focal point of animal husbandry research in Victoria, and the main objective is to increase efficiency of production by improved feeding, breeding, reproduction, and management of all classes of farm livestock.

The development of artificial breeding techniques has been one of the main activities of this Centre, with the aim of making maximum use of every bull proved capable of transmitting high production to his daughters. Methods of freezing bull semen, to build up a "bank" for the breeding season, have been improved to a level of efficiency at which a State wide service can operate effectively and several thousand cows can be mated to each bull each year. A Co-operative Society has now been formed by the dairying industry to provide a commercial semen distribution service from a bull farm situated in the Bacchus Marsh district.

Another research team at Werribee specializes in methods of increasing production from each acre of pasture. These experiments cover several important aspects of nutrition of grazing sheep and cattle, including rates of stocking the pasture, methods of controlling grazing, the amount of pasture eaten by the grazing animal and the efficiency with which it is digested. The place of conservation of the excess spring pasture as hay or silage, for feeding back to the stock when pasture is in short supply, is also being investigated.

As a service to stud pig breeders, the Centre maintains a Pig Testing Station in which several litters sired by a young boar are tested for efficiency and quality of bacon production under standard conditions of feeding and management. The performances of at least three litters from each boar then enable the breeder to select the best boar for future breeding.

Other activities of the Centre include experiments to improve growth of fat lambs on irrigated and dry pastures, and to develop strains of quick maturing poultry suitable as table birds.

The Ellinbank Dairy Research Station, near Warragul, is now almost entirely stocked with identical twin cattle for dairy cattle research projects. These twin animals greatly reduce the cost of research and at the same time increase its accuracy. The main purpose of this research is increased efficiency of dairy farm production, particularly by grazing management, fodder conservation, and the use of spray irrigation or fodder crops during the summer.

The new Pastoral Research Station at Hamilton was purchased in 1959 for investigation of problems of sheep nutrition and pasture production in the Western District. Initially, the experimental programme will be directed to the failure of weaner sheep to make satisfactory growth during their first year.

Work at the Rutherglen Research Station, which serves as a research centre for the North-east, includes investigations into various aspects of cereal growing, pasture improvement and fat lamb raising. It was here that the initial experiments were conducted (from 1911 to 1918) which resulted in the widespread practice of topdressing pastures with superphosphate. Clover ley farming was also developed from this centre. The Viticultural Station is attached to Rutherglen Research Station. Work with vines includes wine research work and the development of disease free root stocks, both at Rutherglen and at the nearby nursery at Wahgunyah.

The Mallee Research Station was established at Walpeup in 1932. In addition to cereal and fat lamb investigations, an important feature of the work at this station is the testing of various species of grasses, clovers and other legumes with a view to developing types especially suitable for Mallee conditions. Special attention is being paid to the problem of sand drift control.

The Horticultural Research Station at Tatura serves as a Research Centre for the investigation of problems associated with canning fruit growing in the Goulburn Valley District. The Research Station at Scoresby is engaged in experimental work associated with fruit and vegetable production under southern Victorian conditions. It is also the centre for cool storage experiments.

The Research Station at Mildura is mainly engaged in investigating problems associated with the citrus growing industry.

At the Plant Research Laboratory, Burnley, plant pathological and entomological research is undertaken. On the same property, the Pasture Research Station and Plant Breeding Centre deal with pasture problems and the production and testing of new plant species.

Departmental experimental plots on private farms and orchards embrace investigations into pasture improvement and the cultivation of various crops, including cereals, fodder crops, linseed, potatoes, tobacco, maize, fruit, and vegetables.

Extension Activities

Victoria's premier position as the most intensively farmed State demands that a comprehensive extension service be maintained to transmit quickly and efficiently the results of scientific research to the farming community.

Although this has always been one of its most important functions, the Department of Agriculture has placed considerable emphasis on the development of the service in recent years, and it has taken special steps to recruit and train staff primarily for extension work and at the same time greatly widen the scope of extension activities undertaken.

Implementation of the policy has been made possible with larger appropriations by the State Government, supplemented with generous aid provided under special Commonwealth grants such as the Extension Services Grant and the Dairy Industry Extension Grant, and with special funds contributed by primary producer organizations.

A few years ago, an agricultural extension scholarship scheme was established to enable future extension staff to graduate in agricultural science at the University of Melbourne. Of 31 students awarded these scholarships, thirteen have graduated and are now on the Department's staff and five more are expected next year. They will augment the district agricultural officers who are already strategically located in Victoria's key agricultural districts to provide advice on farm problems. In addition, many trained under the Department's dairy science scholarship scheme are now engaged in extension work among dairy farmers.

In-service training schools regularly conducted by the Department have advanced the knowledge of this new staff as well as the more experienced personnel in many phases of advisory work such as extension principles, rural sociology and communication methods.

Thus the Department can today provide Victorian primary producers with a comprehensive advisory service on technical farming matters and frequently economic guidance on their farming activities. Specialists are available to visit farms, attend meetings of farmers and handle enquiries received at the district extension office. Demonstration plots have been established on many local farms and on research stations to show farmers the benefits they can gain by adopting improved practices on their properties. Field days held regularly at these plots and at most of the Department's research stations are usually well attended by farm people.

Partly because the Department is not able to recruit and place farm advisers as quickly as it would like in country districts, mass communication channels are used more than ever before to get information to farmers. Foremost among these are seven industry digests which are sent free to farmers and which have a combined yearly circulation of about 200,000 copies. They present the practical outcome of research findings in an easy-to-read manner. For the more technically inclined, the Department also publishes a Journal of Agriculture with a monthly circulation of 16,000. And on many topics farmers can select from a wide range of short bulletins and advisory leaflets for help on particular farm problems.

In the broadcast media, the Department's own radio programme known as the " Voice of Agriculture " supplies over four hours per week of agricultural information through Victoria's commercial stations. Information and talks by officers are also regularly used by the Australian Broadcasting Commission's regional stations. Both live

and filmed television programmes have been presented by the Department and plans are being prepared to take fuller advantage of this new medium when stations are erected in country areas.

Finally, two departmental mobile units are continually screening films, many of which are produced by the Department, to well attended farm groups throughout the State.

Bureau of Agricultural Economics

Activities in Victoria

The Bureau of Agricultural Economics was established in August 1945 in order to meet the need for a Commonwealth research body in the field of agricultural economics and rural policy. No administrative functions are vested in the Bureau ; it is specifically a service institution charged with the duty of undertaking research and making the results available to all concerned, including Commonwealth and State Departments, semi-government and private institutions, and individuals.

As a Commonwealth body, the Bureau is concerned with agricultural problems and policies primarily on a Commonwealth wide basis. Its activities in the States are to a large extent limited to collecting basic information for this purpose. It does, however, carry out specific investigations requested by State authorities. In Victoria these have included a study of the water requirements in relation to irrigated dairy farms in the Tongala-Stanhope Irrigation District ; an examination of the economic aspects of the processed tomato industry ; and an economic assessment of the mechanical harvesting of tobacco.

Generally, the activities of the Bureau in Victoria have taken the form of surveys of the structure of the various rural industries. These have been usually carried out in conjunction with the Victorian Department of Agriculture. The most important of these include :—

(1) A study of the costs, incomes, and management problems of dairy farms in Victoria. This study, carried out in conjunction with the State Department and with the assistance of the Victorian Dairy Farmers' Association, covered commercial butter producers in the main dairying districts ;

(2) a survey of the economic structure of the wheat industry in Australia. Data on all aspects of farm activity in the main wheatgrowing districts in Victoria and other States were collected and analysed for the three seasons ending 1956–57 ;

(3) a study of the sheep industry in Victoria was undertaken by the Bureau as part of a wider study of the economic structure of the industry in Australia. The Victorian survey covered properties carrying 200 sheep or more in the pastoral, wheat/sheep, and high rainfall zones of the State and related to the season 1952–53. Subsequent follow-up surveys have been carried out and results are available for each season up to 1957–58 ;

(4) a survey of the Australian dried fruits industry carried out in conjunction with the State Departments of Agriculture in New South Wales, Victoria, and South Australia. The areas in Victoria covered include the Robinvale district, the Mid-Murray district, and the Sunraysia district ; and

(5) a continuous study of a sample group of dried vine fruit specialists in Sunraysia is currently being undertaken by the Bureau.

Other surveys carried out by the Bureau and which have included Victoria as an area of study include surveys of commercial egg producers, wine grape growers, and beef cattle producers.

Other activities of the Bureau which are of importance for Victoria include the publication of various commodity situation reports such as " The Wheat Situation ", " The Wool Outlook " and " The Dairy Situation ", which review home and overseas developments affecting the outlook for these major commodities ; the publication from time to time of special reports such as the " Statistical Handbook of the Sheep and Wool Industry " and " Changes in Acreage and Production of Wheat in Australia ". The Bureau also carries out more general analyses which are of interest to Victoria as well as other States. These include examinations of the effects of economic policies, conditions and developments at home and abroad on Australian rural industries, of trends in Australian farm production, cost and incomes, and of the economics of rural development projects.

Agricultural Education

Department of Agriculture

The Victorian Department of Agriculture, through its Division of Agricultural Education, has the responsibility for agricultural education at the diploma level in the Agricultural Colleges at Dookie and Longerenong and the Horticultural College at Burnley gardens.

The main purpose of the colleges is to teach the principles and practice of agriculture and horticulture to those who intend to adopt farming or horticulture or any other career requiring an intimate knowledge of agriculture or horticulture as a vocation.

Each college offers a diploma course of three years' duration ; the agricultural colleges being residential and the horticultural college non-residential. The college at Dookie has accommodation for 170 full-time students, including about 50 second year University degree students, and Longerenong for 70 students. Current building programmes will shortly increase this accommodation to 270 and 100 students respectively. Burnley Horticultural College has accommodation for 60 diploma students.

The diploma course at each college is of a wide general nature and class and laboratory work alternate with practical work in the various branches. The Agricultural Colleges have technical blocks for the teaching of farm crafts and appropriate farm and live stock branches, including farm crops, fruit and vegetables, and dairy, sheep,

cattle, poultry, and pig husbandry branches. The Horticultural College has sections covering the growing of ornamental plants, fruit, and vegetables and is equipped with appropriate nursery sections and glass houses. Landscape design and park administration are also taught.

As well as training in the vocational subjects of agriculture, animal husbandry, and horticulture, the students are given a good grounding in the related sciences—chemistry, soil science, physics, botany, zoology, entomology, bacteriology, plant pathology and genetics and in elementary mathematics and surveying. English is taught to Matriculation standard and a good grounding is given in book-keeping and rural economics. Students who do well in the diploma course and pass in Matriculation English Expression can, if they so desire, proceed to a degree course in agricultural science at the University of Melbourne.

About 50 per cent. of the holders of the diploma of agriculture take up farming as a career, over 30 per cent. are employed as technical officers with Government instrumentalities and firms which manufacture or distribute farmer's requisites or handle farm produce. Some engage in teaching agricultural science in schools and others in agricultural journalism. Some proceed to further education at the University.

At Dookie Agricultural College each year about twelve short intensive courses of from one to three weeks' duration in specialized farm subjects are conducted for the benefit of members of the farming community. These include two special classes each year for country women and one junior young farmers' course.

At Burnley Horticultural College part-time evening classes are also conducted for persons engaged in horticultural industry and for home gardeners.

Melbourne University School of Agriculture

The School of Agriculture of the Melbourne University provides a four year degree course for undergraduates leading to the Degree of B.Agr.Sc. and post graduate work for higher degrees in Agricultural Science. The undergraduate course is based on a first year devoted to pure science subjects ; this is followed by three years in which the scientific principles upon which the practice of agriculture is based are presented and the more intensive training is given in those scientific disciplines required by research workers in agriculture. During the second year of the course, the students are in residence at Dookie Agricultural College where they have the opportunity of combining the advantages of communal college life with close observation and contact with the practice of agriculture.

Research activities at the School of Agriculture cover a wide field including agronomy, agrostology, and animal nutrition and physiology, with basic work in the fields of soil chemistry and agricultural

biochemistry as related to both the plant and the animal. Research into various aspects of agricultural economics and farm management together with studies of the sociological relationships of the farming community and of the farmer himself are also undertaken.

The graduates from the School find employment over a wide range of positions. Many join the State Service in such departments as Agriculture, the State Rivers and Water Supply Commission and the Soil Conservation Authority. The more academic students after taking post graduate training go to research positions in C.S.I.R.O. or the Universities, but a number with more commercial interests are taking positions in industrial organizations related to agriculture.

Rural Industries

Introduction

Collection of Statistics

Since the year 1904, police officers have been required to collect agricultural, pastoral, and dairying statistics from land holders in Victoria. Prior to 1904, the statistics were collected by the municipal authorities who were required by statute to furnish information on such forms and in such manner as was required by the Governor in Council.

The rural statistics contained in this chapter are in the main compiled from Census returns of agricultural, pastoral, and dairying production collected from 70,000 rural holdings in Victoria at 31st March each year. Schedules are distributed to farmers by about 330 local police officers who act as collectors of statistics as required by the Victorian *Statistics Act* 1958. Statistics from these schedules are compiled for each county and municipality.

Every holding of 1 acre and upwards used for the production of agricultural products or for the raising of livestock and the production of livestock products is visited, and full particulars are obtained of the area occupied, the rural population, the number of persons employed, the area and yield of each kind of crop cultivated, artificial fertilizer usage, numbers of certain items of farm machinery, the number and description of livestock and the quantity of wool clipped.

Data relating to area sown, production, yield per acre, and number of holdings growing crops are for the season ended 31st March, thus including crops which are sown and harvested, or sown or harvested, during the twelve months ended 31st March.

In cases where harvesting of certain crops has not been completed by the 31st March (potatoes, fruit, vines, &c.) supplementary collections are made later in the year.

Livestock numbers, farm machinery on rural holdings, and the number of persons working are reported at 31st March, whilst wage and salary payments relate to the twelve months ended 31st March.

Land Occupied in Different Districts, 1958–59

For the season 1958–59, the number of occupiers of rural holdings was 69,770, the area devoted to agriculture 6,978,201 acres, and the total area occupied 37,755,428 acres.

It should be noted that statistics in this part of the Year Book have been compiled for statistical districts, which are groups of counties, namely, land areas with immutable boundaries. A map defining the boundary of each statistical district appears between pages 42 and 43 of the 1954–58 Victorian Year Book.

VICTORIA—LAND IN OCCUPATION IN EACH DISTRICT, SEASON 1958–59

(Areas of 1 acre and upwards)

Statistical Districts	Total Area of Districts (Acres)	Number of Holdings	Acres Occupied				
			For Agricultural Purposes	For Pasture		Unproductive	Total
				Sown Grasses, Clover, or Lucerne	Natural Grasses		
Central	2,705,703	14,524	419,669	1,096,737	894,215	295,082	2,705,703
North-Central ..	2,100,324	4,429	140,235	382,662	1,402,247	175,180	2,100,324
Western ..	6,523,640	12,760	573,088	3,301,581	2,064,233	584,738	6,523,640
Wimmera ..	6,081,556	6,146	1,712,308	1,415,310	2,277,862	676,076	6,081,556
Mallee	7,517,659	6,258	2,574,785	449,447	3,677,717	815,710	7,517,659
Northern ..	5,514,238	11,484	1,159,560	1,180,504	2,952,793	221,381	5,514,238
North-Eastern ..	3,643,528	5,046	171,749	602,523	1,846,688	1,022,568	3,643,528
Gippsland	3,668,780	9,123	226,807	972,418	1,307,545	1,162,010	3,668,780
Total ..	37,755,428	69,770	6,978,201	9,401,182	16,423,300	4,952,745	37,755,428
	PERCENTAGE OF ABOVE TO AREA OCCUPIED						
Central	..	..	15·51	40·53	33·05	10·91	100·00
North-Central ..	..	..	6·68	18·22	66·76	8·34	100·00
Western ..	..	..	8·79	50·61	31·64	8·96	100·00
Wimmera ..	..	..	28·15	23·27	37·46	11·12	100·00
Mallee	..	..	34·25	5·98	48·92	10·85	100·00
Northern ..	..	..	21·03	21·41	53·55	4·01	100·00
North-Eastern ..	..	..	4·71	16·54	50·68	28·07	100·00
Gippsland ..	..	..	6·18	26·51	35·64	31·67	100·00
Total ..	..	..	18·48	24·90	43·50	13·12	100·00
	PERCENTAGE IN EACH DISTRICT OF TOTAL IN STATE						
Central	7·17	20·82	6·01	11·67	5·44	5·96	7·17
North-Central ..	5·56	6·35	2·01	4·07	8·54	3·54	5·56
Western ..	17·28	18·29	8·21	35·12	12·57	11·80	17·28
Wimmera ..	16·11	8·81	24·54	15·05	13·87	13·65	16·11
Mallee	19·91	8·97	36·90	4·78	22·39	16·47	19·91
Northern ..	14·60	16·46	16·62	12·56	17·98	4·47	14·60
North-Eastern ..	9·65	7·23	2·46	6·41	11·25	20·65	9·65
Gippsland ..	9·72	13·07	3·25	10·34	7·96	23·46	9·72
Total ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00

Size of Holdings Showing Areas Cultivated and Grazed

A detailed cross classification of holdings by size and area of main crops or number of livestock is prepared approximately every five

years. The following table shows some of the information, in summary form, from the last classification of this type taken at 31st March, 1956 :—

VICTORIA—SIZE OF HOLDINGS SHOWING AREAS UNDER WHEAT AND STOCK DEPASTURED, 31ST MARCH, 1956

Size of Holdings (Including Crown Lands Held)	Number of Holdings	Area Occupied	Wheat 1955–56	Sheep	Dairy Cattle	Beef Cattle	Pigs
acres		acres	acres	No.	No.	No.	No.
1– 99 ..	22,095	860,845	3,802	181,445	268,655	25,435	55,758
100– 199 ..	12,387	1,750,435	13,507	636,536	535,984	53,785	62,665
200– 299 ..	6,346	1,536,059	19,225	859,495	278,518	58,691	34,064
300– 399 ..	5,186	1,752,632	61,298	1,312,906	179,258	66,827	20,899
400– 499 ..	3,344	1,488,982	64,454	1,277,891	98,744	61,857	13,804
500– 999 ..	11,190	7,887,925	607,475	6,793,088	185,078	231,095	21,999
1,000–1,399 ..	3,614	4,256,983	414,042	3,076,428	43,808	99,623	5,829
1,400–1,999 ..	2,445	4,041,291	361,697	2,896,267	22,829	83,133	3,006
2,000–2,999 ..	1,468	3,505,790	288,140	2,237,791	25,880	74,912	3,577
3,000–4,999 ..	908	3,369,086	219,284	1,933,920		65,797	
5,000 and over ..	545	7,406,447	88,486	2,082,936	7,549	124,581	1,212
Total ..	69,528	37,856,475	2,141,410	23,288,703	1,646,303	945,736	222,813

Artificial Fertilizers

In 1958–59, artificial fertilizers were used on 1,825,787 acres of wheat; 1,576,285 acres of other cereal crops; 74,729 acres of vegetables; 101,602 acres of orchards; 1,001,469 acres of other crops (including grass and clover hay); and 8,925,268 acres of pastures. Superphosphate is the main fertilizer used on both crops and pastures and in 1958–59 amounted to 192,878 tons or 84 per cent. of the total artificial fertilizer used on all crops and 487,223 tons or 97 per cent. of that used on pastures.

