6

PRIMARY PRODUCTION

Land Settlement and Irrigation

Land Utilisation

Introduction

The climatic conditions of Victoria (for details see pages 44 to 62) and especially the incidence of rain have resulted in the development of a wide range of farming practices, but at the same time have been largely responsible for restricting the number of enterprises on individual farms. Farming is generally carried out on a single enterprise basis, a major exception being the association of cereal growing and sheep grazing in the main wheat areas. Other exceptions occur on a less extensive scale with other forms of production.

Most farms in the State are owner-operated and, with the exception of the larger holdings, the routine work on the farm is carried out by the farmer and his family, but at times of peak labour requirement, such as during shearing or harvest, additional labour is employed.

Considerable areas in the State are retained as forest reserves and for water catchments (see page 284).

The pattern of land use is more or less clearly defined in each of the statistical districts (see map on page 308). Thus the Mallee and the northern part of the Wimmera District are used almost exclusively for cereal production and sheep raising. The more intensive carrying of livestock in these districts has been made possible by a channel system of domestic and stock water supply originating in the mountainous area of the Grampians to the south. The agriculture of the Northern District is based largely on irrigation and ranges from dairying to fruit production. The non-irrigated parts of the district are used for cereal and sheep production. In the Western, Central, North-Central, North-Eastern, and Gippsland Districts, the rainfall is heavier and more reliable; consequently, there is more diversity in land utilisation. In these districts, sheep grazing and dairying are the most important industries. Cultivation is generally limited. Some wheat is grown in the North-Eastern and Western Districts and there is some production of potatoes, vegetables, and other intensive cultivation crops on the more fertile soils in the higher rainfall parts.

Mallee District

This district is situated in the far north-west of the State and has a total area of 10·8 mill. acres. However, there are extensive areas in the north and west which, because of water shortage and the liability to severe soil erosion, have not been settled, and the total area used for agricultural production is 7·5 mill. acres.

The soils of the district being light in texture are easily and cheaply cultivated and the main farming enterprise is cereal cropping, associated with wool, and prime lamb production. The principal crop grown is

wheat and the area sown to this crop averages about 1·4 mill. acres. In addition, some 300,000 acres of oats, including 15,000 acres for hay and 50,000 acres for grazing, and 65,000 acres of barley are usually grown. Yields from cereal crops vary widely, according to seasonal conditions. The average district yield per acre for wheat in recent years has been close to 20 bushels.

In the past, lack of suitable pasture species was a major problem in pasture development, and the grazing was provided largely by native pastures, green cereal crops, and crop stubbles. The discovery and introduction into crop rotations of suitable medics has resulted in marked benefit to both crop production and grazing. The use of medics is now widespread in the district and has greatly improved the conditions for production of early prime lambs mainly for the Melbourne market. Dry land lucerne has also contributed to the vastly improved grazing afforded by the pastures.

The district now carries about 1·8 mill. sheep and produces about 17·8 mill. lb of wool in addition to the early lambs.

Irrigation areas located close to the River Murray, which marks the northern boundary of the State, produce most of the State's dried vine fruits and considerable quantities of citrus fruits.

Wimmera District

The Wimmera occupies the central western part of the State and has an area of 7·4 mill. acres, of which 6 mill. acres are used for agricultural purposes. Rainfall in the north is about 14 in per year, increasing to 25 in in the south. The Grampians in the south of the district have a higher rainfall. This area is unsuited to agricultural production and is retained by the Crown as a watershed area and forest reserve.

There are wide variations in soil type, but the district includes substantial areas of fertile self-mulching clay loams, which are among the most productive wheat-growing soils in Australia. South and east of the Grampians the soils are podzols and in the south-west there is a large area of light-textured grey soils.

Wheat farming in association with fine-wool growing or prime lamb production is the main farm enterprise over the north and central Wimmera. Both climate and soils are suited to cereal cropping and yields obtained are high. The area sown to wheat averages about 900,000 acres, the average yield being close to 26 bushels per acre. Other major crops are oats (305,000 acres, including 26,000 acres for hay and 21,000 acres for grazing), and barley (30,000 acres). In recent years the development of suitable strains of medics and clovers has resulted in the inclusion of a pasture phase in crop rotations.

In addition to mixed sheep and wheat farming, there are extensive areas, particularly in the south and west of the district where rainfall is higher and pasture establishment easier, which are used solely for grazing. Almost three-quarters of the sheep carried in the area are Merinos, and, although a number of early fat lambs come from the wheat-growing areas, emphasis here is more generally on fine-wool

production and breeding. The district carries over 4 mill. sheep and produces more than 46 mill. lb of wool. As is the case in the Mallee, dairying and beef cattle production are only of minor importance.

Northern District

This is an area of plains country extending from the Central Highlands in the south to the River Murray in the north. The total area of the district is 6·3 mill. acres, of which 5·5 mill. acres are occupied for agricultural purposes. The soils vary from typical light Mallee soils in the north-west to fertile red-brown earths in the east. Average annual rainfall is 14 in in the north-west and increases to 25 in over the foothills of the ranges, which are on the eastern boundary of the district. The district includes the major irrigation areas of the State, and because of this several different farming enterprises are carried out.

Wheat growing is an important industry. The area sown averages about 580,000 acres, and, because of climatic and soil differences, yields vary widely across the area, the district average being 21·5 bushels per acre. As in the other major wheat-producing districts, oat crops are an important feature in rotations and for grazing. In the Northern District over 258,000 acres of oats are sown each year, including 38,000 acres for hay and 17,000 acres for grazing.

The district carries about 4 mill. sheep, largely on wheat farms, and emphasis is on prime lamb production rather than fine-wool growing. Extensive irrigation has made it possible to establish highly productive perennial pastures which are used mainly for dairy production, but, in addition, the irrigation areas fatten sheep and lambs from the non-irrigated areas in Victoria and New South Wales. The milk produced is mostly used for butter, cheese, and other manufactured products, but small quantities are used for city whole milk supply. There are over 410,000 dairy cattle in the district.

Apart from dairying, irrigation has permitted the establishment of an important fruit-growing industry. This area supplies fresh fruit to Victorian and interstate markets and also provides fruit, mainly apricots, pears, and peaches, for the important canneries operating in the district. Tomatoes are also produced on a large scale.