A summary of the area fertilized, quantity used, and number of holdings on which artificial fertilizers were used is shown below for each of the years 1954–55 to 1958–59 :—

VICTORIA—ARTIFICIAL FERTILIZERS

Year	Crops			Pastures		
	No. of Holdings	Area Fertilized	Quantity Used	No. of Holdings	Area Fertilized	Quantity Used
		'000 acres	'000 tons		'000 acres	'000 tons
1954–55 ..	34,034	3,609	176	34,484	8,118	459
1955–56 ..	34,907	3,500	174	40,256	8,537	480
1956–57 ..	34,454	2,906	151	41,659	8,729	494
1957–58 ..	41,167	3,690	191	43,234	9,684	548
1958–59 ..	*	4,580	229	40,452	8,925	502

* Not available.

Aerial Agriculture

During recent years aircraft have been used for topdressing and seeding pastures and for spraying and dusting crops and pastures. Since 1956–57 statistical information has been collected by the Department of Civil Aviation and details are shown in the following table :—

VICTORIA—AERIAL AGRICULTURE

Particulars	Unit	1956–57	1957–58	1958–59
Total Area Treated*	acres	230,781	339,019	408,745
Topdressing and Seeding Area Treated—				
Superphosphate	acres	164,326	252,311	252,529
Seed	,,	16,642	35,500	10,336
Other	,,	..	..	1,360
Total Area Treated† ..	,,	164,326	253,596	253,489
Materials Used—				
Superphosphate	tons	11,745	17,065	15,895
Seed	lb.	4,940	7,240	8,320
Spraying and Dusting Area Treated—				
Insecticides	acres	9,826	51,813	82,740
Fungicides	,,	..	2,200	600
Herbicides	,,	57,644	32,713	75,747
Total Area Treated† ..	,,	66,455	85,423	155,256

* Excludes dingo baiting operations and areas baited for rabbit destruction.
† Areas treated with more than one type of material in one operation are counted once only.

Farm Machinery

The number of the principal items of farm machinery on rural holdings at the 31st March during each of the past five years are given in the table below :—

VICTORIA—FARM MACHINERY ON RURAL HOLDINGS

Particulars	Number at 31st March—				
	1955	1956	1957	1958	1959
Milking Machines—Units ..	74,513	77,602	81,729	83,819	85,608
Shearing Machines—Stands ..	30,801	32,245	34,884	34,955	35,951
Tractors—Wheeled Type ..	45,824	49,584	52,275	55,090	57,435
Crawler Type	1,430	1,645	1,621	1,825	2,067
Rotary Hoes	8,537	9,749	9,166	8,777	9,429
Fertilizer Distributors and Broadcasters	26,647	26,470	27,336	26,692	27,290
Grain Drills—Combine	17,785	19,994	19,363	18,360	19,428
Other	8,172	8,209	8,206	8,531	8,525
Maize Planters	*	1,050	1,041	972	1,020
Headers, Strippers and Harvesters	14,524	14,168	13,722	13,641	13,507
Pick-up Balers	*	5,055	5,468	6,173	7,073
Stationary Hay Presses	*	3,371	3,077	2,658	2,518

Note.—Details of items which have not been collected since 1955 are published in the Victorian Year Book 1954–58, page 88.
* Not available.

Financial Assistance to Primary Producers

In recent years legislative provision has been made by both the Commonwealth and State Parliaments for granting financial relief to primary producers. These provisions have been described in previous issues of the Year Book.

Rural Finance Corporation

The Corporation was established in April, 1950. Its objects, which are set out in section 5 of the *Rural Finance Corporation Act* 1958, include the making of advances by way of loan at low rates of interest to existing or proposed country industries both primary and secondary. The Corporation is the successor in law of the Farmers' Debts Adjustment Board and is empowered to advance moneys to, or for the benefit of, any farmer for the purpose of carrying into effect a composition or scheme of arrangement between him and his creditors.

Revenue, expenditure, &c., of the Corporation for each of the five years 1954–55 to 1958–59 is given in the following table :—

VICTORIA—RURAL FINANCE CORPORATION : REVENUE, EXPENDITURE, ETC.

(£'000)

Particulars	1954–55	1955–56	1956–57	1957–58	1958–59
REVENUE					
Interest	181	248	283	337	381
Other	5	5	6	5	7
Total Revenue ..	186	253	289	342	388
EXPENDITURE					
Administration	35	38	41	47	49
Interest	104	138	167	202	250
Sinking Fund	12	16	18	23	19
Other	3	22	7	8	21
Total Expenditure ..	154	214	233	280	339
Net Surplus	32	39	56	62	49
Loans and Advances Outstanding at 30th June	5,991	6,915	7,559	8,147	8,611
Loan Indebtedness to State Government at 30th June ..	4,786	5,668	6,557	7,223	7,734

Agriculture

Progress of Cultivation

The first Statistical Register of Victoria published in 1854 shows that in 1836 there were 50 acres of land under cultivation in the colony of Victoria. By the year 1840 this figure had increased to 3,210 acres. This progress continued until 1852 when 57,472 acres were under cultivation. With the discovery of gold in Victoria agricultural progress received a temporary setback, the area of land cultivated declining to 34,816 acres in 1854. However with the influx of population came a demand for agricultural products and, by the end of 1860, the area of land under cultivation amounted to 407,740 acres.

The following table shows the area under cultivation at decennial intervals from 1856 to 1945 and for each of the following fourteen seasons to 1958–59 :—

VICTORIA—ACREAGE CULTIVATED ANNUALLY

Period or Year (Ended March)	Annual Average Area in Each Decennium, 1856–1945, and Actual Area Each Year 1946–1959, under—		
	Crop	Fallow	Total Cultivation
	acres	acres	acres
1856–65	325,676	12,146	337,822
1866–75	624,377	57,274	681,651
1876–85	1,306,920	137,536	1,444,456
1886–95	2,109,326	364,282	2,473,608
1896–1905	3,022,914	524,197	3,547,111
1906–15	3,756,211	1,276,148	5,032,359
1916–25	4,594,244	1,852,145	6,446,389
1926–35	5,233,894	2,501,357	7,735,251
1936–45	4,435,645	2,142,953	6,578,598
1946	5,327,122	2,394,032	7,721,154
1947	5,102,980	2,460,350	7,563,330
1948	5,023,149	2,527,306	7,550,455
1949	4,644,841	2,343,685	6,988,526
1950	4,480,202	2,429,888	6,910,090
1951	4,351,220	2,153,611	6,504,831
1952	4,270,512	2,026,965	6,297,477
1953	4,285,770	2,294,891	6,580,661
1954	4,479,568	2,287,090	6,766,658
1955	4,394,451	2,196,192	6,590,643
1956	4,542,096	1,982,742	6,524,838
1957	3,637,352	1,879,812	5,517,164
1958	4,051,249	1,644,764	5,696,013
1959	4,790,989	2,187,212	6,978,201

Crops and Growers

The following table shows the area under, the yield from, and the gross value of each of the principal crops in Victoria for the season 1958–59 :—

VICTORIA—AREA, YIELD, AND GROSS VALUE OF CROPS, 1958–59

Crop	Area	Yield	Gross Values*
	acres		£
Cereals for Grain—			
Barley—			
2 row	343,484	8,174,172 bushels	4,006,253
6 row	19,387	406,627 bushels	159,211
Maize	3,881	203,366 bushels	136,876
Oats	970,688	23,338,679 bushels	6,820,079
Rye	27,458	226,320 bushels	114,104
Wheat	1,810,026	42,696,801 bushels	28,274,489
Hay—			
Barley and Rye	3,891	5,030 tons	38,830
Lucerne	74,109	138,916 tons	1,610,100
Meadow	909,703	1,636,123 tons	13,421,170
Oaten	261,853	464,091 tons	3,859,640
Wheaten	32,584	55,073 tons	430,380
Green Fodder	70,289	..	650,458
Grass and Clover Seed	18,520	25,879 cwt.	374,266
Industrial Crops—			
Broom Millet	261	1,327 cwt. fibre	10,168
		835 cwt. seed	1,065
Linseed	8,817	110,779 bushels	193,863
Hops	440	6,281 cwt.	257,975
Mustard	727	2,570 cwt.	17,191
Tobacco	4,248	43,617 cwt.	2,763,525
Vegetables—			
Onions	3,971	28,456 tons	1,062,490
Potatoes	46,122	259,346 tons	5,040,290
Other	35,702	214,935 tons	8,869,878
Stock Fodder—			
Grey and Other Field Peas	11,077	260,571 bushels	285,259
Pumpkins	696	2,114 tons	31,710
Turnips, Beet, &c.	16,343	54,777 tons	547,770
Vineyards—			
Grapes—			
Table	1,949	6,689 tons	552,465
Wine	3,979	12,403 tons	238,448
Drying	36,554	232,962 tons producing—	
		46,894 tons of sultanas	7,442,978
		5,813 tons of raisins	801,520
		4,776 tons of currants	672,149
Vines, Unproductive	2,319	..	..
Orchards—			
Productive	46,673	..	10,328,486
Unproductive	20,073	..	..
All Other Crops	5,165	..	2,045,116
Total Crops	4,790,989		101,058,202

* The gross value is based on the wholesale price realized in the principal markets. The places where primary products are absorbed locally or where they become raw materials for a secondary industry, are presumed to be the principal markets.

The following table shows the numbers of growers of certain primary products, in each statistical district of the State, for the season 1958–59.

The information has no relation to the number of rural holdings in the State, as numbers of occupiers are engaged in the cultivation of more than one of the crops enumerated.

VICTORIA—GROWERS OF CERTAIN CROPS, SEASON 1958–59

Crops Grown	Growers in Each Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat ..	377	234	498	3,341	2,698	2,764	361	44	10,317
Oats	622	503	1,472	3,138	2,146	2,934	620	61	11,496
Barley ..	608	74	329	1,065	1,359	895	82	73	4,485
Maize ..	5	1	..	..	1	3	51	211	272
Green Fodder—									
Maize ..	517	40	199	3	2	18	60	708	1,547
Lucerne ..	73	31	79	20	26	79	34	36	378
Millet ..	283	38	191	8	41	271	233	439	1,504
All Other ..	351	178	543	17	10	59	72	357	1,587
Other—									
Potatoes ..	1,983	563	830	24	16	18	204	692	4,330
Onions ..	337	..	313	3	5	8	2	12	680
Other Vegetables	1,432	20	230	61	371	584	37	118	2,853
Orchards ..	2,031	172	125	150	1,238	1,057	201	91	5,065
Vineyards ..	5	1	..	10	2,366	87	25	..	2,494
Grass and Clover Seed	9	36	103	..	..	5	11	1	165
Tobacco ..	..	..	..	..	2	45	164	..	*211

* Excluding Share-farmers

A summary of the area under cultivation in each statistical district of the State for the season 1958–59 is given in the following table :—

VICTORIA—AREA UNDER CULTIVATION, SEASON 1958–59
(Acres)

Crop	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat	15,285	8,966	22,855	541,028	904,169	292,294	23,721	1,708	1,810,026
Oats	24,014	19,703	89,721	251,481	345,249	216,036	22,343	2,141	970,688
Barley ..	37,359	2,130	9,859	84,172	176,885	48,102	2,266	2,098	362,871
Maize	14	3	..	..	4	30	490	3,340	3,881
Peas	6,584	272	3,365	190	26	22	154	464	11,077
All Hay	184,526	73,504	324,193	154,000	54,934	239,027	93,213	158,743	1,282,140
Green Fodder ..	13,138	4,626	18,888	1,108	3,973	7,301	4,644	16,611	70,289
Grass and Clover for Seed ..	623	1,583	6,502	2,855	780	3,875	2,135	167	18,520
Tobacco	..	..	..	..	25	777	3,446	..	4,248
Potatoes	24,722	7,514	6,597	65	81	62	1,151	5,930	46,122
Onions	1,404	..	2,443	3	19	28	3	71	3,971
All Other Vegetables	21,298	69	4,267	211	3,082	4,903	190	1,682	35,702
Vines	7	35	..	663	41,876	637	1,583	..	44,801
Orchards	24,116	2,483	683	4,153	6,272	27,131	1,538	370	66,746
All Other Crops ..	5,965	804	15,323	630	27,192	2,370	1,916	5,707	59,907
Total Area under Crop ..	359,055	121,692	504,696	1,040,559	1,564,567	842,595	158,793	199,032	4,790,989
Land in Fallow ..	60,614	18,543	68,392	671,749	1,010,218	316,965	12,956	27,775	2,187,212
Total Area under Cultivation ..	419,669	140,235	573,088	1,712,308	2,574,785	1,159,560	171,749	226,807	6,978,201

The following table shows the yields, in statistical districts, of the principal crops for the season 1958–59 :—

VICTORIA—YIELDS OF PRINCIPAL CROPS SEASON, 1958–59

Crop	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat bush.	457,395	270,171	701,850	14,722,257	18,500,979	7,396,389	598,212	49,548	42,696,801
Oats ,,	823,715	600,843	3,769,937	5,995,345	6,309,750	5,282,268	517,529	39,292	23,338,679
Barley ,,	1,326,627	67,365	347,317	1,840,816	3,624,035	1,249,379	56,477	68,783	8,580,799
Maize ,,	536	150	..	..	120	1,080	20,339	181,141	203,366
Peas ,,	158,026	6,705	78,982	2,139	834	295	2,480	11,110	260,571
All Hay tons	348,170	138,610	607,345	231,792	70,040	409,779	180,296	313,201	2,299,233
Grass and Clover for Seed cwt.	975	2,422	9,528	4,335	1,220	4,660	2,553	186	25,879
Tobacco ,,	..	..	..	..	136	6,834	36,647	..	43,617
Potatoes tons	134,178	45,086	39,909	351	448	249	6,060	33,065	259,346
Onions ,,	9,691	..	17,764	20	98	220	19	644	28,456
Wine Made *gals.	..	..	..	..	..	..	..	..	2,354,076
Dried Vine Fruits—									
Raisins tons	..	..	..	..	5,798	15	..	..	5,813
Sultanas ,,	..	..	..	..	46,894	..	..	..	46,894
Currants ,,	..	..	..	..	4,775	1	..	..	4,776

* Details of individual districts are confidential.

Principal Crops

General

The cereals wheat, oats, and barley are the principal crops grown in Victoria and these, together with hay, represent about 90 per cent. of the total area sown, although there is some variation from year to year. The growing of potatoes, grapes, and apples is also important.

In the following section some detailed descriptive and statistical information is given for all main crops grown in the State including those mentioned above.

Wheat

Wheat is the main crop grown in Victoria and in 1958–59 production amounted to nearly 43 mill. bushels from 1,810,000 acres sown. Normally about 98 per cent. of the crop is harvested for grain of which a considerable proportion is exported as grain or flour.

The main wheat belt lies in the north-west and north of the State in the Wimmera, Mallee, and Northern Districts. The average annual rainfall varies from 11 inches in the northern Mallee, which is about the limit for economic wheat production, to 17 inches in the southern Wimmera. A small proportion of the crop is grown in the Western and North-Eastern Districts in a rainfall of up to 23 inches, but wheat growing is not the most important form of production in these districts.

The highest yields are obtained in the Wimmera, the district yield varying around 25 bushels per acre. Yields on individual farms may exceed 60 bushels per acre in favourable seasons and the highest official yield over 50 acres of crop is 76·8 bushels per acre, established at Natimuk in 1953.

The wheat varieties grown in Victoria are of the soft white class. Wheat breeders have achieved great success in producing high-yielding, drought-resistant varieties specially suitable for local conditions, and more than 95 per cent. of the Victorian wheat acreage is now sown with wheats bred by these scientists from the Department of Agriculture.

The Victorian environment usually does not favour the production of wheat of high baking quality, but important developments have taken place in recent years which minimize the environmental influence on quality. The most significant of these include the wider adoption of clover and medic ley rotation systems and the production by wheat breeders and agronomists of varieties which combine high yield and improved baking quality.

Legume ley farming involves the growing of subterranean clover pasture in the higher rainfall sections of the wheat belt and medics, such as barrel medic, in the lower rainfall areas. After a period under pasture, cropping is resumed and the improvement in the fertility of the soil is reflected in higher yields of wheat which is of better quality for breadmaking. More sheep can be carried on the improved pastures with clover and medic ley farming and thus increase the income on wheat farms.

Grain Elevators Board

In 1934 an Act was passed to provide for the handling of wheat in bulk in Victoria. The Act gave the Government power to constitute a Board of three members to implement the provisions of the Act. On submissions made by the Board to, and approved by, the Government, 183 country receiving elevators and a shipping terminal have been constructed, the necessary finance being obtained from loans totalling £3,729,403. Repayment of the principal and interest are guaranteed by the Victorian Government.

The Grain Elevators Board first received and shipped Victorian wheat in bulk for the 1939–40 season.

Prior to the introduction of bulk handling by the Grain Elevators Board, many wheat growers had opposed that method of handling their wheat. One season of operation of the Board's bulk handling system in any wheat producing area was sufficient to allay the fears of those growers and prove to them that the bulk handling system not only saved labor on the farms, but materially reduced the overall handling costs for wheat.

The Board's Geelong Terminal is the most modern and the largest single wheat shipping terminal in the world. Its operation is by push-button remote control with operational indicator lights appearing on a diagram panel of the whole terminal. Wheat can be received from rail trucks at the rate of 1,200 tons per hour and can be shipped from the terminal at the rate of 1,600 tons per hour, either direct from the terminal storage bins or by a combination of storage bins and rail receivals.

The Grain Elevators Board claims that wheat is taken off the farms by the Board in a shorter period and handled at a lower cost per bushel than is achieved by any other wheat bulk handling system in Australia or anywhere throughout the world.

The use of the tractor as well as the introduction of more modern harvesting machinery now permits growers to harvest wheat with moisture considerably in excess of that which was possible when they had to rely on horses to haul their harvesting machines. Deterioration of wheat in store, because of high moisture content, has brought home to wheat growers the fact that, when they deliver their wheat, each matured grain contains a series of living organisms which need only the required percentage of moisture to enable them to begin their reproductive cycles.

It is now also appreciated that a smaller percentage of moisture than that which is required for germination of the grain will bring about deterioration of the matter in the grain and that too much moisture will, likewise, adversely affect the reproductive organisms within the grain. The percentage of moisture which has those varying effects upon the matter within the grain has made it necessary to find an easy means of determining the moisture present in a quantity of wheat at any time. Engineers have already produced the tractor and the modern machinery which permit the harvesting of high-moisture-content wheat and have now produced a simple moisture meter which indicates when the sun and wind have reduced the moisture content in the wheat to the percentage that enables the wheat to be harvested and stored with safety.

In addition to erecting its own country receival facilities, the Board has leased from country flour millers specified quantities of the storage constructed by millers.

The Grain Elevators Board has under its control storage for 71 million bushels of wheat. The largest quantity of wheat delivered to railway stations by Victorian growers in any one season was 59,175,593 bushels in 1915–16.

The following statement shows the revenue and expenditure of the Grain Elevators Board in Victoria :—

VICTORIA—GRAIN ELEVATORS BOARD: REVENUE, EXPENDITURE, ETC.

(£'000)

Particulars	Year Ended 31st October—				
	1955	1956	1957	1958	1959
REVENUE					
Australian Wheat Board—Operating and Maintenance Expenses ..	489	517	492	480	478
Australian Wheat Board—Capital Facilities Allowance	201	244	262	312	342
Interest on Investments	30	43	59	53	63
Other	..	..	..	1	1
Total Revenue	720	804	813	846	884
EXPENDITURE					
Operating and Maintenance Expenses	342	348	310	268	281
Administration Expenses ..	82	93	99	119	101
Depreciation and Renewals ..	65	75	83	93	96
Interest on Loans	114	137	167	177	178
Sinking Fund Charges	23	27	31	31	32
Appropriations to Reserves ..	72	82	110	113	131
Other	9	7	4	7	7
Total Expenditure ..	707	769	804	808	826
Net Surplus	13	35	9	38	58
Fixed Assets (at 31st October) ..	2,672	3,283	3,860	4,064	4,229
Loan Indebtedness (at 31st October)—					
State Government	981	972	965	955	946
Public	2,027	2,321	2,808	2,774	2,838

Australian Wheat Board

The Australian Wheat Board was first formed, under National Security Regulations, in 1939 shortly after the outbreak of the Second World War. During the War and in the immediate post-War period, the Board acted as agent for the Commonwealth Government in receiving, handling, storing, and marketing wheat which was acquired by the Government, and in distributing amongst growers the net proceeds from sales of each season's crop on the basis of a pooling system.

In 1948, the Governments of the main wheat growing States arranged for a ballot of wheat growers before deciding to implement a five-year wheat stabilization plan for the purpose of continuing orderly marketing of wheat at the expiration of war time legislation. This ballot resulted in 64 per cent. of growers voting in favour of the stabilization plan and legislation known as the *Wheat Industry Stabilization Act* 1948 was subsequently enacted by the Commonwealth and the six State Governments to implement this plan. Under this five-year plan, which commenced with the 1948–49 season's harvest, the pooling system for each crop was continued, but wheat, instead of being acquired by the Government, became the property of the Australian Wheat Board on delivery by growers, and stabilization provisions were introduced.

Further five-year stabilization plans were introduced by appropriate Commonwealth and State legislation in 1954 (covering seasons 1953–54 to 1957–58) and in 1958. The *Wheat Industry Stabilization Act* 1958 will end with the marketing of the 1962–63 crop and, as in the two preceding Acts, the Australian Wheat Board is named as the sole constituted authority for the marketing of wheat within Australia and for the marketing of wheat and flour for export from Australia.

Constitution of the Australian Wheat Board

The chairman and four members are Commonwealth Government appointees, whilst the remaining nine members are representatives of wheat growers in the five main wheat growing States.

Home Consumption Price

The Board is authorized by State legislation (which is complementary to the Commonwealth Act) to sell wheat for local consumption at the guaranteed price for wheat of the season that is current at the beginning of the year when the sale is made (" year " being defined as the period of twelve months commencing 1st December), plus an amount (currently 2d. per bushel) for the purpose of reimbursing the Board for the costs of shipping wheat to Tasmania.

The guaranteed price for wheat of a particular season is an amount equal to the cost of production of wheat of that season as determined in accordance with the Commonwealth Stabilization Act. For the season 1958–59, it was fixed by the Act at 14s. 6d. per bushel and for each

succeeding year of the Act the cost of production will be determined by the Commonwealth Minister, after considering the report of the appropriate Committee on the variation in elements of costs and after consulting the appropriate Ministers of each State.

Wheat Standard

The fair average quality (f.a.q.) standard is fixed each season by a State Committee and is the basis for sales of each crop.

Samples of wheat from various districts are obtained each year and mixed to obtain a representative sample of the whole crop. The f.a.q. weight is then determined by use of the Schopper 1-litre scale chondrometer.

The f.a.q. standard method is peculiar to Australia, other countries selling according to sample or fixed grades.

The following table shows the standard determined in Victoria for each of the ten seasons, 1949–50 to 1958–59 :—

VICTORIA—WHEAT STANDARD

Season	Weight of Bushel of Wheat, f.a.q.	Season	Weight of Bushel of Wheat, f.a.q.
	lb.		lb.
1949–50	64	1954–55	62½
1950–51	62½	1955–56	63¾
1951–52	64	1956–57	65½
1952–53	64¾	1957–58	65½
1953–54	64¼	1958–59	64

Area Sown, Production, and Gross Value

In the following table the area, production, average yield, and gross value of production of wheat for each of the seasons 1954–55 to 1958–59 are shown :—

VICTORIA—WHEAT STATISTICS

Season	Area	Production	Average Yield	Gross Value
	acres	bushels	bushels	£
1954–55	2,390,173	48,484,543	20·28	30,515,605
1955–56	2,141,410	41,083,071	19·19	26,046,763
1956–57	1,565,220	35,282,188	22·54	24,040,997
1957–58	1,834,842	32,134,257	17·51	22,064,910
1958–59	1,810,026	42,696,801	23·59	28,274,489

Farmers Growing Wheat for Grain

The following statement shows the number of farmers engaged in the growing of wheat for grain :—

VICTORIA—NUMBER OF HOLDINGS WITH TWENTY OR MORE ACRES OF WHEAT FOR GRAIN

1954–55	1955–56	1956–57	1957–58	1958–59
10,547	9,683	7,674	8,856	9,074

Varieties of Wheat

Free Gallipoli became the leading variety in Victoria in 1929–30, and continued as such until the season 1934–35, when it was superseded by Ghurka. This variety continued as the most popular until it was displaced by Quadrat at the 1946 sowing. Quadrat increased in favour until, in the season 1948–49, 47·20 per cent. of wheat sown was of that variety. Due to the rapid headway made by the varieties Insignia and Pinnacle, which were openly released from the Werribee Research Station in 1946 and 1947, the percentage of area sown with Quadrat declined to 6·58 in the 1958–59 season. The varieties Insignia and Pinnacle have increased in popularity and in 1958–59 they represented 47·3 and 22·7 per cent. respectively of the total area sown.

The following table shows the areas under the principal varieties of wheat, including wheat for hay, for the seasons 1956–57, 1957–58, and 1958–59. Varieties are tabulated in order of popularity for the last mentioned season.

VICTORIA—PRINCIPAL VARIETIES OF WHEAT SOWN

Variety (In Order of Popularity, Season 1958–59)	1956–57		1957–58		1958–59	
	Area Sown	Percentage of Total Area Sown	Area Sown	Percentage of Total Area Sown	Area Sown	Percentage of Total Area Sown
	acres		acres		acres	
Insignia	857,331	54·11	923,903	49·38	872,373	47·34
Pinnacle	309,042	19·50	437,067	23·36	418,237	22·70
Sherpa	128,396	8·10	169,021	9·03	163,889	8·89
Olympic	243	0·02	11,550	0·62	132,427	7·19
Quadrat	182,434	11·51	185,347	9·91	121,250	6·58
Insignia 49	16,340	1·03	40,018	2·14	51,097	2·77
Gabo	29,516	1·86	27,208	1·45	18,519	1·01
Baldmin	4,717	0·30	15,843	0·85	17,601	0·96
Magnet	17,572	1·11	18,321	0·98	10,009	0·54
Sabre	2,708	0·17	11,510	0·61	9,698	0·52
Bencubbin	13,994	0·88	9,280	0·50	5,135	0·28
Ghurka	3,196	0·20	3,502	0·19	3,624	0·20
Pindar	3,486	0·22	4,032	0·22	2,206	0·12
Dirk 48	192	0·01	1,642	0·09	1,468	0·08
Blue Stem	783	0·05	970	0·05	1,279	0·07
Scimitar	888	0·06	1,114	0·06	1,125	0·06
Kendee	2,298	0·14	702	0·04	1,006	0·05
All Other Varieties	11,416	0·73	9,877	0·52	11,667	0·64
Total	1,584,552	100·00	1,870,907	100·00	1,842,610	100·00

Wheat Growing in Conjunction with Livestock Grazed

A table showing the number of holdings in Victoria growing wheat for grain, together with sheep, dairy cattle, and pigs on them at 31st March, 1956, appears on page 471.

Oats

Oats may be cut for hay, stripped for grain or fed off to stock. The proportion of the oat crop used for each of the above purposes varies according to seasonal conditions. Oats as hay or grain form a very suitable fodder reserve on Mallee farms. For many years past, increasing areas of oats have been sown with the object of providing feed for sheep during the winter and early spring months. Some varieties of oats show high powers of recovery, particularly for a grain yield, after such grazing. More than 40 varieties are generally sown, but Algerian, with 48 per cent., Orient, with 26 per cent., Algeribee, and with 10 per cent., of the area predominate. The area harvested (season 1958–59) for hay was 261,853 acres, and for grain 970,688 acres, which produced 464,091 tons of hay, and a record 23,338,679 bushels of grain respectively. The area of oats sown for grazing purposes amounted to 174,430 acres. The following table shows the area, yield, and gross value of oats for grain for each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—OATS FOR GRAIN

Season	Area	Production	Yield per Acre	Gross Value
	acres	bushels	bushels	£
1954–55	644,444	10,020,742	15·55	4,415,390
1955–56	871,068	14,858,117	17·06	4,671,021
1956–57	612,587	9,555,123	15·60	3,314,831
1957–58	622,245	9,527,653	15·31	5,313,252
1958–59	970,688	23,338,679*	24·04	6,820,079

* Record Production.

Barley

The most important barley growing district is the south-western Mallee and the adjoining portion of the northern Wimmera, while the county of Grant in Central Victoria also contains an important barley growing area.

Barley is marketed through the Australian Barley Board, which was established under complementary legislation in Victoria and South Australia to provide an orderly marketing system for the barley produced in the two States.

Under the Board, a classification committee grades each grower's produce, from a sample collected after harvest, into one of four grades—malting, milling (or No. 3), feed (or No. 4), and poor feed (or No. 5). Payment is made to growers on the pool system, with a

substantial advance payable (less freight) on delivery, and subsequent payments or advances as the crop is sold by the Board. For two-row barley, a margin of 9d. a bushel is maintained between the three top grades, payment of which is included in the first advance. There is little demand for Cape or six-row barley, and payments for this class are heavily discounted.

Practically all of the malting grade barley is used in Australia, but most of the milling grade and a large proportion of the feed grades are exported to Europe and Japan.

The figures in the table below show the area, yield, and gross value of barley for each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—BARLEY PRODUCTION

Season	Area under Crop		Produce		Average per Acre			Gross Value
	Malting (2 row)	Other (6 row)	Malting (2 row)	Other (6 row)	Malting (2 row)	Other (6 row)	Total	
	acres	acres	bushels	bushels	bushels	bushels	bushels	£
1954–55 ..	261,206	19,389	4,608,546	337,174	17·64	17·39	17·63	3,154,897
1955–56 ..	290,716	18,395	6,487,849	389,012	22·32	21·15	22·25	3,459,243
1956–57 ..	325,004	20,278	7,164,492	384,648	22·04	18·97	21·86	3,837,587
1957–58 ..	334,076	17,668	5,201,308	245,683	15·57	13·91	15·49	3,280,191
1958–59 ..	343,484	19,387	8,174,172	406,627	23·80	20·97	23·65	4,165,464

Maize

Maize for grain is cultivated mainly in Gippsland, but one or two thousand acres are regularly grown in the Mornington and the North-Eastern Districts. It is grown in Victoria both for grain and for green fodder. The area, yield, and gross value of maize for each of the five seasons, 1954–55 to 1958–59, are given in the following table :—

VICTORIA—MAIZE PRODUCTION

Season	For Green Fodder	For Grain			
		Area	Production	Yield per Acre	Gross Value
	acres	acres	bushels	bushels	£
1954–55	10,673	4,379	228,781	52·25	177,032
1955–56	8,665	3,535	175,813	49·73	135,002
1956–57	6,429	2,727	80,798	29·63	66,930
1957–58	8,122	4,278	241,764	56·51	158,708
1958–59	7,619	3,881	203,366	52·40	136,876

Rye

The area under rye for grain in 1958–59 was 27,458 acres, of which 26,849 acres (97·8 per cent.) were in the Mallee. The following table shows the area, yield, and gross value of rye for each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—RYE PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	bushels	bushels	£
1954–55	21,880	141,363	6·46	88,352
1955–56	20,043	110,451	5·51	60,748
1956–57	19,419	129,729	6·68	94,054
1957–58	17,807	84,975	4·77	72,229
1958–59	27,458	226,320	8·24	114,104

Hay

Particulars of areas harvested and production of the several kinds of hay appear in the following table :—

VICTORIA—HAY PRODUCTION, 1958–59

Kind	Area	Production	Average Yield
	acres	tons	tons
Wheaten	32,584	55,073	1·69
Oaten	261,853	464,091	1·77
Lucerne	74,109	138,916	1·87
Barley, Rye, &c.	3,891	5,030	1·29
Grasses and Clovers	909,703	1,636,123	1·80
Total	1,282,140	2,299,233	1·79

The following table shows, in respect of each statistical district of the State, the quantity of ensilage made during the 1958–59 season, and the stocks of ensilage and hay held on rural holdings on the 31st March, 1959 :—

ENSILAGE MADE AND FARM STOCKS OF ENSILAGE AND HAY
(Tons)

District	Ensilage Made, 1958–59	Stocks at 31st March, 1959	
		Ensilage	Hay
Central	70,723	63,375	354,392
North-Central	7,843	7,767	142,846
Western	47,393	46,445	560,004
Wimmera	8,662	10,589	273,081
Mallee	10,880	14,080	87,785
Northern	21,299	25,850	465,705
North-Eastern	21,536	23,874	222,474
Gippsland	113,503	62,715	357,763
Total	301,839	254,695	2,464,050

Potatoes

Victoria is the chief potato producing State in the Commonwealth. Of a total area of 104,765 acres planted in Australia during 1958–59, 46,122 acres were planted in this State.

The cultivation of potatoes in Victoria is confined mainly to the Central Highlands, the south-western district and the Gippsland district. These areas are favoured with good average rainfall varying from 30 to 50 inches per annum, which is fairly well distributed throughout the year.

The following table shows the area, yield and value of potatoes for each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—POTATO PRODUCTION

Season	Area	Production *	Average Yield	Gross Value
	acres	tons	tons	£
1954–55	44,075	206,577	4·69	5,839,461
1955–56	37,020	163,239	4·41	12,485,900
1956–57	39,706	227,307	5·72	5,862,224
1957–58	49,846	251,159	5·04	3,325,916
1958–59	46,122	259,346	5·62	5,040,290

* Includes amounts held on farms for seed, stock feed, &c., as follows :—26,502 tons in 1954–55 ; 21,089 tons in 1955–56 ; 49,755 tons in 1956–57 ; 53,842 tons in 1957–58 ; and 42,345 tons in 1958–59.

Onions

The principal onion growing areas are in the Central and Western Districts. In the season 1958–59 these areas were responsible for 96 per cent. of the total onion production of the State. The following table shows the area, yield, and gross value for each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—ONION PRODUCTION

Season	Area	Production	Average Yield	Gross Value
	acres	tons	tons	£
1954–55	3,970	26,091	6·57	841,217
1955–56	3,337	16,955	5·08	940,270
1956–57	4,503	26,811	5·95	860,982
1957–58	5,368	40,678	7·58	637,581
1958–59	3,971	28,456	7·17	1,062,490

Linseed

Linseed oil is one of the chief components of paints, varnishes, and linoleum, and has many other industrial uses. The presscake or meal, which remains after the oil has been extracted from the ground and partly cooked seed, is a valuable stock food.

The area sown to linseed in Victoria for the season 1958–59 was 8,817 acres, which produced 11,779 bushels valued at £193,863 (gross). Figures for 1957–58 were 4,091 acres, 45,946 bushels and gross value £78,558.

Tobacco

The imposition of emergency tariff rates in 1931 greatly stimulated the growing of tobacco in Victoria and, as a result, the area planted increased in the 1932–33 season to 13,418 acres. However, because of economic circumstances and disease in the crops, the area planted subsequently declined to 919 acres in the 1949–50 season.

Since 1950–51, due to the maintenance of a satisfactory price level, combined with high average yields and a market which continues to absorb all the usable leaf produced, the acreage has steadily increased. The prime factor leading to the increased and more stabilized yield per acre is undoubtedly the reduced incidence of the fungous disease, blue mould, during the last three years. The introduction of adaptable high yielding and high quality varieties has also played a vital part in placing the industry on its present sound footing.

Research activities are financed from a trust fund to which State and Commonwealth Governments, growers, and manufacturers contribute. Problems associated with the industry are being investigated

at the Tobacco Research Station, Myrtleford, where research into plant pathology, genetics, and agronomy is being carried out. An active extension service ensures that growers are kept informed about research developments and provides technical advice on day-to-day problems.

The following table furnishes details of the area, yield, and gross value in each of the five seasons 1954–55 to 1958–59 :—

VICTORIA—TOBACCO PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	cwt. (dry)	cwt. (dry)	£
1954–55	2,471	7,751	3·14	466,806
1955–56	2,876	10,134	3·52	571,090
1956–57	2,935	24,470	8·34	1,376,489
1957–58	3,252	32,884	10·12	1,861,956
1958–59	4,248	43,617	10·27	2,763,525

Fruit

Fruit producing areas north of the Great Dividing Range have a rainfall which varies from 10 inches per annum in the Mallee to 20 inches per annum in the Goulburn Valley. All the fruit producing areas in this part of the State rely on irrigation. Distribution is mostly by gravity except for small areas of citrus under spray irrigation.

In the south of the State, where apples, pears, plums, cherries, dessert peaches, lemons, and berries are produced, rainfall varies from 20 inches to 40 inches per annum. Many orchards irrigate their properties with water from dams, rivers, or town supplies.

The largest area under a single horticultural crop is the vineyard area at Mildura, Swan Hill, and the War Service Land Settlement area at Robinvale.

About 80 per cent. of the dried-fruits production is normally exported, mainly to the United Kingdom. The pome fruits are next in importance, most of the apples being sold locally or interstate, while most of the pear production is exported to the United Kingdom.

Peaches, pears, and apricots for canning are produced in the Goulburn Valley, where large co-operative canneries are also located.

The principal fruits grown in the State are apples, pears, peaches, and citrus. The apple and pear crops for the season 1958–59 amounted to 2,969,521 and 3,279,535 bushels respectively.