North-Central District

This district includes much of the Central Highlands area and the rainfall is generally over 30 in, but on the northern slopes it is as low as 22 in. There is wide variation in topography and soils and much of the area is used for grazing sheep and beef cattle. However, the district is relatively small, containing only 2·9 mill. acres, of which 2·1 mill. acres are occupied and used for farming production.

Cereal cropping is unimportant, but potatoes in the volcanic hills east of Ballarat and pome fruits in the Harcourt area are the most important crops grown. Although dairy farms are scattered throughout the district, it is marginal for this form of production and emphasis is on sheep production associated with beef production. The district carries over 2 mill. sheep and about 80,000 beef cattle.

North-Eastern District

The district has a total area of 7·2 mill. acres, but includes substantial areas of Crown lands, much of which is very steep and heavily timbered. The area occupied is 3·6 mill. acres. Annual average rainfall varies from 20 in in the north-western corner of the district to well over 60 in over the mountains. Almost all of the area used for rural production has a 20 to 30 in rainfall.

Although cereal cropping is not general, there is an interesting development of ley farming based on subterranean clover pastures. However, areas concerned and production are small in relation to the State totals. The fertile river valleys are suited to specialty crop production, and some 9,000 acres of tobacco and small quantities of hops are grown in these areas. The district carries about 140,000 dairy cattle, mainly along the river valleys.

Prime lamb growing and crossbred wool production are the main sheep enterprises in the north-western and western parts of the district, but fine-wool growing is more common on the unimproved pastures along the Murray Valley and in the Omeo area. The district carries about 2 mill. sheep.

The North-Eastern District is an important beef cattle breeding and fattening area, and over 250,000 head are carried. The cattle make good use of the rough pastures of the foothill country and the productive pastures of the flats make suitable fattening areas.

Western District

Most of the district falls in the 25–30 in rainfall belt, but an area north and east of the Otways is influenced by a rain shadow effect and the average annual rainfall is 20 to 25 in. In the Otway Ranges the average annual rainfall is as high as 70 in. The soils of the district vary considerably in type and fertility. Basaltic soils cover the great bulk of the plains area. In the north the soils are similar to those of the southern Wimmera. The total area of the district is 8·8 mill. acres, of which 6·6 mill. acres are occupied. There are substantial areas of forest reserve in the Otways, which are in the south-eastern part of the district.

The only cereal crop of importance grown is oats which are used as a fodder crop, cut for hay, or harvested for grain which is also used very largely to feed stock. The more fertile soils produce both potatoes and onions, and about 60 per cent of the State's onion acreage is located on volcanic tuff soils near Colac and Warrnambool. However, emphasis is placed on animal production, and climatically the district is well suited to the development of improved pastures. It is the major wool producing area of the State, carrying over 10·3 mill. sheep. Almost half the total sheep population is Merino, and the fine wool breeds—Merino, Polwarth, and Corriedale—make up nearly three-quarters of the total sheep population. There are relatively few crossbreds, and prime lamb production does not have the same importance as in other districts. The Western District is an important beef cattle breeding and fattening area and carries close to 400,000 head. Many of the State's leading stud herds are located in the district, and in addition, many sheep properties carry beef cattle.

Dairying is an important industry and there is widespread distribution of dairy cattle. However, the main concentrations are in the following areas : Colac, Camperdown, Koroit, Allansford, and the Casterton–Coleraine region. A proportion of production is used as whole milk for town supply, but a considerable proportion of the State's processed milk products and butter is produced in the district, which carries about 428,000 dairy cattle.

Central District

Rainfall varies from 20 in in the rain shadow area, north of Geelong, to more than 50 in over the ranges north and east of Melbourne. Topographically there is variation from plains country on the western side of Port Phillip Bay to the steep hill country north and east of Melbourne. There is also a wide variation in soil type and fertility. The total area of the district is 4·1 mill. acres and 2·6 mill. acres are occupied—the remainder being reserved as forest and water-shed areas.

The climate is suited to the production of malting barley and about 40,000 acres are grown—mainly on the plains to the west. Potatoes are grown in the Romsey–Ballarat area, on the Bellarine Peninsula and the Kooweerup Swamp.

Market gardening is important in the area extending from the south-eastern suburbs of Melbourne to the northern shores of Westernport Bay, and also on the irrigation settlements near Werribee and Bacchus Marsh.

The district is the major producer of apples ; dessert types of pears and peaches and other stone fruits are of importance. Orchards are located in the eastern Metropolitan Area, on the Mornington Peninsula and near Bacchus Marsh and Pakenham. Ninety per cent of the State's strawberry crop is grown in the Dandenong Ranges some 25 miles east of Melbourne.

The district carries about 2·5 mill. sheep and production is almost evenly divided between fine-wool growing and fat lamb production.

Beef cattle are grazed in conjunction with sheep over most of the area, but in the east they are run with dairy cows to produce vealers.

The major dairying area is in the east, and this forms part of the most important dairying area of the State. The area is an important supplier of whole milk for city supply and for butter and cheese manufacture. There are just under 300,000 dairy cattle in the district. Pig production is also important.

Gippsland District

The total area of this district is 8·7 mill. acres, but the northern and eastern parts are mountainous and are reserved by the Crown. The area occupied is 3·9 mill. acres and the bulk of settlement is south of a line between Dandenong and Bairnsdale. Rainfall varies from just under 25 in in the rain shadow area near Maffra and Sale to 60 in and above in the highlands. Average annual rainfall over the most part of the settled areas is 30 to 40 in, and climatically the district is well suited to the development of highly productive perennial pastures. The soils range from poor sands to relatively fertile loams The highly fertile alluvial soils of the river valleys are important sources of production.

With the exception of forage crops, cropping is not important in the area, although certain specialty crops, such as maize, beans, and potatoes, contribute substantially to the State's total production.

Gippsland is the most important dairying district of the State and dairying is by far the most important rural industry in the district. The highly productive pastures of the 30 to 40 in rainfall areas are the basis of the industry. The district supplies the greater part of the whole milk requirements for the Melbourne market, and in addition, plays an important part in the production of butter, cheese, and other processed dairy products. In addition, the dairy herds contribute to veal and beef production. The district carries over 530,000 dairy cattle. Pig raising is associated with dairy farming, and there are 74,000 pigs carried in the area.

In western and southern Gippsland, sheep production is small and consists largely of fat lamb producing flocks run in conjunction with dairy cattle. However, in the 22–30 in rainfall area near Sale, prime lamb production on improved pastures is a major enterprise. In the foothills, fine-woolled sheep and beef cattle are carried.

Alienation of Land

The total area of the State is approximately 56,245,760 acres. On 31 December 1965, this comprised :

	Acres
Lands alienated in fee-simple	31,866,897
Lands in process of alienation	2,293,213
Crown lands	22,085,650
Total	56,245,760
Crown lands comprise :	
Reserved Forest	5,603,833
State Forest and timber reserves (under Land Act)	150,088
Water Reserves	314,643
Reserves in the Mallee	410,000
Other reserves	675,022
Roads	1,706,981
Water frontages, beds of rivers, lakes, etc., unsold land in cities, towns, and boroughs	3,845,096
Land in occupation under—	
Perpetual leases	157,649
Leases of former agricultural college lands	24,409
Other leases and licences	1,543
Temporary grazing licences and leases	*6,000,900
Unoccupied	3,195,486
Total	22,085,650

* In addition, 78,996 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 five years 1961 to 1965. 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 31 December—	Area of Crown Lands Sold			Crown Lands Alienated in Fee-simple	
	Absolutely, at Auction, etc.	Conditionally to Selectors	Total	Area	Purchase Money
	acres				$
1961..	16,315	42,070	58,385	99,805	552,056
1962..	3,584	11,299	14,883	103,337	616,674
1963..	3,308	19,425	22,733	103,766	326,934
1964..	3,896	23,055	26,951	76,587	406,554
1965..	4,705	20,757	25,462	76,965	280,839

Transfer of Land Act and Assurance Fund, 1961; Government Assistance to the Farming Industry, 1964

Soil Conservation Authority

Functions

The Authority is responsible for the mitigation and prevention of soil erosion; promotion of soil conservation; the determination of land use to achieve these objectives; and the provision of an advisory service to landholders for the efficient use and development of their land and the water resources available to them. To perform these functions, it 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. Its major field activity with landholders is the development of group conservation schemes in which the Authority engages in conservation projects in conjunction with groups of farmers having contiguous properties.

Principal aspects of current research are concerned with conservation hydrology, soil, ecological and land use surveys, conservation agronomy, soil analyses, and conservation economics.

The Engineering Division is responsible for the design and construction of concrete erosion control structures, and promotion of efficient use of farm water supplies.

Farm Water Supplies

With the passing of the *Soil Conservation (Water Resources) Act* 1965 the responsibility for the promotion of efficiency in the use and development by landholders of water resources available to them was clearly defined. The Act provides for technical assistance and advice to be given by the Authority, and for a source of finance (the Rural Finance and Settlement Commission) for landholders proposing to carry out soil or water conservation works. For these purposes the Authority is empowered to make the necessary surveys and investigations and to enter into appropriate agreements with landholders. It is also authorised to hire equipment to farmers for the carrying out of necessary conservation works and to charge fees for any service provided, and may recommend that loans be granted to landholders for approved works, the Rural Finance and Settlement Commission being the responsible organisation for handling any loan arrangements.

Land Utilisation Advisory Council

The Members of the Council are the permanent heads, or their nominees, of the Soil Conservation Authority, Department of Agriculture, Forests Commission, Department of Crown Lands and Survey, and State Rivers and Water Supply Commission. The Chairman and Secretary of the Soil Conservation Authority also occupy those positions on the Council.

Under the Soil Conservation and Land Utilisation Act the functions of the Council are to recommend to the Soil Conservation Authority the constitution and definition of catchment areas, and advise the Minister for Conservation and the Authority concerning policy on the use of land, including Crown land, in any catchment area. After consultation with the Council, the Authority determines the most suitable use in the public interest of all lands in catchment areas. The practical result is that decisions are made about which land should be used permanently for forest purposes, and what land may be used for pasture, agriculture, or any other purpose without adversely affecting the catchment as a water supply area.

The conditions under which the various forms of land use may be permitted are defined by the Authority. However, the Soil Conservation Authority, as provided for in its legislation, is obliged to consult the appropriate district advisory committee, and the Minister's approval must be obtained before the conditions of the use of land can be applied.

Landholders are liable to a penalty of up to $100 for non-compliance with the decisions, but there is a right of appeal. Should a landholder refuse to comply, the Authority may carry out any remedial work necessary and the costs may be recovered by reasonable instalments.

In 1966 the Premier directed the Land Utilisation Advisory Council to determine the potential of land throughout the State. Where there are alternative possible forms of land use, the Council recommends those which should be adopted now in the public interest. It is also responsible for recommending a long term policy for the development and use of land resources.

Because it is the most populated State in relation to area, Victoria illustrates the problem of how modern civilisation demands land for various purposes, some of which are compatible and some conflicting or competitive. When there are, or it is anticipated that there will be, conflicting or competitive demands for land, decisions must be made and these should be based on proper criteria. The direction to the Council enables the land use problems of the State to be considered on the basis of significant scientific and other criteria. Inter-departmental study groups have been established to assist the Council by collating and examining such land use and ecological information as is already available for parts of the State, in relation to the demands for land for different purposes and the decisions which need to be made.

Soil Conservation Authority, 1961–67; Land Utilisation Advisory Council, 1962, 1967; Destruction of Vermin and Noxious Weeds, 1963; Soil, Land Use, and Ecological Surveys, 1966

Rural Finance Facilities

Introduction

Australia's national policy for permanent land settlement has been based on the family unit farm. Financially this has seldom been easy because even in the early days settlers found it difficult to earn enough to maintain themselves whilst they were clearing and developing their blocks. The conditions of purchase were made very easy but considerable aggregation of holdings took place because settlers failed. Later, some of these large estates were re-purchased, subdivided, and the smaller farms made available to settlers under closer settlement schemes.

After the two world wars these schemes were expanded to enable ex-servicemen to acquire farms under generous terms of settlement. In addition, money was advanced to returned servicemen to enable them to buy their own " Single Unit " farms. Soldier settlers were also granted loans for the purchase of stock, plant, and equipment.

The State set up a Rural Finance Corporation with wide powers for assisting rural industry. This was later merged with the Soldier Settlement Commission into a Rural Finance and Settlement Commission.