A considerable quantity of apricots, peaches, and pears is grown, mostly in irrigated areas for canning purposes. The total output of 3,155,000 cartons* of canned fruits for the 1959 season comprised

*Basic export carton containing 24 cases of No. 2½ can size.

apricots, 144,000 cartons ; peaches (including 149,000 cartons of mixed fruits), 1,182,000 cartons ; and pears, 1,829,000 cartons. This output represented 72 per cent. of the total Australian pack of these fruits. In addition to the fruits shown in the following table, large quantities of melons, rhubarb and tomatoes are produced in orchards. The gross value of all fruit grown in the season 1958–59 was £10,328,486.

VICTORIA—FRUIT GROWING

Particulars		1954–55	1955–56	1956–57	1957–58	1958–59
Number of Growers		5,041	4,891	4,936	5,044	5,065
Area	acres	66,091	65,214	63,319	66,221	66,746
Kind of Fruit—						
Apples	bushels	2,580,148	2,648,892	2,621,487	3,125,088	2,969,521
Pears	„	3,331,360	2,742,863	3,432,090	3,730,427	3,279,535
Quinces	„	23,335	21,048	39,073	39,941	31,431
Apricots	„	519,762	235,933	274,780	692,139	291,547
Cherries	„	62,342	76,599	86,706	74,387	97,872
Nectarines	„	20,366	18,340	15,289	19,875	18,770
Peaches	„	1,549,029	1,162,447	878,560	1,287,011	1,033,712
Plums	„	127,561	148,910	104,280	157,332	139,579
Prunes	„	17,249	16,894	25,574	28,878	20,540
Lemons	„	171,825	219,348	159,153	159,085	162,616
Oranges	„	650,795	770,503	711,453	796,625	830,115
Mandarins	„	13,617	17,032	14,275	15,773	24,180
Grapefruit	„	55,179	56,421	53,917	55,900	66,894
Figs	„	4,719	4,147	6,053	4,414	4,660
Passion-fruit	„	7,548	6,772	5,026	5,609	4,800
Other Large Fruits	„	9,941	7,849	8,181	12,510	12,281
Gooseberries	cwt.	1,260	1,114	1,382	1,250	953
Loganberries	„	2,667	2,201	1,667	2,262	2,458
Raspberries	„	2,109	2,148	1,733	2,150	2,486
Strawberries	„	4,029	4,710	6,694	8,211	7,739
Youngberries	„	(*a*)	(*a*)	1,342	1,823	3,383
Almonds	lb.	164,886	87,650	85,919	121,937	92,838
Filberts	„	5,837	6,271	7,283	7,827	6,615
Walnuts	„	65,610	97,708	159,743	137,544	139,660

(*a*) Not collected.

The production of the various kinds of dried tree-fruits for each of the last five seasons is shown in the following table. Particulars in respect of dried vine-fruits appear on page 492.

VICTORIA—DRIED TREE-FRUITS
(lb.)

Year Ended 30th June—	Apples	Apricots	Figs	Nectarines	Peaches	Pears	Prunes	Total
1955 ..	42	75,807	1,122	50	23,856	45,824	325,601	472,302
1956 ..	27	22,682	1,970	25	21,228	4,015	257,341	307,288
1957 ..	100	12,499	2,805	40	272	4,481	330,762	350,959
1958 ..	37	24,841	3,365	284	2,105	744	401,108	432,484
1959 ..	574	72,807	*	600	5,122	6,824	355,072	440,999

* Not available for publication.

Orchards

The extent of cultivation of each important class of fruit and nuts on holdings of 1 acre and upwards during the seasons 1955–56 and 1958–59 is shown in the following table :—

VICTORIA—FRUIT TREES, PLANTS, ETC., IN ORCHARDS AND GARDENS

Fruit and Nuts	Number of Trees, Plants, &c.					
	1955–56			1958–59		
	Bearing	Not Bearing	Total	Bearing	Not Bearing	Total
Apples	1,529,208	420,365	1,949,573	1,498,638	511,163	2,009,801
Pears	1,100,880	236,531	1,337,411	1,124,220	376,722	1,500,942
Quinces	25,655	3,709	29,364	21,402	922	22,324
Plums	171,634	31,463	203,097	146,136	38,127	184,263
Prunes	29,046	9,302	38,348	25,332	6,385	31,717
Cherries	121,477	56,480	177,957	117,292	48,813	166,105
Peaches	835,511	189,500	1,025,011	540,124	607,039	1,147,163
Apricots	376,994	73,458	450,452	312,979	89,970	402,949
Nectarines	20,097	3,874	23,971	18,103	5,296	23,399
Oranges	370,595	77,325	447,920	372,550	86,824	459,374
Mandarins	6,140	5,604	11,744	9,252	9,676	18,928
Grapefruit	22,386	2,979	25,365	22,917	1,541	24,458
Lemons	106,644	25,608	132,252	89,869	14,704	104,573
Figs	5,506	716	6,222	5,840	983	6,823
Raspberries	209,451	46,010	255,461	248,770	60,001	308,771
Loganberries	108,403	10,675	119,078	138,129	19,001	157,130
Strawberries	4,507,904	603,608	5,111,512	6,972,270	405,759	7,378,029
Gooseberries	45,302	6,646	51,948	51,762	8,480	60,242
Youngberries	*	*	*	127,304	21,600	148,904
Olives	17,191	100,952	118,143	60,351	56,568	116,919
Passion-fruit	22,803	6,718	29,521	15,950	8,085	24,035
Almonds	34,781	9,211	43,992	26,496	4,576	31,072
Walnuts	7,702	2,799	10,501	6,549	2,094	8,643
Filberts	3,511	1,388	4,899	3,725	458	4,183

* Not collected.

The distribution of the fruit industry over the State is set out in the following table, where the number of growers, the area under fruit and the number of trees of each kind in each statistical district are given for the season 1958–59 :—

VICTORIA—NUMBER OF FRUIT GROWERS, AREA UNDER FRUIT AND NUMBER OF FRUIT TREES, PLANTS, ETC.: SEASON 1958–59

Particulars		Statistical District								
		Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	Total
Growers	No.	2,031	172	125	150	1,238	1,057	201	91	5,065
Area	acres	24,116	2,483	683	4,153	6,272	27,131	1,538	370	66,746
Apples	trees	1,445,277	185,390	57,446	18,637	12,546	187,477	73,030	29,998	2,009,801
Pears	,,	277,673	60,727	1,533	9,407	3,284	1,145,284	1,064	1,970	1,500,942
Peaches	,,	221,768	2,382	402	19,334	21,886	877,965	2,165	1,261	1,147,163
Apricots	,,	73,072	760	1,354	19,967	51,286	254,741	983	786	402,949
Plums	,,	93,477	6,203	1,184	3,649	12,346	63,024	3,456	924	184,263
Prunes	,,	507	8	936	11,459	7,513	11,207	51	36	31,717
Cherries	,,	138,786	3,581	57	4,614	259	10,442	7,799	567	166,105
Quinces	,,	11,260	639	181	1,490	752	7,786	140	76	22,324
Nectarines	,,	16,125	23	85	444	3,286	2,742	449	245	23,399
Figs	,,	1,539	16	37	65	648	3,816	637	65	6,823
Olives	,,	294	..	1	95,000	19,997	1,524	92	11	116,919
Oranges	,,	443	5	75	161	321,492	133,343	3,704	151	459,374
Mandarins	,,	13	..	..	6	16,398	2,441	64	6	18,928
Grapefruit	,,	325	..	5	22	16,961	6,974	161	10	24,458
Lemons	,,	76,413	81	14	250	8,796	17,959	959	101	104,573
Passion Fruit	vines	5,220	4	111	6	1,148	5,645	11,331	570	24,035
Strawberries	plants	7,327,292	100	..	..	25,630	21,252	3,755	..	7,378,029
Raspberries	bushes	306,201	1,020	..	..	..	750	..	..	307,971
Loganberries	,,	157,127	3	..	..	..	..	..	..	157,130
Gooseberries	,,	58,431	1,507	4	..	..	..	..	300	60,242
Youngberries	,,	148,901	1	..	..	2	..	..	..	148,904
Almonds	trees	562	62	34	715	16,827	7,598	5,208	66	31,072
Walnuts	,,	561	46	21	180	593	197	6,480	565	8,643
Filberts	,,	307	..	1	..	499	1	3,362	13	4,183

Vine Production

Of the total quantity of grapes gathered in 1958–59, it is estimated that 248,061 cwt. were used for making wine and spirits, 4,659,249 cwt. for raisins and currants, and 133,774 cwt. for table consumption. The figures for 1957–58 were 267,755 cwt., 4,765,960 cwt. and 154,431 cwt. respectively.

The production of dried vine-fruits for the season 1958–59 amounted to 57,483 tons, as compared with a production of 60,896 tons for the previous season. This far exceeds the requirements for home consumption. Oversea exports of Victorian produce for the season 1958–59 amounted to 43,960 tons.

Australian production of dried vine-fruits for the season 1958–59 was 87,256 tons, of which the Victorian portion represented 66 per cent.

Particulars of vine production for the five seasons 1954–55 to 1958–59 are given in the following table :—

VICTORIA—VINE-FRUIT PRODUCTION

Season	Number of Growers	Area		Produce				
		Bearing	Not Bearing	Grapes Gathered	Wine Made	Dried Fruits		
						Raisins		Currants
						Lexias	Sultanas	
		acres	acres	cwt.	gallons	cwt.	cwt.	cwt.
1954–55 ..	2,436	42,929	2,828	4,589,449	1,611,923	111,237	876,105	93,509
1955–56 ..	2,474	42,295	2,522	3,087,445	1,311,797	57,933	530,414	102,992
1956–57 ..	2,428	41,741	3,153	4,701,612	2,369,176	81,875	919,825	79,070
1957–58 ..	2,467	42,089	2,678	5,188,146	2,582,492	122,628	1,012,220	83,063
1958–59 ..	2,494	42,482	2,319	5,041,084	2,354,076	116,252	937,878	95,517

Vegetables

The climate of Victoria is such that practically every kind of vegetable can be grown in the appropriate parts of the State during the favourable seasons. Consequently, there is a plentiful supply of fresh vegetables on the market for the whole year.

The larger portion of the production is carried out in the southern half of the State. This covers large areas which are fairly frost free and which also have a well distributed rainfall of from 20 to 35 inches.

Soils on which vegetables are grown in southern Victoria are sands, sandy loams, clay loams, peat, alluvial flats, and volcanic types. In general, most of the soils require applications of 5 to 12 cwt. of fertilizers per acre for each crop.

Near Melbourne, market-garden production is a specialized industry. Suitable soils include the sand or sandy loams in Cheltenham, Burwood, Mulgrave, Keysborough, Dandenong and Cranbourne districts. These soils require large amounts of manures and fertilizers, and because they are workable during the winter and also are suitable for spray irrigation in the summer, it is possible to grow two crops on the same plot each year. Every vegetable, except those requiring hot conditions, can be grown in these areas. It is common to see large areas of lettuces, carrots, beetroot, silver beet, herbs, celery, parsnips, salad onions, cabbages, cauliflowers, and cucurbits. Cabbage, brussels sprouts, and cauliflower crops are also grown on heavier clay loam soils in the foothills of the Dandenong Ranges.

The outlet for vegetables from these districts is the Melbourne market, where growers sell their own produce to retailers. Large quantities of vegetables from the Melbourne market are sent to provincial cities. Special crops for canning and freezing are grown east of Melbourne and south of Geelong. Asparagus, peas, green beans, and sweet corn are the main crops grown for this purpose.

The northern portion of the State is warm in summer, but more subject to frost in winter. It contains many areas which are ideal for growing early spring crops and is the home of tomato production, particularly for processing.

In this warmer climate, vegetables can be planted earlier and mature earlier than in most of the southern districts. The soils of the north are sands, sandy loams and clay loams, the majority being reddish sandy loam.

Prior to the season 1942–43, statistics relating to vegetable growing were collected only from those market gardeners who cropped an area of 1 acre or more. Only the surface area employed for vegetable growing was tabulated and, as a consequence, due to double cropping, the actual area utilized was understated. Furthermore, vegetables grown between trees and vines in orchards and vineyards were not recorded.

From the season 1942–43, however, particulars were obtained of all vegetables grown on areas of 1 acre and upwards, including those grown in orchards and vineyards, and allowance was made for double cropping. These changes in practice therefore invalidate any comparison with previous years.

Details of the area, production, and gross value of vegetables are given in the table below for all the more important types, except potatoes and onions which are shown under separate headings on pages 486–487 :—

VICTORIA—VEGETABLES FOR HUMAN CONSUMPTION, 1958–59

Type	Area Sown	Production	Gross Value
	acres	tons	£'000
Carrots	1,680	19,854	1,074
Parsnips	763	7,674	553
Beetroot	630	6,259	407
Tomatoes	4,675	54,947	1,700
French Beans	2,659	3,941	399
Green Peas (Sold in Pod)	7,986	9,669	835
,, ,, (Canning)	2,876	3,049	119
Cabbages	2,037	25,630	507
Cauliflowers	3,469	46,410	1,149
Brussels Sprouts	826	2,877	351
Lettuce	2,563	8,261	682
Pumpkins	2,021	11,914	281
Other Vegetables	3,517	14,450	813
Total	35,702	214,935	8,870

Minor Crops

There are other crops cultivated in Victoria in addition to those enumerated on page 476. The most important of these are :—Nursery products, cut flowers, mustard, sunflowers, agricultural seeds, and hops.

Pastoral and Dairying

Progress of Stock Breeding in Victoria

The first great development in Victoria, or as it was then known, the district of Port Phillip, was the pastoral interest. Millions of acres of lightly timbered land lay at the feet of the newcomers, and the readiest way to wealth was evidently by the division of the land into runs and the depasturing of sheep and cattle. Settlers and stock, at first from Tasmania and eventually from New South Wales, came from the very first year of discovery.

According to early statistical records, there were 26,000 sheep, 100 cattle and 57 horses in the colony on the 25th May, 1836. On the 1st January, 1841, as a result of five years of livestock importation and breeding, there were 782,283 sheep, 50,837 cattle and 2,372 horses. By 1st January, 1851, the livestock population had increased to 6,032,783 sheep, 378,806 cattle, 21,219 horses and 9,260 pigs.

The following table shows the number of livestock in Victoria at decennial intervals since 1861 and for each of the eight years 1952 to 1959 :—

VICTORIA—LIVESTOCK

Year	Horses (Including Foals)	Cattle (*a*)		Sheep	Pigs
		Dairy	Beef		
1861 at 1st March	76,536	722,332		5,780,896	61,259
1871 ,, ,,	167,220	721,096		10,761,887	130,946
1881 ,, ,,	275,516	1,286,267		10,360,285	241,936
1891 ,, ,,	436,469	1,782,881		12,692,843	282,457
1901 ,, ,,	392,237	1,602,384		10,841,790	350,370
1911 ,, ,,	472,080	1,547,569		12,882,665	333,281
1921 ,, ,,	487,503	1,575,159		12,171,084	175,275
1931 ,, ,,	379,872	1,429,920		16,477,995	281,245
1941 ,, ,,	318,441	1,922,336		20,412,362	397,945
1951 at 31st March	186,415	1,489,393	726,860	20,011,933	237,127
1955 ,, ,,	132,172	1,599,721	856,582	22,329,515	263,666
1956 ,, ,,	118,705	1,662,548	954,039	23,343,212	227,223
1957 ,, ,,	107,859	1,720,564	1,044,485	25,830,544	258,336
1958 ,, ,,	98,067	1,723,845	1,025,766	27,090,469	278,628
1959 ,, ,,	91,452	1,653,493	997,529	26,925,365	253,125

(*a*) Separate figures for beef and dairy cattle are not available for years prior to 1942–43.

A table showing the sizes of holdings and the numbers of livestock on them at March, 1956, appears on page 471.

The following table contains particulars of livestock in each statistical district of the State at 31st March, 1959 :—

VICTORIA—DISTRIBUTION OF LIVESTOCK, 1959

Livestock	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Horses ..	27,867	4,867	18,012	5,075	3,659	12,346	8,654	10,972	91,452
Dairy Cattle—									
Cows-									
Milking	148,619	18,315	165,869	12,200	13,503	157,919	64,034	255,915	836,374
Dry ..	47,407	7,780	91,955	8,253	4,870	27,330	32,617	45,312	265,524
Springing Heifers ..	14,384	2,495	25,067	2,368	1,741	17,807	16,245	22,257	102,364
Other Heifers for Dairying ..	34,857	6,312	50,560	3,814	3,312	37,004	15,857	52,296	204,012
Calves under 1 Year ..	28,587	6,139	41,996	5,977	4,581	42,048	19,422	55,162	203,912
Bulls 1 Year and Over	6,748	1,166	9,960	1,501	998	7,396	3,368	10,170	41,307
Total Dairy Cattle ..	280,602	42,207	385,407	34,113	29,005	289,504	151,543	441,112	1,653,493
Beef Cattle—									
Cows ..	65,288	26,148	141,937	11,304	6,294	40,353	82,928	75,706	449,958
Calves under 1 Year ..	32,893	15,950	79,406	8,518	4,701	30,699	51,209	49,923	273,299
Bulls 1 Year and Over	2,951	1,170	6,128	681	338	2,072	3,333	3,207	19,880
Other ..	34,619	16,679	60,641	5,922	4,200	27,798	52,374	52,159	254,392
Total Beef Cattle	135,751	59,947	288,112	26,425	15,533	100,922	189,844	180,995	997,529
Total All Cattle	416,353	102,154	673,519	60,538	44,538	390,426	341,387	622,107	2,651,022
Pigs ..	52,630	7,289	27,088	7,274	11,044	70,663	27,324	49,813	253,125
Sheep—									
Sheep ..	2,015,988	1,661,321	7,099,999	3,432,751	1,353,609	3,313,512	1,562,704	1,246,362	21,686,246
Lambs ..	481,125	342,928	1,746,814	751,083	349,601	855,171	363,415	348,982	5,239,119
Total Sheep and Lambs	2,497,113	2,004,249	8,846,813	4,183,834	1,703,210	4,168,683	1,926,119	1,595,344	26,925,365

Dairying Industry

Though faced with the long-term prospect of expanding local markets, both for liquid milk and for dairy products, as the population of this country increases, the Australian dairying industry at present experiences varying fortunes according to the demand in oversea markets and the supply from other countries. In Victoria, however, the demand for good dairying land remains keen.

There is some tendency to sustain competitive land prices by increasing the output of milk or butterfat. Until the middle of the 1930's, 30-cow hand-milked herds were common, and three milkers were usually needed to milk a herd of this size. In the next

decade the introduction of milking machines made it possible for two people to milk 30 to 40 cows. In the late 1940's, dairy farmers in large numbers gave up hand-stripping after machines, and one man could then comfortably milk 40 to 45 cows. Doubling up of machine units also made the task easier. In the past three years the introduction of the herringbone-type milking shed has made it possible for one man to milk up to 60 cows and for two men to milk 80 or more.

Pasture improvement has been the basis of the increased carrying capacity of many farms. In some places potash fertilizers and trace elements have played their part; in others the use of more superphosphate and better management and grazing of the pastures have sufficed.