The Commonwealth Bank has had a Rural Credits Department for many years. Its main function is to provide seasonal assistance in the marketing of products. Thus it cushions the effect of large interim payments at harvest time and provides credit for goods awaiting shipment or in transit. The Bank also administers the Farm Development Loan Fund, and assists in financing research. The Commonwealth Development Bank is interested in making loans available for the improvement of approved properties.

The trading banks have many farmer clients who require finance mostly on a relatively short-term seasonal basis. Numerous pastoral finance companies act as agents for farmers and frequently provide

credit for the purchase of properties or for their improvement or for the purchase of livestock. The State Savings Bank also makes limited financial advances to farmers.

Rural Finance and Settlement Commission

General

The Rural Finance and Settlement Commission was established by legislation passed in 1961, which began to merge the former Soldier Settlement Commission and the Rural Finance Corporation. The new Commission carried out the functions of the previous authorities temporarily in two separate branches, namely, those of Settlement and Finance, respectively, until further legislation passed in 1963 completed the merger by removing this division and co-ordinating the functions previously performed by the two separate authorities.

Rural Finance Act

The Rural Finance Corporation was established in April, 1950. Its functions, which have since been taken over by the Commission, include the making of advances through loans at low rates of interest to existing or proposed country industries, both primary and secondary. The Commission is also empowered to advance moneys to, or for the benefit of, any farmer for carrying into effect a composition or scheme of arrangement between him and his creditors.

Revenue, expenditure, etc., for each of the five years, 1961–62 to 1965–66 are given in the following table :

VICTORIA—RURAL FINANCE ACT : REVENUE, EXPENDITURE, ETC.
($'000)

Particulars	1961–62	1962–63	1963–64	1964–65	1965–66
REVENUE					
Interest	950	1,040	1,145	1,237	1,346
Other	40	50	20	21	34
Total Revenue	990	1,090	1,165	1,258	1,380
EXPENDITURE					
Administration	120	110	134	143	169
Interest	598	730	797	947	1,021
Sinking Fund	44	46	50	53	56
Other	24	24	108	63	61
Total Expenditure	786	910	1,089	1,206	1,307
Net Surplus	204	180	76	52	73
Loans and Advances Outstanding at 30 June	19,718	20,340	21,168	22,388	24,113
Loan Indebtedness to State Government at 30 June	17,812	19,032	20,208	21,050	22,128

General Settlement

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. In 1945, the Victorian Government completed an Agreement with the Commonwealth Government. The State Parliament ratified the Agreement and also passed legislation constituting the former Soldier Settlement Commission. Soldier Settlement in all States has now reached the stage where, apart from forfeited holdings, no further allocations of blocks are visualised.

Under the Victorian legislation, soldier settlement was carried out under two separate schemes. First, there was the general settlement scheme where the Commission acquired freehold land or Crown land for subdivision and development into holdings for application by ex-servicemen. Such holdings were allocated on a competitive basis, having regard to the merits of all applicants. The number of ex-servicemen settled under this scheme totalled 3,293. Second, there was the Single Unit Farm Scheme, where ex-servicemen were granted loans up to a maximum of $18,000 to assist them in the purchase of existing farms of their own choosing. Under this scheme 2,878 ex-servicemen were granted loans amounting to $23,917,338.

The Soldier Settlement Act enabled the Commission to make advances to general settlers and Single Unit Farm settlers to assist them in the purchase of stock, plant, equipment, and shares in co-operatives. For this purpose $12,555,363 has been advanced to settlers and at 30 June 1966, $12,383,053 has been repaid, $30,674 has been written off, leaving an outstanding balance of $141,636. In addition to its functions under the Soldier Settlement Act, the Commission, on behalf of the Commonwealth Government, administered that portion of the *Commonwealth Re-Establishment and Employment Act* 1945, which related to agricultural loans and allowances.

With soldier settlement in its final stages, the following tables set out the particulars of rural rehabilitation of ex-servicemen in Victoria as at 30 June 1966 :

VICTORIA—LAND ACQUIRED AND COST OF DEVELOPMENT, 1945 TO 1966

Particulars	Total Expenditure to 30 June 1966		Balance Outstanding at 30 June 1966
	acres	$'000	$'000
Freehold Land	1,193,171	39,448	123
Crown Land	51,536		
Development and Improvement of Holdings	..	53,873	
	Total Realisations to 30 June 1966		
	acres	$'000	
Sales of Land Not Required for Soldier Settlement	65,041	3,267*	484*

* Sale price of land not required for settlement ; balance outstanding represents instalments not yet due where terms were given to purchasers who are not necessarily ex-servicemen.

VICTORIA—ADVANCES TO EX-SERVICEMEN, 1945 TO 1966

Act	Total Advances to 30 June 1966		Advances Outstanding at 30 June 1966	
	No.	$'000	No.	$'000
Soldier Settlement Act—				
Advances for Settlers' Lease Liability*	3,033	57,468	2,285	41,458
Advances to Assist in Acquiring and Developing Single Unit Farms	2,878	23,917	1,345	9,558
Advances for Improvements, Stock, Implements, etc. ..	†	12,305	198	142
Advances for Shares in Co-operatives	327	250	..	..
Commonwealth Re-establishment and Employment Act—				
Advances to Assist Rehabilitation in Farming Industry	2,970	3,594	212	61

* The total number of settlers allocated holdings is 3,293 which includes 239 holdings re-allocated and 17 holdings disposed of. Four settlers have yet to receive their lease liabilities.

† Not available.

Other Land Settlement

The *Land Settlement Act* 1959 extended the functions of the then Soldier Settlement Commission in that, under such Act, the Commission was given authority to administer a new land settlement scheme to cater for those men wishing to become farm owners—many of whom were too young to have been ex-servicemen and thus eligible for soldier settlement. The scheme generally is based on the same principles as the scheme for soldier settlement—the main differences being the interest rates payable and the basis of determining the capital liability of the settler for the farm. There is no provision in the Act for advances to buy single unit farms. The Commission is given authority to purchase privately owned land or set apart suitable Crown land for development and subdivision.

Any male British subject over the age of 21 years is eligible to apply for land made available, but the actual allocation is made on a competitive basis, having regard to a number of factors laid down in the Act, including the applicant's experience in farming and prospects of success. A feature of the legislation is that the farms are either brought to, or within sight of, production before allocation. Further details about the general principles of this legislation will be found on pages 494 to 496 of the Victorian Year Book 1963.

Up to 30 June 1966, the land being developed for allocation under this scheme has been on three developmental projects. These are at Heytesbury near Cobden, Yanakie on Wilson's Promontory, and the East Goulburn Project near Shepparton.

The Yanakie and East Goulburn schemes have now been completed and all farms allocated to settlers.

The demand for all holdings allotted to date has been exceedingly keen and the 421 farms allocated (342 dairying and 79 soft fruit) attracted nearly 11,000 applications.

At 30 June 1966, the position of other land settlement in Victoria under the *Land Settlement Act* 1959 was as follows :

VICTORIA—OTHER LAND SETTLEMENT, 1959 TO 1966

Particulars	Total Expenditure to 30 June 1966		Balance Outstanding at 30 June 1966	
	acres	$'000	$'000	
Land Acquired—				
Freehold Land Purchased ..	20,489	1,576	14,753	
Crown Land	106,681			
Development and Improvement of Holdings	..	18,512		
	Total Realisations to 30 June 1966			
	acres	$'000		
Sales of Land Not Required for Settlement	3,583	242*	86*	
	Total Advances to 30 June 1966		Advances Outstanding at 30 June 1966	
	No.	$'000	No.	$'000
Advances to Settlers under the Land Settlement Act ..	†	877	262	363
Liability of Settlers Granted Purchase Leases	133	3,896	133	3,818

* Sale price of land not required for settlement ; balance outstanding represents instalments not yet due where terms were given to purchasers.

†Not available.

Other Rural Finance Facilities

State Savings Bank of Victoria

State Savings Bank loans for rural purposes fall into two categories :

(1) Credit Foncier Department loans are long-term advances to enable borrowers to purchase or improve farms. The maximum loan available from this source is $7,000 carrying interest at 5 per cent per annum and repayable over 10 years (subject to renewal). The maximum loan must not exceed three-quarters of the value of the property. Particulars of advances, repayments, etc., for the year ended 30 June 1966, may be found on page 676.

(2) Savings Bank Department loans are advances of larger amounts—the maximum loan is $20,000—and are available on the security of first mortgage over freehold property. These are short-term loans extending over a period of three years, but are subject to renewal. Interest charged is either 5·75 or 6·25 per cent per annum depending on whether the property is occupied by the borrower or whether the loan exceeds $10,000. The maximum loan must not exceed two-thirds of the value of the property.

Reserve Bank of Australia—Rural Credits Department

The Rural Credits Department was established in 1925 as a department of the Commonwealth Bank of Australia, now known as the Reserve Bank of Australia. Its function is to provide finance to statutory marketing boards and similar authorities and to co-operative

associations of primary producers. Advances are used by borrowers principally for making payments to growers for their primary produce pending its sale and to finance marketing expenses which in some cases include processing and packing of the commodity.

Finance for the marketing of wheat, and to a lesser extent, dairy products and barley has comprised the major portion of accommodation provided, but the Department's operations have also covered such commodities as tobacco, canning fruits, dried fruits, meat, eggs, and fertilizers.

The interest rates for advances during the year ended 30 June 1966 were 4·25 per cent per annum, if against the security of a Commonwealth or State Government guarantee, and 4·5 per cent per annum against other securities.

Grants have also been made by the Rural Credits Development Fund for research and extension work to assist the development of primary industries. The Fund is financed by one-half of the annual net profits of the Rural Credits Department.

Farm Development Loan Fund

The Farm Development Loan Fund was established in 1966 to provide loans to primary producers, at preferential rates and conditions, for drought relief and farm development purposes. Loans are made by the trading banks from their Farm Development Loan Fund Accounts with the Reserve Bank, and are designed to supplement other loans available from the banking system.

Commonwealth Development Bank

A brief outline of the functions of the Commonwealth Development Bank, together with particulars of rural advances outstanding at 30 June 1966, may be found on pages 670–2. Rural loans are made for a variety of purposes, e.g., clearing, fencing, pasture improvement, farm water conservation, erection of essential farm buildings, and the stocking of properties. Other aspects of assistance granted include aid to successful applicants in government sponsored rural development schemes and land ballots. Special attention is also given to providing finance to applicants opening up new areas. Particulars of rural advances approved in Victoria during the year ended 30 June 1966 are given in the following table :

VICTORIA—COMMONWEALTH DEVELOPMENT BANK OF AUSTRALIA : RURAL ADVANCES APPROVED, YEAR ENDED 30 JUNE 1966

($'000)

Type of Rural Activity	Rural Advances Approved
Sheep	3,756
Dairying	2,589
Cattle	319
Wheat	249
Fruit Growing	255
Poultry	699
Other	274
Total	8,141

The average loan approved for rural purposes during the year was $12,467.

Advances by Major Trading Banks

The extent of rural lending in Victoria by the Commonwealth Trading and other major trading banks is illustrated by the following table which shows bank advances to borrowers outstanding at the end of June for the five years 1962 to 1966 :

VICTORIA—COMMONWEALTH TRADING BANK AND PRIVATE TRADING BANKS : BUSINESS ADVANCES OUTSTANDING TO RURAL INDUSTRY BORROWERS

($m)

Industry of Borrower	Amount Outstanding at the End of June—				
	1962	1963	1964	1965	1966
Sheep Grazing	39.5	39.8	39.8	45.6	49.2
Wheat Growing	6.3	7.8	8.4	12.2	15.2
Dairying and Pig Raising	27.4	29.7	31.8	31.2	31.9
Other Rural	17.2	19.4	20.2	21.2	22.9
Total	90.3	96.7	100.2	110.2	119.2

Advances to rural industry borrowers represented 18·1 per cent of trading banks' business advances outstanding at the end of June 1966, and 14·8 per cent of all advances outstanding. The maximum rate of interest on bank overdrafts at 30 June 1966, was 7·25 per cent per annum but the average rate on rural loans would probably be below this level.

Advances of Pastoral Finance Companies

The following table shows total rural advances outstanding to pastoral finance companies at the end of June for the five years 1962 to 1966 :

VICTORIA—RURAL ADVANCES* OF PASTORAL FINANCE COMPANIES

($m)

At End of June—	Advances Outstanding
1962	32.9
1963	35.6
1964	39.0
1965	43.9
1966 .. .	40.9

* Held by branches located in Victoria which is not necessarily the State of residence of the borrower.