With this stepping up of production has come a greater need to produce or conserve feed to be used at times when pasture production is slack. This is especially true on farms which supply market milk, as they must fulfil a contract every day of the year. Silage making on dairy farms has increased eightfold in recent years, and is still being taken up by more farmers. More crops are grown to fill the summer and winter feed gaps, and some have resorted to water harvesting and spray irrigation to provide green pasture in summer.

Light tractors with hydraulic three-point linkage have brought with them the tendency to rely on machinery in preference to employing labour.

Advisory services given to dairy farmers by the Department of Agriculture through dairy supervisors, the bi-monthly "Dairyfarming Digest", and other media, have made them more conscious of their need to give thought to every side of farm management. More cows are under test than ever before in Victoria. Many artificial breeding groups have been formed, and a co-operative society formed to conduct the bull centre has been freely supported. There has been increased interest in milking methods, milking machine efficiency, and in the use of new and improved dairy detergents.

Refrigeration of milk on the farm and its collection from bulk vats by road tanker have been proved practicable in some districts, and these practices are now being adopted in other areas.

Local markets are changing. More and more country towns are being provided with supplies of pasteurized bottled milk, and the Milk Board has added the Latrobe Valley and Goulburn Valley to the area under its jurisdiction. In manufacturing, the trend is towards large versatile factories equipped to change from one type of product to another, according to market prospects. There is a growing local market for various types of cheeses hitherto little known in this country, and cheddar cheese is now exported in blocks wrapped in plastic film. These have several advantages over the traditional cylindrical bandaged cheeses.

The industry levy to establish a fund for research and promotion should benefit the dairying industry greatly in the coming years.

Victoria is the principal milk producing State, and in 1958–59 the Victorian output (582·9 million gallons) represented 42·5 per cent. of the Australian production.

The following table shows the numbers of cow-keepers and cows, the estimated total production of milk and the gross value of dairy produce for each of the last five years :—

VICTORIA—DAIRYING

At 31st March—	Number of Cow-keepers	Number of Dairy Cows*	Estimated Total Production of Milk for All Purposes (Year Ended 30th June)	Gross Value of Dairy Produce†
			'000 gall.	£'000
1955	50,111	1,116,546	536,835	62,001
1956	49,693	1,171,593	577,475	70,094
1957	49,153	1,220,330	587,199	66,330
1958	48,451	1,235,034	565,439	65,431
1959	‡	1,204,262	582,948	65,264

* Includes cows (in milk and dry) and springing heifers.
† Includes subsidy.
‡ Not available.

The quantities of butter, cheese, condensed and powdered full-cream milk and casein produced during the last five years were as follows :—

VICTORIA—BUTTER, CHEESE, CONDENSED AND POWDERED MILK, AND CASEIN MADE
('000 lb.)

Year Ended 30th June—	Butter*	Cheese*	Condensed Milk	Powdered Full-Cream Milk	Casein
1955	179,608	45,476	78,652	24,870	13,852
1956	204,632	31,383	90,766	24,859	19,128
1957	200,080	46,068	100,178	24,476	16,345
1958	194,596	33,294	96,810	24,854	22,421
1959	198,650	39,140	87,287	24,481	23,348

* Including that made on farms.

The following table shows the number of dairy herds in Victoria, grouped, according to size, for each of the four years 1955–58 :—

VICTORIA—DAIRY HERDS, CONTAINING FIVE COWS OR MORE, GROUPED ACCORDING TO SIZE

At 31st March—	Number of Herds—							
	5 to 9 Cows	10 to 14 Cows	15 to 19 Cows	20 to 29 Cows	30 to 49 Cows	50 to 99 Cows	100 Cows and Over	Total
1955.. ..	6,234	2,897	2,003	3,562	6,924	7,049	1,013	29,682
1956.. ..	6,077	2,817	1,928	3,466	6,892	7,528	1,213	29,921
1957.. ..	6,183	2,916	1,953	3,448	6,893	8,042	1,310	30,745
1958 ..	5,889	2,801	1,860	3,215	6,402	8,406	1,464	30,037

The numbers of farmers with less than five cows were :—20,429 in 1955, 19,772 in 1956, 18,408 in 1957 and 18,414 in 1958. These numbers were excluded from the above table as the groups were considered too small to be classed as dairy herds.

Eradication of Tuberculosis

Tuberculosis has been present in dairy cattle in Victoria since the dairy industry was first established. As long ago as 1884, it was recognized that the disease was a serious cause of loss to the cattle industry as well as being a likely source of spread of infection to the human population of the State.

Under the Milk and Dairy Supervision Act which was introduced in 1905, inspectors were empowered to take action where cattle were found suffering from this disease and in 1924 a Compensation Fund was established through which owners of cattle which had been destroyed because of tuberculosis could be compensated for their loss. Regular inspection of herds and slaughter of cattle infected by tuberculosis, combined with tuberculin testing of herds, was carried out by the veterinary staff of the Department and considerably reduced the incidence of this disease in Victorian dairy herds.

Following the lead of progressive dairying countries such as Denmark and the United States of America, action was taken in 1937 to step up the amount of tuberculin testing being carried out in Victoria and all cattle supplying milk to the Metropolitan Area of Melbourne were thus tested. This did not of itself lead to the eradication of tuberculosis from any particular area, but it reduced considerably the number of infected herds in the State.

Meanwhile, in the United Kingdom, a tuberculosis eradication programme on an area basis had been developed and great progress was being made. In 1958, an area eradication plan based on that of

the United Kingdom was put into effect in this State. Under this plan, all the dairy cattle in two proclaimed areas in Victoria will be subjected to tuberculin tests over a period of six years. At the end of that time it is expected that the disease will have been eradicated from the cattle in those areas and it will then be possible to proceed with testing in adjoining areas.

The actual testing is being carried out by veterinary practitioners resident in the areas and the cost of this testing is being borne by the Government. Before testing commenced in these areas, it was estimated that 1 per cent. of the cattle would give a positive reaction. To date, 3,007 herds with 165,000 cattle have been tested with a reactor rate of 0·7 per cent., which is a little below the estimated figure. As well as paying for the cost of testing, the Government makes a contribution of 40 per cent. of the compensation payable to the owners of cattle which are slaughtered because of tuberculosis. At the present time the annual cost to the State of the testing actually carried out is £10,500 and the contribution to the Compensation Fund for all cases of tuberculosis of cattle is £53,000.

Pigs

The number of pigs in Victoria at 31st March, 1959, was 253,125. About 68 per cent. of these are held in the Central, Western, Northern, and Gippsland districts which are so largely devoted to dairying. The following table shows classifications (in statistical districts) of pigs, together with the numbers of pig-keepers :—

VICTORIA—PIGS AND PIG-KEEPERS, 31ST MARCH, 1959

Statistical District	Boars	Breeding Sows	All Other	Total Pigs	Pig Owners
Central	1,045	7,019	44,566	52,630	1,528
North–Central ..	240	1,247	5,802	7,289	503
Western	729	3,983	22,376	27,088	1,360
Wimmera	235	1,143	5,896	7,274	839
Mallee	329	1,700	9,015	11,044	823
Northern	1,645	10,767	58,251	70,663	2,271
North–Eastern ..	886	4,371	22,067	27,324	1,254
Gippsland	1,432	7,828	40,553	49,813	1,967
Total ..	6,541	38,058	208,526	253,125	10,545*

* Of this number 2,951 had herds of under 5 pigs, 1,563 herds of 5 and under 10, 2,132 herds of 10 and under 20, and 3,899 herds of 20 pigs and over.

The following tabulation shows the number of dairy herds (in size groups) separated into those where pigs are held, and those where no pigs are held. The sizes of pig herds are also shown :—

VICTORIA—PIG-KEEPING IN CONJUNCTION WITH DAIRYING : NUMBER OF HOLDINGS AT MARCH, 1956

Size of Dairy Cattle Herd (Numbers)	Size of Pig Herd (Numbers)								Holdings with Pigs	Holdings with No Pigs	Holdings with Dairy Cattle
	1–4	5–9	10–14	15–19	20–29	30–49	50–99	100 and Over			
1–4 ..	529	76	54	34	26	40	30	26	815	14,111	14,926
5–9 ..	573	100	77	23	43	27	20	18	881	6,576	7,457
10–14 ..	349	112	49	27	40	20	9	13	619	2,934	3,553
15–19 ..	222	86	58	15	30	17	11	2	441	1,735	2,176
20–29 ..	363	198	110	62	57	29	16	7	842	2,523	3,365
30–49 ..	473	416	314	196	232	109	39	3	1,782	3,792	5,574
50–99 ..	357	529	580	430	723	617	208	36	3,480	6,541	10,021
100 and Over ..	53	85	110	108	225	367	249	58	1,255	2,176	3,431
Total ..	2,919	1,602	1,352	895	1,376	1,226	582	163	10,115	40,388	50,503

Sheep Industry

The world renowned Merino is the most common sheep breed in Victoria. In 1959, the sheep population of this State comprised Merinos 42·4 per cent., Corriedales 13·5 per cent., Polwarths 4·4 per cent., Comebacks 12·7 per cent., Crossbreds 22·2 per cent., and British breeds consisting mainly of Border Leicesters, Dorset Horns, Romneys, and Southdowns 4·8 per cent.

The Merino is the main wool producing breed and it also plays an important role in the breeding of Comeback and Crossbred sheep. These are produced mainly by crossing the Merinos with Corriedales, Polwarths, and Border Leicesters.

The pure British breeds are mostly run in small stud flocks which produce rams for cross breeding in fat lamb production.

The two main sheep enterprises are wool production and fat lamb production.

Wool is produced mainly in the Western and Southern Wimmera districts where both rainfall and topography are ideal for the development of improved pastures. The majority of these flocks breed their own replacements and consist of about one-third breeding ewes and two-thirds wethers which are the best wool producing sheep.

Nearly half of Victoria's total wool production comes from these two areas and the wools are much sought after by oversea buyers because of their high yield, good colour, soft handling, and freedom from dust and seed.

On the other hand, most of the fat lambs are produced in the Wimmera, Mallee, and Northern districts where fat lamb production has become complementary to cereal production. These lambs are produced mainly from strong crossbred ewes which graze on clover and medic pastures—an important part of the clover ley system of crop rotation. The lambs are usually dropped in the autumn and fattened on the late winter and early spring crop feed. The majority are cashed from August to November. Wool from these areas is poor in quality and contains more seed and vegetable fault than that produced in the higher rainfall districts.

Fat lamb production is also carried on in the South Western, Central and Gippsland districts, where rainfall and country favour the development of highly improved pastures which carry well into the summer.

These lambs are usually dropped later than in the cereal growing districts and after fattening on spring and summer pastures the majority are cashed in local markets from November to April.

The wools produced in these areas are mainly fine and strong crossbred types, which have good style and no dust or vegetable fault.

A description of the types and qualities of wool in the wool growing districts of the State appears on pages 506 to 508.

The numbers of sheep in Victoria in various years since 1861 are shown in the table on page 494. The distribution of all live stock is shown in tables on page 495.

Factors such as seasonal conditions, prices of wool, mutton, and lamb and, to a less degree, wheat, affect the number of sheep in the State in any given year. In an adverse season flocks may be reduced by mortality due to lack of fodder or water, by the increase in the slaughtering of fat stock or by the decrease in lambing. Decreased imports from other States is another factor. In addition to the seasonal movements of sheep from New South Wales and South Australia for agistment, there is a regular importation of sheep from those States for slaughtering purposes.

Lambing

Climatic conditions also play a large part in determining the proportion of lambs dropped to ewes mated, and thus the natural increase from season to season may vary considerably. The following table shows the numbers of ewes mated or intended to be mated and lambs dropped, in each of the five years 1955 to 1959 :—

VICTORIA—LAMBING

Season	Ewes Intended for Mating	Ewes Actually Mated	Lambs Marked	Proportion of Lambs Marked to Ewes Mated*
	No.	No.	No.	%
1955	9,284,708	†	7,807,465	84
1956	9,984,202	†	8,670,251	87
1957	11,203,761	†	9,496,322	85
1958	10,794,387	10,173,330	8,455,109	83
1959	11,402,885	11,232,355	9,357,388	83

* Prior to 1958 this proportion was based on farmers intentions at the beginning of the season.

† Not collected.

Sheep and Lambs in Statistical Districts

The following table sets out the numbers of rams, ewes, wethers and lambs depastured in each Statistical District of the State at 31st March, 1959, and the numbers of ewes mated classified according to whether the progeny is intended for wool or for fat lamb production :—

VICTORIA—RAMS, EWES, ETC., IN EACH STATISTICAL DISTRICT AT 31ST MARCH, 1959

Particulars	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Rams ..	30,822	21,528	105,219	45,275	22,309	59,287	24,568	17,298	326,306
Breeding Ewes*	1,111,939	836,756	3,567,597	1,742,535	1,042,101	2,351,363	979,923	700,416	12,332,630
Other Ewes ..	112,017	65,415	562,955	194,272	28,472	82,674	57,031	58,738	1,161,574
Wethers ..	761,210	737,622	2,864,228	1,450,669	260,727	820,188	501,182	469,910	7,865,736
Lambs ..	481,125	342,928	1,746,814	751,083	349,601	855,171	363,415	348,982	5,239,119
Total Sheep and Lambs	2,497,113	2,004,249	8,846,813	4,183,834	1,703,210	4,168,683	1,926,119	1,595,344	26,925,365

* Includes breeding ewes not mated (929,745 at 31st March, 1959).

VICTORIA—LAMBING, 1958 SEASON, AND ACTUAL OR INTENDED MATINGS, 1959 SEASON

Particulars	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Lambing 1958 Season									
Ewes Mated	923,912	682,115	2,904,627	1,344,175	879,599	1,994,753	848,619	595,530	10,173,330
Lambs Marked	820,433	562,355	2,277,170	1055,375	719,145	1,741,920	741,061	537,650	8,455,109
Actual or Intended Matings 1959 Season									
To Merino Rams	154,894	268,715	1,436,427	889,885	163,011	327,303	193,353	176,270	3,609,858
To Corriedale or Polwarth Rams ..	210,725	111.548	898,702	218,936	111,711	231,437	126,265	82,875	1,992,199
To Rams of Shortwool Breeds ..	564,745	289,959	480,570	237,702	388,127	1,129,881	419,149	284,097	3,794,230
To Rams of Longwool Breeds ..	112,602	114,354	320,550	213,010	364,993	590,061	188,446	102,582	2,006,598

Breeds of Sheep at March, 1959

The method of collecting particulars of breeds was changed considerably in 1950 and, apart from Merinos, all comparison with breeds of previous years is nullified. Merino Comebacks were previously collected as a whole, irrespective of whether they were fine or coarse. The 1950 collection made provision for segregating those "finer than half-bred", while those not up to that standard were included with other crossbreds.

Similarly, it cannot be determined if any increase in the numbers of other Pure Breeds (British and Australasian) has occurred as another very important change in method was the substitution of the category "Other *Recognized Breeds*" in place of the former category "Other *Pure Breeds*". Other Pure Breeds in 1947 numbered 1,407,349, whereas in 1953 Other Recognized Breeds numbered 5,220,326. Crossbreds, which numbered 6,923,603 in 1947, dropped to 5,625,483 in 1953 notwithstanding the inclusion of half-bred and coarser Merino Comebacks.

Australasian breeds are the Polwarth and the Corriedale. The Polwarth is a Merino–Lincoln cross (approximately three-quarters Merino and one-quarter Lincoln). It was evolved to meet the conditions of light wool-growing localities found to be too wet and cold for the pure Merino. The Corriedale was evolved by heavily culling the progeny of Lincoln rams and Merino ewes and by judicious mating over several years. The Corriedale is a dual purpose sheep, being favoured by many breeders both for lamb raising and for wool production.

The following table shows the breeds of sheep in Victoria (by districts) at the 31st March, 1959 :—

VICTORIA—BREEDS OF SHEEP, 31ST MARCH, 1959

Statistical District	Merino	Other Recognized Breeds	Merino Comeback (Finer than Half-bred)	Crossbred (Including Half-bred and Coarser Comebacks)	Total
Central	527,060	787,476	305,615	876,972	2,497,123
North-Central ..	920,473	389,861	257,768	436,147	2,004,249
Western	4,129,790	2,746,618	1,157,778	813,232	8,847,418
Wimmera	3,052,149	504,546	211,513	415,626	4,183,834
Mallee	635,554	238,424	292,747	536,485	1,703,210
Northern	1,124,224	791,957	574,742	1,677,955	4,168,878
North-Eastern ..	524,106	391,814	311,321	698,068	1,925,309
Gippsland	496,013	267,926	310,977	520,428	1,595,344
Total ..	11,409,369	6,118,622	3,422,461	5,974,913	26,925,365

VICTORIA—BREEDS OF RAMS, 31ST MARCH, 1959

Statistical District	Merino	Corrie-dale	Pol-warth	Border Leicester	Dorset Horn	South-down	Other
Central ..	4,509	4,697	1,819	1,478	9,205	4,540	4,574
North-Central ..	7,603	2,895	563	1,887	4,343	2,266	1,971
Western ..	53,454	18,389	11,073	1,367	7,249	3,525	10,162
Wimmera ..	26,686	6,437	440	3,458	5,596	287	2,371
Mallee ..	3,724	2,477	164	7,347	7,583	152	862
Northern ..	9,422	6,206	852	12,570	21,597	4,917	3,723
North-Eastern	4,703	2,440	987	3,609	6,387	2,786	3,656
Gippsland ..	4,589	1,657	438	842	4,109	2,190	3,473
Total ..	114,690	45,198	16,336	32,558	66,069	20,663	30,792

Production of Wool

Statistics of wool production are obtained direct from the growers, from fellmongeries and, for wool exported on skins, from the Customs Department.

VICTORIA—SHEEP AND LAMBS SHORN, SEASON 1958–59

Statistical District	Shorn		Wool Clipped (Including Crutchings)		Average	
	Sheep	Lambs	Sheep's	Lamb's	Per Sheep	Per Lamb
	No.	No.	lb.	lb.	lb.	lb.
Central ..	2,187,101	538,345	21,039,044	1,542,157	9·62	2·86
North-Central ..	1,952,761	394,006	18,260,149	1,044,976	9·35	2·65
Western ..	8,709,372	1,902,863	81,003,264	4,841,993	9·30	2·54
Wimmera ..	4,084,248	834,955	39,681,280	2,312,318	9·72	2·77
Mallee ..	1,505,527	365,066	15,281,405	1,087,786	10·15	2·98
Northern ..	3,799,475	951,275	35,899,979	2,720,427	9·45	2·86
North-Eastern	1,869,853	398,403	16,923,579	1,025,399	9·05	2·57
Gippsland ..	1,444,488	435,728	13,783,108	1,128,365	9·54	2·59
Total ..	25,552,825	5,820,641	241,871,808	15,703,421	9·47	2·70

VICTORIA—SHEEP SHORN AND WOOL CLIPPED

Season	Shorn		Wool Clipped (Including Crutchings)		Average	
	Sheep	Lambs	Sheep's	Lamb's	Per Sheep	Per Lamb
	No.	No.	lb.	lb.	lb.	lb.
1954–55 ..	20,952,056	5,216,388	205,876,210	13,641,248	9·83	2·62
1955–56 ..	21,497,987	5,329,369	223,735,558	14,810,746	10·41	2·78
1956–57 ..	22,674,479	6,555,706	249,945,167	20,421,056	11·02	3·12
1957–58 ..	24,831,793	7,181,760	240,510,268	19,487,126	9·69	2·71
1958–59 ..	25,552,825	5,820,641	241,871,808	15,703,421	9·47	2·70

VICTORIA—WOOL PRODUCTION AND VALUE

Season	Clip	Stripped from and Exported on Skins, &c. (Greasy)	Total Quantity (Greasy)	Gross Value	Average Price per lb.
	lb.	lb.	lb.	£	d.
1954–55 ..	219,517,458	33,846,965	253,364,423	75,124,583	71·16
1955–56 ..	238,546,304	34,810,124	273,356,428	69,019,813	60·60
1956–57 ..	270,366,223	29,205,320	299,571,543	97,659,041	78·24
1957–58 ..	259,997,394	36,492,898	296,490,292	76,255,309	61·73
1958–59 ..	257,575,229	41,268,582	298,843,811	59,470,800	47·76

Wool Marketing System

Samples of Australian wool, taken to England by McArthur and by Marsden early in the nineteenth century, aroused considerable interest and in 1808 the first commercial consignment of one bale was sold in London. The years following saw regular sales there, the wool being consigned by the grower himself or by speculative or general merchants. However, the round journey of the wool out and the cash home resulted in a long period of uncertainty.