Improvement Purchase Leases

Crown land can be made available for application under improvement purchase lease conditions. All applications received are dealt with by a Local Land Board and no person is eligible to obtain a lease if the unimproved value of the area applied for together with the unimproved value of the land already owned by the applicant exceeds $15,000.

The essential conditions of an improvement purchase lease are as follows :

(1) That the lessee will make such land improvements within the first six years as are specified. Land improvements means the clearing, draining or grading of land, the preparation of land for the sowing of crops and pasture, and soil improvement and maintenance.

(2) That the lessee will commence to carry out the land improvements within one year and will complete one quarter within three years.

(3) That the lessee will not sell, assign, or part with possession of the leasehold during the first six years.

(4) That the lessee will not mortgage his interest in the leasehold during the first six years without first obtaining the consent of the Department.

(5) That the lessee will establish his permanent home on the land before the end of the sixth year. If the land is not considered to be capable of being developed into a living area, then the lessee may reside on other land within 20 miles owned by him.

The purchase money is payable in 20 annual instalments and on satisfactory compliance with the conditions of the lease and on payment of the balance of purchase money and fees, a Crown grant will be issued at any time after the first six years.

Since the inception of improvement purchase leases in 1956 and up to 31 December 1966, 730 allotments comprising 257,037 acres of Crown land have been proclaimed available for settlement.

Water Supply and Land Settlement

History

For practical purposes, the history of water supply in Victoria—outside the Metropolitan Area—can be taken up in the early 1880s when the miners who had left the goldfields to settle on the northern plains began to assess 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

Victorian Act, which has since provided the basis for practically all of the rest of Australia's water supply development, had three main features :

(1) It abolished all but one of the Trusts (Mildura) 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, with the exception of the Melbourne Metropolitan Area ; and

(3) it completed the nationalisation of water resources commenced in the 1886 Act and vested in the Crown the right to the use and control of the water in the State's rivers, streams, etc., thus avoiding the litigation which has clouded the history of water supply elsewhere.

Control of Surface Waters and Other Functions

One of the State Rivers and Water Supply Commission's main functions is to exercise the Crown's rights to the control and use of rural surface waters, and to act on any infringement of these rights. The Crown's interest is to see that limited resources are distributed fairly and productively between users. This is done by licences and permits for private diversions from streams, and by the apportionment of resources to authorities constituted under the Water Act.

The Commission also investigates water resources and plans works. It operates 278 gauging stations on streams and publishes the information obtained. Records of river flows extend back to the 1860s. Investigation and planning require surveys, and there are 34 surveyors working from nine centres. Other Commission investigatory services are its Testing Laboratory and Irrigation Research Section at Head Office, and its Hydraulic Research Station at Werribee.

Irrigation

Most irrigation is carried out in districts directly controlled by the Commission, although there is an increasingly large proportion of " private diverters ", irrigators who are authorised to take water from streams, lakes, etc., but who do not come within the boundaries of an irrigation district. (See page 298.)

A feature of the districts is the system of " water rights ". Under this system a certain quantity of water is assigned to each district and allotted to the lands commanded and 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 and they can also buy water in excess of the water right in most seasons. The water right system assures irrigators of a definite quantity of water each year, and the Commission can rely on fairly constant revenue to meet the cost of district operation. Water usage varies according to seasonal conditions and the water right system provides a constant minimum income.

A 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 holding instead of limiting the

allocation of water to a portion of each holding. This has meant that Victorian irrigation is predominantly devoted to dairying, fruit, and vegetables, rather than to sheep raising. The advantage of intensive irrigation is that much higher returns are available from a given quantity of water and, consequently, a much greater rural population is supported.

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

VICTORIA—MAJOR IRRIGATION STORAGES

River	Name	Capacity	Principal System or District Served
		acre ft	
Goulburn ..	Lake Eildon ..	2,750,000	Goulburn–Loddon
	Goulburn Reservoir..	20,700	,, ,,
	Waranga Reservoir ..	333,400	,, ,,
Campaspe ..	Lake Eppalock ..	252,860	,, ,,
Loddon ..	Cairn-Curran Reservoir	120,600	,, ,,
	Tullaroop Reservoir..	60,000	Maryborough town supply ; private diverters ; and Goulburn–Loddon System
Murray ..	Lake Hume ..	1,240,000*	Murray
	River Murray Weirs..	111,575*	,,
Macalister ..	Lake Glenmaggie ..	154,300	Macalister
Werribee ..	Pykes Creek Reservoir	19,400	Bacchus Marsh District
	Melton Reservoir ..	15,500	Werribee District
		5,078,335†	

* Victoria's half share under the River Murray Agreement, subject to certain obligations to South Australia.

† In addition to the storages named, there is a system of natural lakes in the Kerang–Swan Hill Area forming part of the Torrumbarry System. The Coliban River storages are used for both irrigation and town supply around Bendigo and Castlemaine. A limited irrigation area is also supplied from the Wimmera–Mallee System.

The following table compiled by the Commission shows the total areas of the various irrigation systems and the areas under irrigated culture during 1965–66 :

VICTORIA—AREA OF SYSTEMS AND LANDS IRRIGATED, AND WATER DELIVERED, 1965–66

System or District	Total Area within Constituted District	Area Irrigated								Water Deliveries
		Pastures		Lucerne and Sorghum	Vineyards	Orchards	Market Gardens	Others	Total	
		Native	Sown							
	acres									acre ft
Goulburn–Loddon System	1,352,217	29,066	449,271	30,831	356	22,786	3,585	32,256	568,151	798,142
River Murray System—										
Torrumbarry System* ..	365,126	19,890	228,931	10,613	3,186	2,816	906	9,889	276,231	286,226
Murray Valley Area ..	301,807	425	100,704	9,637	41	5,986	383	716	117,892	209,571
Pumped Supply Districts†	80,596	364	277	1,008	38,594	3,272	171	1,591	45,277	137,111
Total River Murray	747,529	20,679	329,912	21,258	41,821	12,074	1,460	12,196	439,400	632,908
Macalister District ..	130,595	2,389	62,428	1,058	..	..	360	170	66,405	116,076
Werribee–Bacchus Marsh	16,344	2	5,899	816	..	678	4,122	56	11,573	19,873
Other Northern Systems ..	‡	724	12,609	1,175	..	3,293	500	62	18,363	33,968
Other Southern Systems ..	‡	..	..	..	..	..	1,650	258	1,908	..
Private Diversions ..	‡	2,107	106,347	12,001	3,520	6,020	15,976	10,890	156,861	369,640
Grand Totals ..	2,246,685§	54,967	966,466	67,139	45,697	44,851	27,653	55,888	1,262,661	1,970,607

* Includes 31,406 acres irrigated by private diversion.

† Including First Mildura Irrigation Trust (16,288 acres irrigated), supervised by the Commission.

‡ Not available.

§ Incomplete.

Private Irrigation

Private irrigation by diversion of water from rivers, lakes, etc., has increased in recent years. From 1942–43 to 1965–66, the area watered privately increased from 23,462 acres to 156,861 acres, the latter being 17 per cent of the total area irrigated. The number of private diversions authorised during 1965–66 was 8,162 and the water delivered was used mainly to produce annual and perennial pastures and fodder, as well as potatoes, tobacco, hops, citrus, and cotton. About half the area privately watered is supplied from streams regulated by storages, the other half being from streams wholly dependent on rainfall. Many private storage dams are being built, frequently at substantial cost, on individual properties to insure against low flows in the streams normally used.

Town Supplies

The Commission operates major works for town water supplies outside the Melbourne Metropolitan Area—the Coliban System supplying Bendigo, Castlemaine, and other towns in that area; the Mornington Peninsula System supplying towns extending from Longwarry to portion of Dandenong, the bayside towns from Seaford to Portsea, and the Westernport towns from Hastings to Somers; the township of Wonthaggi; the Bellarine Peninsula System supplying water to the towns extending from Portarlington to Anglesea; and the Otway System supplying water from the Otway Ranges to Camperdown, Cobden, Terang, and Warrnambool. The total towns supplied by the Commission are 140 and their total population is 206,000. (For other town supplies and sewerage—see page 227.)

Finance

Acting as a government authority, the Commission constructs its works with funds provided for the purpose by Parliament—amounting to date to about $276m. A further $63m of Government loan moneys has been provided for expenditure by local authorities under the supervision of the Commission. In recent years the rate of expenditure on construction of State works has been about $12.5m annually, and the Commission also supervises the expenditure of about $5m annually by local authorities.

The Commission administers, supplies water to, and collects revenue from, nearly 120 separate districts, each of which is run financially as a separate undertaking. Revenue from its ten irrigation districts exceeds $4.6m; from its 92 urban districts about $1.9m; from its eleven rural waterworks districts about $1.8m, and from its three flood protection districts about $100,000—the total annual revenue, including other minor sources, being about $8.5m.

Administration

The Commission is served by a decentralised organisation, designed to carry out diverse functions all ultimately related to water. Central administrative, engineering, and clerical functions are carried out by a staff of 500 in the Head Office at Armadale. At the many country centres throughout the State, there are 1,050 other officers and some 1,750 casual employees. Together they are engaged in planning, building, maintaining, and operating waterworks vital to the prosperity of rural Victoria.

River Improvement and Land Drainage

Introduction

Rivers and streams are the main arterial drains which serve as outlets for the drainage of surplus water from the land. Effective land drainage is vital to primary production and industry; the object of river improvement is to preserve and increase the usefulness of rivers as effective drainage outlets and to prevent harmful flooding during wet years.

Victoria is served by about twenty principal rivers—excluding the River Murray which is in New South Wales—but in comparison with other countries these rivers are not large.

River Improvement and Drainage Trusts

The first major step towards improving Victoria's rivers and streams was taken in 1948, when the Victorian Parliament passed the River Improvement Act enabling local authorities, known as River Improvement Trusts, to be constituted. These Trusts—of which there are now 22—are comprised of local landowners elected by the ratepayers within the Districts. They accept responsibility not only for improving the watercourses by clearing obstructions and controlling bed and bank erosion, but also for maintaining the river training and stabilisation works.

Where it is necessary to add artificial channels to the natural system of drainage provided by the rivers and streams to relieve waterlogging of the land, the River Improvement Act provides for Drainage Trusts to be constituted. There are now four such Trusts in Victoria.

River Improvement and Drainage Districts generally are confined to the relatively narrow strips of land bordering the rivers and streams requiring improvement and maintenance, and the areas affected by the drainage systems. Under the Act only those lands which are expected to derive benefit from the works may be rated for the operation of the Trust and for maintenance.

Funds for river improvement and drainage works are allocated annually by the Government and the works are subsidised. The Trusts operate under the supervision of the State Rivers and Water Supply Commission, their works being subject to review and approval before construction is commenced. The total expenditure by River Improvement and Drainage Trusts since 1950, when the first Trust was formed, now amounts to nearly $4.8m.

Where River Improvement Trusts have been in operation for some years, significant improvements by means of channel clearing, bank protection, and erosion control works have been achieved in stabilising the river channel and preventing the loss and devastation of valuable agricultural lands. Some results achieved have been quite spectacular, as for example in the Yarra River Improvement District. In the Yering Flats near Yarra Glen and the Yarra flood-plain adjacent to the River at the Maroondah Highway, former swamp lands have now been drained and converted into first-class grazing lands under improved pasture, following the improvement of the river channel downstream by the Trust. Other notable examples of flood mitigation and erosion control by Trusts are the Kiewa, King, Ovens, Mitta Mitta, and Broken Rivers in the North-East of the State and the Avon, Latrobe, Macalister, Mitchell, Snowy, Tambo, and Tarwin Rivers in the eastern and southern sections of Victoria.

Significant progress is also being achieved by the constituted Drainage Trusts in improving drainage and preventing water-logging of lands within their Districts. The Lough Calvert Drainage Trust (near Colac) and the Yatchaw Drainage Trust (near Hamilton) have effective drainage systems in operation. The Strathdownie Drainage Trust is proceeding with the construction of works to drain extensive swamps near the Victoria-South Australia border, while the Longwarry Drainage Trust has recently commenced the remodelling of drains near Drouin.