The present system of wool marketing has been built up over more than a century by the efforts of many able and energetic leaders, notably Thomas Sutcliffe Mort who prompted the first Australian auctions held at Sydney in 1843, and Richard Goldsbrough who started the sale of Victorian wool and produce in Melbourne in 1848. Geelong, the third Australian centre, was established in 1857.

On these foundations has been built a marketing system probably unique in world commerce, where a product is sold, in the presence of its grower, to the highest bidder amongst manufacturers and their agents from all over the world. Practically the whole of the Australian clip is sold under this system of local realization, which requires the provision of facilities for receiving, storing and showing the wool, and a closely integrated programme of orderly offering. Each year estimates are made of the quantity of wool available for auction, and the Australian total is divided between Northern, Southern, and Western centres, which each have their resident buyers.

The Commonwealth annual production of almost 5 mill. bales is marketed under the auction system. It is disposed of in the various selling centres of all State capitals and a number of provincial cities. The sales programme in all centres is arranged by the National Council of Wool Selling Brokers of Australia, after consultation with buyers. Later, State allocation committees attend to details such as individual sale dates and the quantities to be offered in each centre at the various sales.

Victorian buyers cover, as well as Melbourne, Geelong, and Ballarat, auctions at Albury, Adelaide, Hobart, and Launceston, and allowing for this, a sales programme for the complete season is prepared. This recognizes the buyer's problems of transport and accommodation and ensures that supplies are evenly spread, not only in quantity, but in type and quality, so that there is a representative selection to meet the varied demand. Thus, by controlling the amount of wool offered an orderly marketing system is maintained.

Auction System

Under the auction system wools are displayed on the show floors of woolbrokers' stores, equipped with sawtooth roofs, giving clear, even lighting. This presentation of the wool under conditions which promote the interest of the grower, and at the same time retain the confidence of the buyer is the responsibility of the selling broker, and involves strict and thorough attention to detail.

On arrival at the store, each bale is weighed by a sworn weigher, and the weight, brand, and description is marked on the head. The wool is stacked to await its turn of offering, which occurs in rotation according to date of arrival. When the wool is due for sale, a representative portion is taken to the show floor, and there the brokers' wool experts inspect it and arrange it into lots. It is also inspected and valued by buyers, who represent oversea and local wool users. Should any lot need additional attention, it is sent to the required department for treatment. The operation of reclassing, by which skilled classers grade a grower's consignment according to quality, length, colour, &c., and the bulk classing department, where large lots are made from various owners' wools, are important services which the broker provides.

The whole of the offering in each catalogue is valued by the brokers' experts, who keep in the closest touch with the market and its movements. When the auction begins, the auctioneer is accompanied by the wool expert who is able to protect the growers' interests. In this way, the grower exercises control up to the last moment, and may withdraw any lot if the bids do not conform to his ideas of value.

The Wool Exchanges are the hub on which the big business of wool revolves. Bidding is vocal, buyers advancing their prices by ¼d., ½d., or even more until limits are reached and the lot falls to the bid of the last caller. The sale is conducted with great rapidity, and in approximately two hours 850 lots will possibly have been sold, as on a normal market it takes on an average only eight seconds to dispose of an individual lot or line of wool. Although about 5 mill. bales are disposed of in the various centres of the Commonwealth during the course of a season, with proceeds representing millions of pounds, disputes are few. This is a remarkable and gratifying feature of the auctions, which it will be seen are based on the confidence, goodwill, and mutual trust of all parties.

At the fall of the auctioneer's hammer, the ownership of the lot passes from the woolgrower to the woolbuyer, but the woolbroker still performs some service by storing it in his warehouse until it is required by the buyer. If the wool is to go overseas it is dumped, or compressed tightly and held by metal bands. The broker then has it delivered to the ship, or the local mill, and at that point marketing ends, and wool enters the process of manufacture.

Wool-growing Districts

In the following sections, the main wool-growing districts of the State are described with their main characteristics :—

Mallee

The country, being dry, is generally extremely dusty and this is reflected in the wools. Many types are grown. The wools, however, are usually in dry order, of serviceable staple and often yield better

than appearance indicates. More often than not, the wools carry a considerable percentage of dust, particularly on the backs, while at times some trefoil burr is also noticeable. The small mixed consignments from these areas lend themselves particularly to the bulk classing system. Wools from the western side extending through Murrayville to the South Australian Mallee show less dust and are normally deeper grown than those east and north, but as a rule are better nourished. Mallees are usually of good average and average standard, and are early offering consignments.

Goulburn Valley and Northern Victoria

Comebacks, fine to medium Crossbreds, principally of good and good average style, are produced in these divisions. The products carry a certain amount of extraneous matter in the shape of dust and trefoil burr, especially from the irrigation areas. On the rich river flats, fat-lamb raising is carried out extensively, and there is a multiplicity of types of wool and lamb's wool seen from these areas on the Melbourne show floors throughout the course of a season. Early and mid season are the offering periods.

Wimmera

Wimmera pastures are extensive in nature, resulting in diversified type of wool, varying from good average style Merinos and Crossbreds (disclosing dust and burr) grown on the northern side to distinctly better class wools from the central and western divisions, which enter the good to super and occasionally the super range. Central Wimmeras are lighter in dust and vegetable fault than those in the north, and are usually of serviceable staple, style, and bulk. The best wools, however, are drawn from the areas adjoining the Western District, to which in many respects they are allied so far as quality, cleanliness, and freedom from fault are concerned, although lacking perhaps quite their bloom and brilliance. Northern Wimmeras are early offering, others mid and late season.

Western District

Some of the most attractive Merino, Comeback, and Crossbred wools in the world are produced from these renowned areas and, whether the flocks are large or small, comparatively high figures are obtained at auction for the product. A percentage are of super to extra super standard, denoting breeding and perfect conditions, both in climate and pasture, for wool production. Associated with these wools is that particularly excellent bloom, rarely obtainable elsewhere. For style, depth of staple, high clean scoured yield and their practically free nature, these wools are supreme and bear a high reputation the world over. Other productions are of good to super and good standard. Offering period—mid and late season.

North Central Victoria

This embraces areas both north and south of the Dividing Range. In the southern section, the climate is rather cold and wet thus, generally speaking, being more suitable to Comebacks and Crossbreds,

but it has proved that both fine and medium wool Merino types can also be produced with success. The wools are attractive, free, and of super and good to super types, but generally are not so light in condition or as stylish as those produced in the Western District. Amongst the smaller growers in the colder areas, the Polwarth, with its deeper staple, is in demand, while the Corriedale is also favoured. Those from the northern section show light dust and fault. They are mid and late season offering.

North East Victoria

These productions usually come to market in attractive order, the many Comebacks and Crossbreds produced—especially those on the tablelands and hill country to the east of the Hume Highway—being outstanding for their light condition and clean order. The wools are white, free, and mainly of good and good to super standard. They do not handle quite as well as Western District wools, but are of good staple and bulk and often hold advantages in yield owing to their water-washed condition. In certain seasons there could be some weather discolouration. They are mid season offering wools.

Gippsland

Merinos, Comebacks, and fine Crosbreds of good and good to super style are produced from Gippsland, the larger percentage being the two last named. The greatest number of the sheep population is maintained in the area from Traralgon to Bairnsdale, extending to the Lake Country and Omeo Plateau. These wools are not so compact in arrangement as those from the west of the State, but are lofty and full handling. The great majority are free in nature with reasonably good bloom and sometimes distinguished by a slightly bluish tinge. Light trefoil, however, is apparent in the wools from the Tambo Valley area. Gippsland consignments are mid and late season offering.

Central Victoria

This division takes in a rather comprehensive range of country, embracing a portion of Gippsland and the Mornington Peninsula on the east, to Geelong, Bacchus Marsh, Werribee, &c., on the west, and areas in and around Romsey to the north. Although some nice Merino clips come forward from Bacchus Marsh, supplies from the other districts consist mainly of Comebacks and Crossbreds of varying type. The majority, however, are in more or less free order, covering good average, good, and good to super types. They are mainly mid season offering.

Prices of Wool

The highest prices obtained for greasy merino fleece wool sold in Victoria and in Australia during each season from 1930–31 to 1958–59

are shown below. Average weighted prices for wool of Victorian production appear on page 504.

VICTORIA AND AUSTRALIA—HIGHEST PRICES OBTAINED FOR GREASY MERINO WOOL

Season	Victoria	Australia	Season	Victoria	Australia
	d.	*d.*		*d.*	*d.*
1930–31 ..	31¼	31¼	1944–45 ..	39	40¾
1931–32 ..	38¼	38¼	1945–46 ..	41¼	41¼
1932–33 ..	22½	28½	1946–47 ..	121½	153
1933–34 ..	36¼	42	1947–48 ..	135	138½
1934–35 ..	22¼	24½	1948–49 ..	181	210
1935–36 ..	29¼	35½	1949–50 ..	183	188
1936–37 ..	36¼	46¾	1950–51 ..	351	354¼
1937–38 ..	33½	33½	1951–52 ..	244	287
1938–39 ..	26¼	28	1952–53 ..	264	367
1939–40 ..	31	33¼	1953–54 ..	250	255
1940–41 ..	33¼	33¼	1954–55 ..	203	420
1941–42 ..	33½	34½	1955–56 ..	181	369
1942–43 ..	39	39½	1956–57 ..	239	503½
1943–44 ..	40¾	40¾	1957–58 ..	195	405¼
			1958–59 ..	225	350

The following information about the average prices of wool per lb. which have prevailed during the last three seasons has been obtained from Victorian wool brokers. These prices are for wool auctioned in Victoria. Wool from the Riverina and the south-east of South Australia is included in Victorian sales.

VICTORIA—PRICES OF WOOL

Class of Wool	Price Range per lb. in—		
	1956–57	1957–58	1958–59
GREASY MERINO	*d.*	*d.*	*d.*
Extra Super (Western District) ..	120–210	100–160	90–125
Super	105–180	80–145	65–115
Good	85–125	70–105	55– 80
Average	75–105	55– 85	45– 65
Wasty and Inferior	40– 90	35– 75	25– 60
Extra Super Lambs	115–335	95–250	75–195
Super Lambs	80–185	60–140	45–110
Good Lambs	60–120	40–100	30– 90
Average Lambs	45– 85	30– 65	25– 50
Inferior Lambs	35– 60	25– 45	20– 35

VICTORIA—PRICES OF WOOL—*continued*

Class of Wool	Price Range per lb. in—		
	1956–57	1957–58	1958–59
GREASY CROSSBRED	*d.*	*d.*	*d.*
Extra Super Comebacks ..	115–125	85–100	65– 90
Super Comebacks	90–115	75– 90	60– 70
Fine Crossbred	55–110	45– 85	35– 65
Medium Crossbred	45– 90	35– 70	25– 55
Coarse Crossbred and Lincoln ..	40– 80	30– 65	25– 50
Super Fine Crossbred Lambs ..	75–110	50– 85	40– 65
Good Crossbred Lambs ..	50– 90	40– 65	30– 50
Coarse and Lincoln Lambs ..	45– 85	35– 65	25– 50
RECORD PRICES FOR THE SEASON			
Greasy Merino Fleece	239	195	225
,, Comeback Fleece ..	138	113¾	92½
,, Merino Lambs	440	423	200
,, Comeback Lambs ..	125	122½	113

Stock Slaughtered

The following table shows the number of slaughtering establishments and details of the stock slaughtered in the State during each of the five years 1955–59 :—

VICTORIA—STOCK SLAUGHTERED

Kind of Stock	Stock Slaughtered in Establishments and on Farms and Stations				
	Year Ended 30th June—				
	1955	1956	1957	1958	1959*
Sheep	4,582,221	3,968,204	3,517,554	5,500,341	5,940,311
Lambs	4,131,702	3,891,857	3,520,554	4,123,307	4,573,007
Bulls and Bullocks ..	238,085	238,000	283,623	271,228	256,001
Cows	287,181	267,549	269,492	393,648	441,073
Young Cattle ..	142,207	134,637	141,071	179,535	173,142
Calves	356,318	382,602	444,938	559,143	527,171
Pigs	422,143	395,244	382,479	472,841	461,909
Number of Slaughter-houses	381	359	345	320	316

* Average dressed weights per carcass during 1958–59 were : Sheep 46·51 lb. ; Lambs 34·31 lb. ; Bulls and Bullocks 603·36 lb. ; Cows 419·02 lb. ; Young Cattle 271·01 lb. ; Calves 69·74 lb. ; Pigs 115·27 lb.

Frozen Mutton and Lamb Exported

The importance of the mutton and lamb export trade to sheep owners is indicated by the export figures for the years 1954–55 to 1958–59 as shown in the table below :—

VICTORIA—FROZEN MUTTON AND LAMB EXPORTED FROM VICTORIAN PORTS

Year Ended 30th June—	Mutton		Lamb	
	'000 lb.	£'000	'000 lb.	£'000
1955	22,237	1,065	58,397	6,280
1956	21,434	1,293	50,450	4,756
1957	14,822	935	28,574	2,610
1958	24,694	1,335	35,193	3,227
1959	41,854	3,692	44,638	3,737

Honey Industry

Victoria's hardwood forests provide each year an important contribution to the wealth of the State by virtue of timber production for various purposes. However, one little known facet of our forest productivity is the annual harvest of honey taken from many species of eucalyptus in all parts of the State. Today, Victoria ranks second among the States in its apicultural activities.

With an average registration of some 1,250 apiarists and some 300–400 large commercial operators, Victoria's honey production averages about 7 mill. lb. per annum. Colony yields are relatively good and range between 180 and 240 lb. per colony per annum.

Eucalyptus species provide the bulk of the honey crop—up to 95 per cent. of the total—with the balance made up of clover and one or two minor species of ground flora.

The industry is, of necessity, migratory, whole apiaries with the necessary plant being moved by road transport from one part of the State to another following the flowering of the eucalyptus species in the forests. Hives, trucks, and plant have been designed and modified to suit the requirements of mobility demanded by the industry.

Pollination of agricultural crops is a further aspect of the industry which has received considerable attention. Each year thousands of colonies are hired out to fruit and seed growers to ensure profitable sets of fruit and seed.

Marketing is the great problem of the industry. Violent fluctuations in the annual honey crop are, in the absence of any organized marketing arrangements, attended by similar fluctuations in the prices of produce and, in some cases, considerable carry-over from one season to the next.

Governmental interest in the industry is authorized by the Bees Act (consolidated 1958) and extends to disease control, advisory services and research into problems of apiculture.

Prior to the season 1936, the statistics of honey and beeswax were based on returns received from apiarists who were permanent occupiers of holdings of 1 acre and upwards. As a consequence, production was understated because of the exclusion of (*a*) hives on areas of less than 1 acre, and (*b*) travelling beekeepers who were not occupiers of rural holdings. Commencing with the season 1935–36, all beekeepers were required to furnish returns. The collection was further revised in 1958 to exclude apiarists with less than five hives. Particulars relating to apiculture for the five years 1955–59 are given in the following table :—

VICTORIA—BEE-HIVES, HONEY, AND BEESWAX

Season Ended 31st May—	Beekeepers*	Hives	Production		Gross Value	
			Honey	Beeswax	Honey	Beeswax
	No.	No.	lb.	lb.	£	£
1955 ..	1,336	103,752	8,833,947	94,012	404,889	32,121
1956 ..	1,268	104,122	7,010,387	78,482	438,149	25,507
1957 ..	1,341	101,736	8,215,350	89,749	590,478	28,888
1958 ..	1,086	104,265	5,884,381	67,431	429,069	20,721
1959 ..	1,145	100,953	7,624,037	85,743	532,094	24,383

* Apiarists with 20 hives and over numbered 865 in 1955, 828 in 1956, 814 in 1957, 779 n 1958, and 771 in 1959.

Non-Rural Industries

Forestry

Administration

The *Forests Act* 1918 first constituted the Department in its present form. The control of State forests was vested in a Forests Commission of three members in lieu of a conservator, and a statutory Forestry Fund was established for the improvement and development of State forests.

Legislation

The *Forests Act* 1928 which established the State Forests Department under a Minister of Forests, constitutes and prescribes the duties and powers of the Forests Commission and makes provision for funds for forest development. This and subsequent Acts and amendments in 1939, 1950, and 1954 have been consolidated in the *Forests Act* 1957. The Forests Commission is also responsible for the administration of the *Wood Pulp Agreement Act* 1936 and the *Masonite Agreement Act* 1956, which prescribe conditions governing the operation of specific wood-pulp industries on State forests. The Commission also administers the *Wild Flowers and Native Plants Protection Act* 1930. Other closely associated legislation includes the *Country Fire Authority Act* 1944, the *Soil Conservation and Land Utilization Act* 1947 and the *National Parks Act* 1956.

Forest Estate

Of Victoria's land area of 56·2 million acres, some 16·8 million acres, or 30 per cent., are occupied by forest cover, of which 14·1 million acres represent State forest and an estimated 2·7 million acres are in private and commercial ownership. The designations of the various categories of State owned forest land are as follows :—

(1) "Reserved forest" comprises (*a*) areas dedicated as "permanent forest" which can be excised only by Act of Parliament or for specific public purposes, or by exchange for private or unoccupied Crown land ; and (*b*) areas dedicated as "timber reserves" which can be alienated only by a resolution of both Houses of Parliament or by exchange as in (*a*).

(2) "Protected forest" comprises unoccupied Crown land proclaimed as such and certain defined unused roads. Such land is liable to be alienated. Reserved water frontages are also protected forest.

(3) "State forest" is an embracing term which comprises (1) and (2) above.

Additions to reserved forest can be made by the Governor in Council by (*a*) dedication of any area of Crown land on the joint recommendation of the Minister of Forests and Minister of Lands ; (*b*) exchange of existing reserved forest for Crown land on the joint recommendation of the Minister of Forests and the Commissioner of Crown Lands and Survey ; (*c*) exchange of existing reserved forest for private land on the recommendation of the Minister of Forests ; (*d*) purchase or resumption of alienated land.

The Forests Commission is vested with sole control and management of all areas of reserved forest. Protected forests are under dual control, the jurisdiction of the Forests Commission being restricted to control of the forest produce thereon.

Forests Output

The following table summarizes the total output of all species for the years under review :—

VICTORIA—FORESTS OUTPUT
('000 Cubic Feet)

Year Ended 30th June—	Sawn Timber*	Fuel Timber†	Pulpwood†	Miscellaneous†
1956	22,455	13,927	4,555	4,763
1957	23,905	15,223	7,024	4,823
1958	22,670	12,300	7,061	6,160
1959	23,843	10,790	7,410	4,430

* These figures are estimates of sawn timber obtained from the recorded volumes of logs cut.
† Volumes estimated from recorded quantities in various units (e.g., tons, cubits, lineal feet, &c.).

The buoyant trading conditions which the sawmilling industry enjoyed in the immediate post-war years terminated abruptly with the financial recession of 1952. By 1954, however, the industry had achieved a stability which the consistency shown by the output figures above amply illustrates. At the present time the industry appears to be operating on a sound basis of efficient working methods and a regular output of good quality timber competitively priced in relation to interstate and oversea imports.

The continued steady decline in output of timber for fuel purposes indicates that this product, at least in the form in which it is being used at present, is losing ground in favour of substitutes. Having regard to this State's potential for power production from its enormous brown coal resources and the obviously increasing demand for wood for the cellulose and fibre industries, any expenditure on the sales promotion of wood as a fuel is of doubtful value.

The miscellaneous group in the above table includes such diverse items as telephone and electric supply poles, bridge piles and beams, fencing timbers, railway sleepers and mining timbers. So many factors, including temporary influences such as the recent introduction of full-length preservation of non-durable species of poles, fluctuations in market conditions for agricultural and pastoral produce, railway construction projects, &c., influence the demand for these items that output trends are obscured in the collective totals, but by and large the demand for wood products is being well sustained.

Traditionally, Victoria is not, and does not appear likely to be, an exporting State as far as wood products are concerned. It is more likely that the problem in the future will be meeting the ever increasing home demand for all types of wood products except wood fuel.

Softwood Output and Plantations

The output of saw logs and pulpwood is summarized below :—

VICTORIA—OUTPUT OF SAW LOGS AND PULPWOOD
(Super. Ft.)

Year Ended 30th June—	Saw Logs and Peeling Logs (H.L.V.*)	Pulpwood (Equivalent H.L.V.*)
1956	20,091,522	9,892,000
1957	17,915,507	8,765,000
1958	17,735,836	6,627,000
1959	19,504,856	9,195,000

* Hoppus Log Volume.

Continuous investigation is proceeding into the matter of accurate determinations of the maximum permissible annual cut from plantation areas. It is thought that little difficulty will be experienced in disposing of the whole of the output from this State. Trade demand for the higher quality logs has improved over the period under review, but case quality and pulpwood logs face very keen marketing conditions.

Plantation areas were increased by the planting of 1,582 acres during the 1955–57 planting seasons. Following the liquidation of unproductive and burnt areas, total plantation acreages have been revised. The total net area of softwood plantations at 30th June, 1959, was 45,098 acres, of which Monterey Pine (*Pinus radiata*) comprised 34,123 acres.

Privately owned softwood plantations continued to expand, the estimated total acreage at 30th June, 1959, being 49,000 acres.

The increased area has resulted mainly from the plantings of Australian Paper Manufacturers Limited which is endeavouring to meet an increasing demand for the long-fibred pulp produced from softwood timbers. At Dartmoor one of the largest sawmills in the State derives all its timber supply from private plantations which are managed on a sustained yield basis.

Private individuals continued to plant small areas of softwood as a long-term investment, and interest has been maintained by State schools in endowment plantations. Revenue from these latter areas, which now total some 1,800 acres, is available for the provision of school amenities.

In recent years several small areas have been planted with pines for the provision of Christmas trees.

Nurseries

In addition to several small nurseries attached to plantations, the Forests Commission maintained four main distributing nurseries to provide trees for its own requirements, and for planting by State schools and farmers in the rural areas of the State.

During the years 1955–57, the total number of trees distributed from these nurseries was 3,027,211, or an average of about one million trees per year.

Fire Protection

Because of climate, vegetation and topography, Victoria is recognized as one of the most fire hazardous areas in the world. Disastrous fires have been recorded frequently since 1851, culminating in the loss of 71 lives in 1939 and 51 in 1944.

The Forests Commission is responsible for the prevention and suppression of fires in all reserved and protected forests (State forests), national parks and (except in the Mallee and some urban fire districts) all alienated lands within 1 mile of the boundaries of State forests and national parks. This sphere of responsibility is designated the Fire Protected Area and totals some 15 mill. acres, or 26 per cent. of Victoria.

The territorial units for fire protection are the 54 forest districts in the State. During the summer, fires are detected by an interlocking system of fire towers, lookouts, radios, and telephones, frequently augmented by aerial patrols. Each forest district holds a supply of fire equipment, and reserves are held in Melbourne and selected country centres. In the event of major outbreaks, men and equipment are transfererd from one district to another as required.

The Commission maintains Communications and Fire Research Branches, and operates a Radio Laboratory and an equipment workshop where the development, maintenance and repair of radios and fire equipment is undertaken.

The main features of forest fire legislation include the prohibition of the lighting of fires in State forests and national parks except with the permission of the authorities or in accordance with strict rules ; power for the Minister of Forests to prohibit the use of fire or to suspend forest operations in areas threatened with acute fire danger ; and provision for the construction of dugouts, shelters, and safety zones for the protection of human life within the Fire Protected Area.

Telecommunications

The radio system consists of 32 fixed stations situated in major forest centres, 280 mobile and portable equipments in field use and a central station at Melbourne. Four automatic repeating stations and a mobile emergency station are provided to strengthen fire protection links during summer.

Forest Fires

The causes of fires attended by Forests Commission personnel in the period 1955–56 to 1958–59 were as follows :—

VICTORIA—CAUSES OF FOREST FIRES

Cause	Number of Fires—			
	1955–56	1956–57	1957–58	1958–59
Grazing Interests	29	8	15	6
Landowners, Householders, &c. ..	2	158	139	103
Deliberate Lighting	22	66	76	62
Sportsmen, Campers, Tourists ..	21	36	76	33
Licencees and Forests Workers ..	28	15	25	18
Smokers	30	48	53	43
Lightning	8	24	29	59
Tractors, Cars, Trucks, Locomotives, Stationary Engines	19	56	42	39
Children	5	17	26	19
Sawmills	20	9	12	13
Miscellaneous Known Causes ..	22	40	80	39
Unknown Origin	30	87	54	31
Total	236	564	627	465

The areas of State forest burnt in the years 1955–56 to 1958–59 were—

1955–56	.. ..	17,415 acres
1956–57	.. ..	115,268 „
1957–58	.. ..	218,072* „
1958–59	.. ..	250,515* „

* 1957–58 includes 156,644 acres of non-commercial forest area; 1958–59 includes 106,624 acres of non-commercial forest area.

Research

The following are some of the lines of investigation being followed in forestry research in Victoria :—

Laboratory Research

The effect of stratification of dormant-seed lots of high-altitude eucalypt species has been studied. Germinative energy and capacity and the number of viable seeds per ounce for over 200 eucalypt seed lots has been determined, together with a study of the temperature range for optimum germination of various species groups. The effect of paradichlorbenzene on the longevity of seeds was investigated to determine its suitability as an insecticide. Longevity studies have been made on stored seeds of a large number of eucalypt species and optimum light conditions determined for the seeds of Victorian eucalypts.

Field Research

A comprehensive study of the natural regeneration of alpine ash (*Eucalyptus delegatensis*) has been made to determine (*a*) the type of seed bed most effective for germination and establishment ; (*b*) time, quantity, and manner of seed cast ; (*c*) distance of wind dissemination of seed ; (*d*) factors affecting seedling distribution and density ; (*e*) ant depredation on seed on the ground ; (*f*) process of and factors affecting field germination ; (*g*) factors affecting survival of seedlings.

The efficacy of grazing as a method of controlling dodder (*Cassytha melantha*) has been investigated.

Trial plantings and natural regeneration experiments have been carried out with a wide variety of indigenous tree species, and measurements and other relevant data associated with numerous experimental plots throughout the State are being regularly collected.

Outbreaks of *Armillaria mellea* on eucalypts have been examined in an attempt to find some economical method of controlling the disease.

Preliminary experiments in grafting of eucalypts have been started and a tree breeding programme in *Pinus radiata* initiated to improve the form and growth characteristics of the most important exotic plantation species.

Entomological and Pathological

A survey has been made to indicate the extent and severity of eucalypt defoliation by insects. It is apparent that the chief insects responsible for defoliation are the phasmid (*Didymuria violescens*), the seedling gum moth (*Nola metallopa*), and leaf beetles (*Paropsis* spp.). Lesser pests are psyllids (lerps) and the Christmas beetle.

A morphological investigation of pine shoots suffering from fused needle disease has been commenced and some fundamental investigations of nutritional requirements of *Pinus radiata* are under way to test the effect of various levels of essential elements.

Forest Education

The Forests Commission trains its own recruits for the professional staff of the Department. The Victorian School of Forestry was founded in 1910 at Creswick, 11 miles north of Ballarat. Extensive pine plantations and native hardwood forests, together with a distributing plant nursery, provide an appropriate setting for the School.

The forestry course comprises three years in residence, and covers both theoretical and practical aspects of both the basic sciences and applied forestry sciences.

The School is capable of accommodating 40 students and is fully equipped with lecture rooms, museum, library, science laboratories, workshop, and accommodation facilities.

Staff of Commission

At 30th June, 1959, the Commission employed 1,470 persons in the following categories :—Administrative, 64 ; professional, 187 ; technical and general, 268 ; temporary, 105 ; and casual, 846.

Fisheries and Wildlife

General

Practical management of the fish and wildlife resources of Victoria is vested in the Department of Fisheries and Wildlife, which is responsible to the Chief Secretary for the administration of the Fisheries Act and the Game Acts, and for conservation, management, and research on native and introduced fishes, birds, and mammals.

The State Hatchery and Freshwater Fisheries Research Station is located at Snob's Creek, near Eildon. A wildlife research centre is in the process of being established at Lara, near Geelong. Fisheries and wildlife officers (enforcement staff) are stationed at sixteen country centres throughout the State, and three more country stations are projected.

Marine Fisheries

One role of the Department is the management of the marine fisheries and research into the biology and ecology of important species of marine fish. Fisheries and wildlife officers are stationed permanently at key points along the coast and patrol vessels are maintained at a number of centres.

Fish production in Victoria is low compared with world production, but management and the development of new methods are directed to raising the catch. Specialized techniques, including the use of aerial spotting, echo sounders and radar for locating fish, and two-way radio have been introduced by the industry. A cannery has been established to utilize certain fish species for which the fresh fish market demand is limited.

The Department provides scientific advice on fisheries management, and technological information on the development of new gear and fishing methods.

The Commonwealth Fisheries Office and the Department of Primary Industry is associated with the Department in the management of the commercial fisheries through complementary legislation. The Commonwealth controls fishing in the extra-territorial waters, and certain State officers are empowered to police the Federal Act. There is close co-operation with the C.S.I.R.O. Division of Fisheries and Oceanography and there is an annual Interstate Federal Fisheries Conference.

Freshwater Fisheries

Angling as a recreation is increasing in importance each year. Streams and lakes are stocked with trout from the State Hatchery, which is the largest in the southern hemisphere. The annual production of fish is rising. An advisory service is provided through the fisheries and wildlife officers located at inland stations, and a close liaison is maintained with the Victorian Piscatorial Council, the governing body of the angling clubs. An extensive programme of research is conducted by research officers stationed at the Freshwater Fisheries Research Station and at headquarters.

Attention is also given to important freshwater fish of the Murray River system, the Murray Cod and Golden Perch. The aim of this

research is to maintain the natural stocks of these fish and to develop hatchery rearing techniques to provide native fish for the stocking of farm dams and virgin public waters.

Wildlife Management

The Wildlife Management Research Group conducts research into the conservation and management of wildlife species, with special reference to problems which arise through conflict between wildlife, and agriculture and forestry. The grey kangaroo is the subject of a special research project.

Some species have potential for management as fur bearers, and an investigation is in progress to exploit these species for fur production. Experimental seasons have been held recently on brush-tailed and mountain possums and the eastern water rat.

Game Development

Following the introduction of the Game Licence in 1959, the Game Development Section was formed to work on the conservation and management of game birds and associated species. Work is concentrated on the biology and ecology of duck and quail, with particular reference to species for which a shooting season is provided. Research teams are engaged on the improvement of duck and quail habitat and in the preservation of existing suitable habitat.

This programme, together with the reservation of swamplands as Game Reserves, will materially improve the status of game birds in Victoria.

Fisheries Statistics

The statistics of production shown below are in terms of recorded weight. In interpreting fisheries statistics, allowance should be made for the incomplete coverage. Returns are collected from licensed professional fishermen only, and as a result the published totals fall short of total fish production to the extent of the catch by amateur fishermen, the commercial catch by persons not licensed as professional fishermen, and unrecorded catch by professional fishermen.

The following table shows certain particulars about the fishing industry in Victoria for the years 1954–55 to 1958–59 :—

VICTORIA—FISHERIES : MEN AND BOATS EMPLOYED : QUANTITY AND GROSS VALUE OF TAKE

Year Ended 30th June—	Number of Men	Boats Employed		Value of Nets and Other Plant	Recorded Production			
		Number	Value		Fish		Crayfish	
					Quantity*	Value	Quantity*	Value
			£	£	lb.	£	doz.	£
1955.. ..	1,018	726	622,847	153,321	10,789,888	809,242	898,632	112,329
1956.. ..	885	683	616,221	143,483	9,333,619	755,760	1,025,524	114,698
1957.. ..	930	703	685,090	166,020	12,243,830	1,202,674	1,164,472	176,057
1958.. ..	937	699	731,788	171,170	11,233,365	1,098,606	1,229,961	185,521
1959.. ..	929	690	1,001,716	214,811	9,863,864	1,185,490	1,293,725	231,243

* Includes catch by Victorian fishermen in Tasmanian waters.

Further References

Department of Fisheries and Wildlife—*Fisheries Contribution*
" " " —*Fisheries Circular*
" " " —*Fauna Contribution*
" " " —*Wildlife Circular*
" " " —*Miscellaneous Paper*
" " " —*General Circular*
" " " —*Newsletter (Monthly)*

Mining

Mining Development in Victoria

Mining has played a most important role in the history and development of Victoria. The discovery of gold in payable quantities was the event which had the greatest effect upon the history of the State. The search for gold first attracted migrants in large numbers and led to their permanent settlement. In September, 1851, a great alluvial goldfield was found at Ballarat and this discovery was followed by very rich gold strikes at Bendigo, Castlemaine, Stawell, Maryborough and other places. The revolutionary effect of this first gold rush was such that, from the start of the rush until 1858, the population rose from 70,000 to nearly 500,000. In the peak year of 1856, Victoria produced 3 mill. ounces and in the first gold decade it exported over 23 mill. ounces.

The gold mining industry was in large measure responsible for determining the pattern of the inland cities, towns, railways, and roads.

The emphasis today is, however, not on gold but on the fuel mineral—brown coal—from which is derived most of the energy indispensable to industrial expansion.

Mines Department

The supervision and inspection of mining is regulated by Act of Parliament and the administration of the various Acts is carried out by the Mines Department. The Department was originally created as the co-ordinating machinery to assist the development of the gold mining industry, but its importance did not cease with the decline of that industry. The Mines Department was destined to assist further in the change in emphasis from a rural to a manufacturing community by discovering and developing the State's black and brown coalfields. The vast brown coal deposits of the Latrobe Valley were originally explored, developed, and mined by the Mines Department, but later, when these deposits were recognized as a major source of fuel for electricity generation, they were handed over to the State Electricity Commission.

The Department's activities today are not, as the name would imply, confined to mining activities only, and of recent years the Department has assumed the task of making underground water available ; its official function now, apart from administering the Acts concerning the mining industry, is to promote mining productivity by

exploration and the provision of technical assistance. These functions are specifically investigation of the State's geological structure, mineral wealth and underground water resources ; the provision of technical services to the mining and quarrying industries ; supervision of the safeworking of mines, quarries, &c.; the licensing of mining activity ; and administration and financial assistance to the mining industry.

The practical work is divided into six branches administered by the Secretary and staff and are as follows :—

Geological Survey Branch

This division includes the Geological Museum and Library staff. The work of this branch includes the preparation of surveys of underground mines and of quarries for record purposes and advising the industry on development ; the identification of rocks, minerals, &c.; the investigation and evaluation of all prospecting work ; and the geological mapping of the State.

The work of the branch today includes the making of detailed plans showing the importance of minerals to industries. These include clay for bricks, tiles, and pottery, sands for mouldings used in foundries, glassmaking, and in the building trades. Rock deposits are tested for concrete aggregate and road metal, and limestone for cement, lime, and chemical use. Gold and coal deposits are accurately surveyed and advice given on the position and amount of reserves as well as the best methods of developing them. Seven geologists are working on the location of underground water suitable for agricultural, domestic, and industrial use. In the geological laboratories, tests are made on the samples collected in the field and submitted by the general public. These include microscopic examination of rock sections, electromagnetic separation of sands for their heavy mineral content, mineragraphic examination of ore minerals, and examination of industrial dust samples that are likely to be harmful to the health of the workers.

Drafting Branch

This branch is concerned with the preparation of topographical and geological maps from aerial photographs and field notes ; the compilation of plans for mines and boring projects ; the charting of lease surveys ; and the preparation of lease plans. It also prepares illustrations for geological publications.

Mines Inspection Branch

The supervision of the safe working of mines, including underground mining for coal, gold, and other metals is carried out by this branch. Open-cut mines, quarries, dredging, and sluicing plants are also inspected with special attention to the safety of workers and the public.

Administrative Branch

The legal rights of the mining industry and the general public are protected by this branch. The various Acts concerned with the Victorian mining industry and with persons employed in mining are also administered. These Acts include the Mines Act, Mines

(Petroleum) Acts and the *Mines (Uranium and Thorium) Act* 1955. The public relations and statistical section forms part of this branch. This section collects and distributes statistics about mineral production and the mining industry in Victoria. It prepares departmental reports as well as reports for publication.

Drilling Branch

This branch, which is closely connected with the work of the geologists, operates 24 drilling rigs of various types to provide information on geological strata and on all types of mineral deposits. A significant part of the Department's activities, today, is the investigation conducted by this branch to assess the potentialities of Victoria's reserves of underground water. The drilling branch, as well as searching for water, provides water for cities, townships, and settlements lacking adequate surface water supplies.

The task of making underground water available is becoming one of the most important duties entrusted to the Department.

As the underground water survey extends, all strata will be explored, and a systematic collection of information carried out. Therefore, this branch collects samples for analysis, and samples of strata drilled are recorded, examined, and stored. In its workshop and store, it is responsible for the maintenance of vehicles, drills, pumping equipment, and the various State batteries.

Boiler Inspection Branch

This branch carries out tests on all steam boilers and other pressure vessels for whatever purpose they may be used. All air compressors used in mines, garages, factories, pressure cooking vessels used in food processing factories, are periodically tested to make sure that they will withstand, with an adequate safety margin, the pressures to which they are likely to be subjected.

Mines Laboratories

Accurate analyses and assays on all material requiring quantitative values of the elements in any given specimens of rocks, metal ores, gold reefs, coals or other minerals are carried out by the branch. Water from bores and gases from mines are all accurately analysed. The firing qualities of clays, used in bricks and other branches of the ceramic industry, are also tested in muffles capable of burning the clay bodies at all temperatures likely to be used.

Mining Rights, Leases, and Licences

Miner's Rights

The taking out of a miner's right entitles the holder to many privileges and rights on Crown lands. The holder is entitled to take possession, for mining purposes, of a defined parcel of Crown land which is called a " claim ". Claims may also be taken up under certain conditions on private land for gold mining purposes only. The number

of miner's rights issued throughout the State in each of the years 1955, 1956, 1957, 1958 were 1,425, 1,470, 2,005, and 1,923 respectively.

Mining Leases

Leases of Crown land and of private land for the purpose of mining for gold are granted for a term not exceeding fifteen years at a yearly rental of 2s. 6d. per acre, except for land that was alienated before 29th December, 1884, where the rental is 6d. per acre. For mining leases of land to be worked by means of dredging or hydraulic sluicing, the yearly rental is 5s. per acre. Other mineral and coal mining leases are also issued at varying rates of rental and royalty.

Mineral Search Licences

Mineral search licences are issued for metals (other than gold) and minerals on Crown land, as well as, in the case of radioactive minerals, also on private land. The maximum area to be occupied under this type of licence is 6,400 acres for radioactive minerals, 640 acres for coal, 100 acres for iron, or 50 acres for other metals or minerals. The term of the licence is twelve months.

Petroleum Leases and Licences

Under the *Mines (Petroleum) Act* 1958 petroleum mineral leases of not more than 100 square miles and petroleum prospecting licences covering a maximum area of 200 square miles are granted at yearly rentals of £10 or 5s. per square mile respectively. Petroleum " exploration permits " covering a maximum area of 5,000 square miles were introduced in 1955.

The mineral production of the State, as recorded by the Mines Department, from lands occupied under the Mines Act (excluding stone raised in quarries, and salt) for the year 1959, and the aggregate mineral production up to 31st December, 1959, are shown in the following table :—

VICTORIA—MINERAL PRODUCTION

Minerals	During 1959		Total to 31st December, 1959	
	Quantity	Value	Quantity	Value
	fine oz.	£	fine oz.	£
Precious Metals—				
Gold	34,662	541,946	73,649,401	336,157,743
Silver	2,016	815	1,718,058	272,119
	tons	£	tons	£
Other Minerals—				
Antimony Ore ..	1	180	31½	4,115
Bauxite	3,464	13,686	66,073	140,663
Coal, Black ..	90,438	387,088	21,944,555	24,311,045
Coal, Brown ..	13,034,605	6,192,909	187,517,091	43,121,701
Diatomaceous Earth	680	4,250	9,988	159,125
Fire Clay	29,803	21,394	*	*
Fluorspar	11	253	4,148	18,080
Gypsum	81,101	76,609	1,018,653	781,973
Kaolin and Other White Clays ..	576,382	448,038	*	*
Limestone	1,119,679	707,041	13,738,818	*
Limonite	2,241	16,454	*	*
Tin Concentrates ..	..	..	18,915	1,468,089

* Not available.

Past production has also included the following :—

	Tons	Value £		Gallons	Value £
Antimony Concentrates ..	106,314	652,428	Oil, Crude.. ..	287,873	9,932
Barytes..	69	270		Tons	
Copper Ore	18,740	218,620	Pigment Clays ..	4,502	5,623
Iron Ore	5,461	12,552	Red Oxide ex Jarosite	109	1,359
Manganese Ore ..	422	2,009	Silver Lead Ore ..	804	5,992
Molybdenite	1,005	63,984	Talc	82	410
Phosphatic Rock ..	15,781	16,704	Wolfram Concentrates	139	22,307

Platinum to the value of £1,671 (311 oz.) was produced, while diamonds to the value of £128 and sapphires worth £630 were discovered.

Gold Production in Victoria

The gold yield, which had continued to decline from 1906, reached its lowest in 1930 at 24,119 fine oz. Since that year the highest yield recorded was in 1940 when 180,568 fine oz. were produced. The gold production in 1959 was the lowest recorded since 1930. Victoria, however, still leads the other States in the amount of gold won since the discovery of gold in Australia. Most of the gold now produced in Victoria is obtained from the mining districts of Beechworth and Castlemaine.

Quantities of gold produced in Victoria in different periods are shown in the next table :—

VICTORIA—GOLD PRODUCTION

Period	Quantity	Period	Quantity
	gross oz.		fine oz.
1851–60	23,334,263	1931–35	307,370
1861–70	16,276,566	1936–40	744,727
1871–80	10,156,297	1941–45	423,653
1881–90	7,103,438	1946–50	376,534
1891–1900	7,476,038	1951..	66,063
		1952..	66,777
	fine oz.	1953..	63,917
		1954..	52,665
1901–10	7,095,061	1955..	38,035
1911–15	2,161,349	1956..	38,846
1916–20	905,561	1957..	45,752
1921–25	421,250	1958..	41,476
1926–30	171,927	1959..	34,662

Coal

The most important mining events in the past few years have been the increase in the brown coal production to 11,643,629 tons in 1958 and 13,034,605 tons in 1959, and the proposal of the State Electricity Commission to extend its already huge developments. Yallourn and Morwell are now among the world's major coal developments for electricity generation and the manufacture of briquette fuel. The area deposits are undoubtedly amongst the largest in the world.

The most extensive of Victoria's deposits of tertiary brown coal exist in the Latrobe Valley, 90 miles east of Melbourne. Tests have proved that here exist reserves of over 22,000 mill. tons of brown coal suitable for open-cut exploitation. The deposits have shaped the destiny of the Victorian economy since the end of the First World War.

The coal is obtained by huge mechanical excavators which shift the overburden and extract the coal. The coal is then delivered by electric railway to nearby power stations or to briquette works where the raw coal is pulverized, dried, and compressed into high grade briquettes suitable for industrial and domestic use. In the manufacture of briquettes 4 tons of coal are used to make 1 ton of briquettes.

Private producers are making some contribution to the amount of coal won. Roughly, this production was 7 per cent. of the total produced (870,953 tons in 1959), but the proportion is likely to increase rapidly through the development of newly discovered brown coal fields on the western side of Port Phillip Bay. These deposits will complement the eastern side deposits and are of comparatively easy access to the main points of consumption. They will particularly benefit the fast growing city of Geelong.

Bituminous coal was mined during 1959 at Jumbunna, Kilcunda, Korumburra, Mirboo North, and Wonthaggi, and brown coal at Bacchus Marsh, Morwell, Thorpdale, Yan Yan Gurt (near Winchelsea), Yallourn, and Yallourn North.

The production and value of black and brown coal are shown below for specified periods :—

VICTORIA—COAL PRODUCTION AND VALUE*

Period	Black Coal		Brown Coal	
	Production	Value	Production	Value
	tons	£'000	tons	£'000
1921–1925†	520,705	592	258,094	62
1926–1930†	668,177	893	1,515,592	193
1931–1935†	472,030	444	2,445,215	256
1936	426,725	391	3,044,897	324
1937	257,945	254	3,393,919	326
1938	307,258	287	3,675,450	352
1939	364,895	260	3,651,014	386
1940	267,694	230	4,278,475	392
1941	326,441	304	4,565,638	423
1942	312,854	411	4,933,861	470
1943	287,100	429	5,091,729	529
1944	257,692	408	5,016,437	566
1945	247,297	495	5,445,108	641
1946	191,290	398	5,707,039	707
1947	173,683	300	6,140,140	937
1948	167,540	348	6,692,291	1,188
1949	122,507	379	7,375,559	1,469
1950	126,431	382	7,327,119	1,707
1951	147,743	601	7,836,056	2,755
1952	143,820	728	8,103,764	3,255
1953	151,907	946	8,257,299	3,628
1954	141,318	886	9,331,255	3,945
1955	132,888	815	10,112,206	4,382
1956	118,827	668	10,559,801	4,644
1957	111,569	556	10,740,989	5,228
1958	108,359	528	11,643,629	5,418
1959	87,715	455	13,040,717	6,123

* Value of output at the mine.
† Average annual production and value.

Quarrying

The growth of the quarrying industry in the post-war period has been the result of the stimulus of increased population and the rapid rate of national development. Apart from the growth of population from immigration, there has been an accumulated demand for quarrying products carried over from the war years. To meet the needs of the increasing number of motor vehicles, the total expenditure on roads has been stepped up each year.

The problem of expansion and improvement of road facilities is now receiving attention and it is high on the list of national priorities. The Commonwealth Government, the State Government, and the various municipal councils are each expected to increase their contributions to the road building programmes by one-third. The demand for quarrying products for road purposes, therefore, appears to be unprecedented, but the industry has also to meet unexpected demands for raw materials to supply expanding industries and housing and building projects.

The industry has become increasingly mechanized and a high degree of efficiency has been obtained. Small quarries are operating singly or in small groups, but the high cost of equipping a modern quarry favours the development of large operators.

Extractive industries now include basalts, granites, and other hard rocks for buildings, soft rocks or mudstones for brick, tile, and pottery making, limestones for lime and cement manufacture, clays for brick, pottery, and many other uses, as well as sands for buildings and other purposes. To these must be added ornamental slates, sandstones, and mudstones.

Today, because of high transport costs, it is important that quarries be situated as near as possible to their markets. This means that the industry is for all practical purposes closed to newcomers—the economical deposits being almost solely in the possession of old established operators. Further considerations which deter newcomers from entering the field are the difficulties met with in obtaining leases, permits from municipal councils, and the other planning authorities concerned.

The necessity of orderly planning for the full and efficient development of the extractive industries had become obvious when, in 1958, the problem was investigated by the State Development Committee. The result of the investigation was published as the Report on the Extractive Industries and it is expected that legislation based on the recommendations of the Report will enable the Mines Department to become the sole controlling authority. By acting in liaison with the Town and Country Planning Board and other departments and instrumentalities, the Department will control the issue of leases in the manner now practised by the Lands Department in dealing with Crown land.

Information in the following table has been obtained from " regular " quarries which are known to have a fixed plant and which are in permanent production. It is realized that there is considerable quarry production unrecorded due mainly to contractors who, requiring material from a source adjacent to the work for which they are suppliers, open up quarries for that purpose or exploit stone outcrops, mine tailings, &c. This work is usually only of a temporary nature.

VICTORIA—QUARRYING CONSTRUCTION MATERIALS*

Year Ended 31st December—	Number of Returns	Main Kinds of Stone Extracted—				Approximate Value of All Quarry Products†
		Bluestone	Sandstone	Granite	Limestone	
		cub. yds	cub. yds.	tons	tons	£
1954 ..	137	2,338,758	77,885	245,290	12,205	3,299,490
1955 ..	141	2,644,392	117,082	179,964	27,464	3,931,657
1956 ..	142	3,240,699	113,241	215,609	39,826	4,738,013
1957 ..	133	3,416,132	191,232	204,590	61,495	4,952,773
1958 ..	132	3,852,012	146,016	173,096	63,230	5,202,993

* Since 1952–53, limestone quarried for the manufacture of cement, lime, &c., has not been included in this table. It will be found in "Mineral Production" on page 524.

† Wholesale selling value of all quarry products (including sand and river gravel), exclusive of delivery charges.

Value of Production

General

The value of production as estimated in the following tables is based to a large extent on returns received annually from individual producers throughout the State. As a measure of total production it is incomplete, as it does not include the building and construction industry. It also omits factories employing less than four hands (unless power-driven machinery is used) and excludes agriculturists with holdings of less than 1 acre.

A detailed account of the period covered for individual rural industries is given on page 469 of the Year Book. Except in the case of mining and quarrying, statistics for the non-rural industries refer to the year ended 30th June. Statistics for mining and quarrying relate to the year ended 31st December of the first year shown.

Gross value is defined as the value placed on recorded production at the wholesale price realized in the principal market. In cases where primary products are absorbed locally, or where they become raw material for secondary industry, these points are presumed to be the principal markets. Care is taken to prevent, as far as possible, all overlapping or double counting. The primary value of dairy production, in accordance with the above definition, is the price paid at the factory for milk or cream sold by the farmer ; the value added by the process of manufacturing into butter, &c., is included in manufacturing production.

VICTORIA—GROSS VALUE OF PRIMARY PRODUCTION
(£'000)

Industry	1954–55	1955–56	1956–57	1957–58	1958–59
Agriculture	84,305	88,902	86,141	88,198	101,058
Pastoral	130,680	123,757	149,880	137,854	134,015
Dairying*	62,000	70,094	66,330	65,431	65,264
Poultry and Bees ..	20,261	21,394	21,464	23,266	22,263
Trapping	2,315	3,422	3,588	3,621	3,862
Forestry	10,721	12,668	13,134	14,109	15,441
Fisheries	1,002	871	1,381	1,294	1,433
Mining	10,080	10,916	11,891	12,728	13,694
Total Primary Industries	321,364	332,024	353,809	346,501	357,030

* Includes Subsidy—1954–55, £7,259,000 ; 1955–56, £6,355,000 ; 1956–57, £6,286,000 ; 1957–58, £6,696,000 ; 1958–59 £6,223 000

The gross value of production less costs of marketing, viz., freight, cartage, brokerage, commission, insurance, and containers, represents the gross value of production at the place of production, i.e., local value, details of which are shown in the following table :—

VICTORIA—GROSS VALUE OF PRIMARY PRODUCTION AT THE PLACE OF PRODUCTION

(£'000)

Produce	1954–55	1955–56	1956–57	1957–58	1958–59
Agriculture	**70,299**	**75,580**	**72,947**	**74,933**	**85,451**
Barley	2,494	2,523	2,829	2,710	3,375
Maize	147	116	60	130	114
Oats	3,292	2,984	2,307	4,072	4,716
Wheat	24,952	21,361	19,778	18,460	23,567
Onions	681	810	685	425	894
Potatoes	4,801	11,662	4,797	2,222	3,874
Other Vegetables	7,742	9,845	9,954	9,219	8,217
Hay and Straw	11,034	13,287	14,358	16,331	17,789
Fruit—					
Orchards	6,883	6,517	8,364	9,422	7,884
Vineyards	5,090	3,895	6,498	8,106	8,342
Other Crops	3,183	2,580	3,317	3,836	6,679
Pastoral	**119,424**	**112,041**	**137,962**	**125,389**	**119,784**
Wool	68,581	61,917	89,652	68,520	51,786
Sheep, Slaughtered	19,965	20,490	17,341	20,865	22,375
Cattle, Slaughtered	30,878	29,634	30,969	36,004	45,623
Dairying*	**59,677**	**67,594**	**63,759**	**62,918**	**62,658**
Cream for Butter	27,069	35,152	29,481	29,027	28,522
Milk for Cheese	4,011	2,557	3,921	2,973	3,650
Milk for Condensing, Concentrating, &c.	5,587	6,229	6,085	6,520	5,979
Whole Milk Consumed	11,282	11,510	12,050	12,243	12,744
Pigs	4,469	5,791	5,936	5,459	5,540
Poultry and Bees	**18,690**	**19,771**	**19,787**	**21,373**	**20,486**
Eggs	14,227	14,877	14,349	15,516	13,545
Poultry	4,110	4,484	4,932	5,589	6,533
Honey and Beeswax	353	410	506	268	408
Trapping, &c.	**2,153**	**3,197**	**3,333**	**3,287**	**3,562**
Rabbits and Hares	1,454	1,883	2,387	2,501	2,717
Rabbit and Hare Skins, &c.	699	1,314	946	786	845
Forestry	**9,987**	**11,823**	**12,297**	**13,088**	**14,063**
Sawmills	7,130	7,621	7,828	7,617	7,468
Hewn Timber	†	926	1,007	1,300	998
Firewood	2,695	3,118	3,280	4,030	5,454
Bark for Tanning	162	158	163	120	128
Other	†	†	19	21	15
Fisheries	**849**	**733**	**1,178**	**1,104**	**1,265**
Fish	757	637	1,026	937	1,062
Crayfish	92	96	150	158	199
Oysters	..	..	2	6	1
Other	..	..	..	3	3

* Inclusive of Subsidy—1954–55, £7,259,000 ; 1955–56, £6,355,000 ; 1956–57, £6,286,000 ; 1957–58, £6,696,000 ; 1958–59, £6,223,000.

† Not available.

VICTORIA—GROSS VALUE OF PRIMARY PRODUCTION AT THE PLACE OF PRODUCTION—*continued*

(£'000)

Produce	1954–55	1955–56	1956–57	1957–58	1958–59
Mining	**10,080**	**10,916**	**11,891**	**12,728**	**13,694**
Gold	887	640	653	736	694
Coal—					
Black	886	815	668	556	528
Brown	3,945	4,382	4,644	5,227	5,418
Other Metals and Minerals ..	1,063	1,148	1,188	1,256	1,851
Quarrying	3,299	3,931	4,738	4,953	5,203
Total Primary Industries	**291,159**	**301,655**	**323,154**	**314,820**	**320,963**

Net Value of Production

The ultimate aim of the valuation of production is to arrive at the sum available for distribution among those concerned in each class of industry, i.e.:—

(*a*) Workers in all grades of industry ;

(*b*) proprietors (including landlords) of any of the instruments of production concerned ; and

(*c*) providers of capital including debenture holders and mortgagees.

This represents the net value of production which is calculated by the deduction of costs of production from the gross value of production at the place of production. Such costs comprise stock feed, seed costs, manures, spraying, animal dips, fuel, power, water, and all other materials consumed in the process of production.

VICTORIA—NET VALUE OF PRODUCTION

(£'000)

Division of Industry	1954–55	1955–56	1956–57	1957–58	1958–59
Rural—					
Agriculture ..	61,516	66,465	63,802	64,971	73,661
Pastoral	112,196	104,820	129,883	115,970	110,392
Dairying	46,428	54,301	47,933	46,153	44,382
Poultry	11,796	12,618	12,506	14,042	12,572
Bee-farming ..	353	410	506	268	408
Total Rural ..	232,289	238,614	254,630	241,404	241,415
Non-rural	21,134	24,621	26,265	27,423	29,877
Total Primary ..	253,423	263,235	280,895	268,827	271,292
Manufacturing ..	452,223	491,948	528,031	566,476	608,947
Total All Industries ..	705,646	755,183	808,926	835,303	880,239