Rivers and Streams Fund

Assistance is available to municipal councils and other local authorities on a contributory basis for improvements to streams and watercourses, such as the removal of obstructions to flow and for the control of erosion of their beds and banks.

This Rivers and Streams Fund was created in 1930. Initially the rentals received by the Lands Department for grazing purposes by adjoining landholders of river frontage reserves—which are strips of land along certain watercourses in Victoria—were paid into this Fund. Since 1954, these monies have been supplemented from net fees received by the State Rivers and Water Supply Commission for diversion of water from streams under permits and licences. Grants are generally made to these local authorities on a two for one basis, and since the Fund was initiated, approximately 2,600 grants totalling over $1.6m have been made for local river improvement works. The total expenditure on these works subsidised from this Fund now amounts to approximately $2.4m.

Dandenong Valley Authority

In 1963, the Government passed legislation to enable the Dandenong Valley Authority to be formed to deal with the problems of river improvement and arterial drainage within the whole of the Dandenong Creek catchment. The essential feature of this legislation is that one authority is responsible for the whole catchment area.

Since the Second World War, the very rapid housing and industrial development in this area had intensified the drainage problems in all the fourteen municipalities concerned, not only in the downstream sections but also in the topmost parts of the catchment. This Authority, which acts under the general supervision of the State Rivers and Water Supply Commission, has already carried out extensive investigations and has drawn up a master plan for the arterial drainage of its District, and construction of works has already begun. The total cost of its first ten-year plan of works is $6m.

The Authority has taken over, for arterial drainage purposes, that portion of the catchment which was formerly situated within the metropolis, and also the Carrum Drainage District which was formerly managed by the Commission. Its District is shown on the accompanying map. The whole of the Dandenong Creek Catchment area is rated on a uniform basis through the municipalities to finance the construction and maintenance of works. In addition, the Authority has power to borrow money from private sources and is eligible to receive Government assistance towards the cost of capital works. This is the first Authority

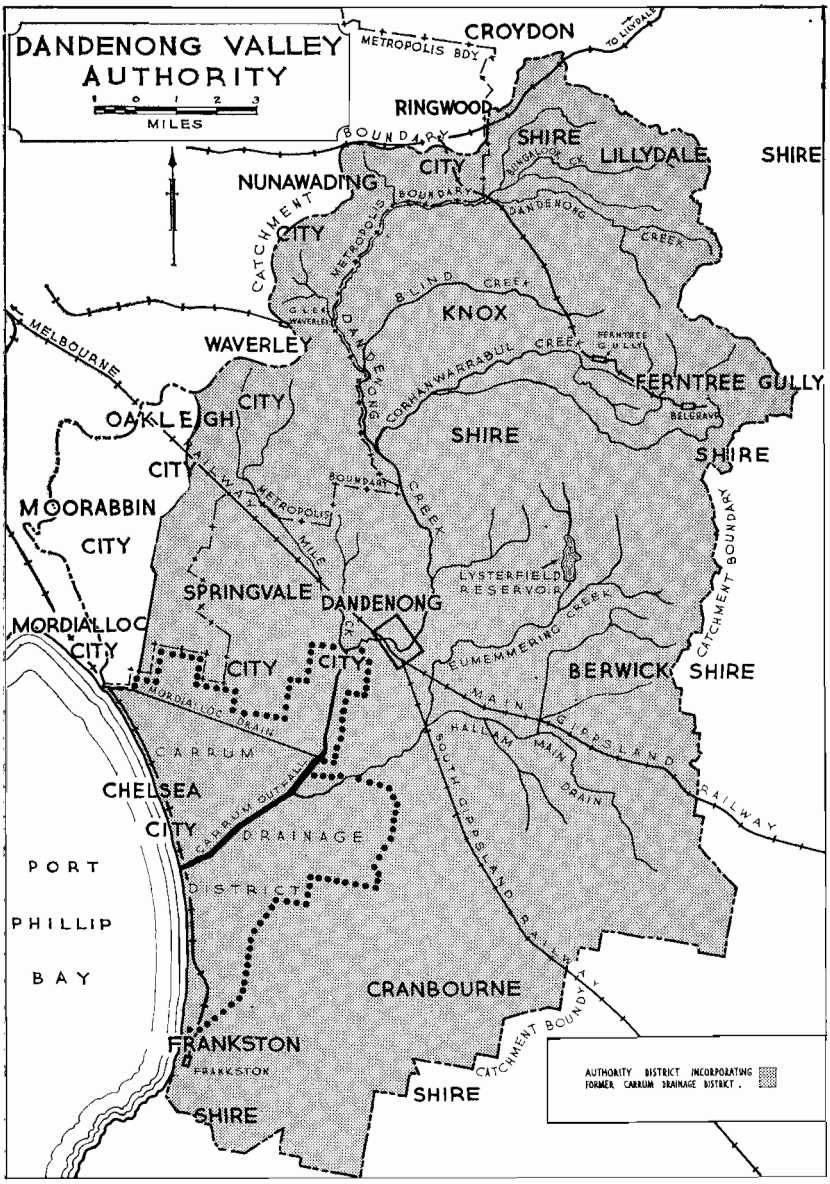


FIGURE 10.

of its type in Victoria with complete local control and with adequate financial resources to deal with local drainage problems promptly and effectively.

Irrigation, 1962; Wimmera–Mallee Region Water Supply and Flood Protection, River Improvement, and Drainage, 1963; Underground Water, 1964; Water Supply in Victoria, 1964; Goulburn–Murray Irrigation District, 1965; Spray Irrigation in Agriculture and Dairying, 1965; Private Irrigation Development, 1966; Water Research Foundation, 1966; River Improvement, 1967; Rivers and Streams Fund, 1967

Agricultural Education, Research, and Extension

Tertiary Agricultural Education

Agricultural Colleges

The legislation of 1884 which provided for the establishment of agricultural colleges set up a Council of Agricultural Education for their administration. Its revenue was derived from the rentals of endowment lands, sales of farm produce, and students' fees, and it continued to administer the Colleges until 1944 when, with the passing of a new Agricultural Colleges' Act, control passed to the Department of Agriculture in which a new Division of Agricultural Education was established. This move has provided adequate finance for maintenance and capital expenditure, the latter including a complete rehabilitation programme for both Dookie and Longerenong Colleges in the period from 1959 to 1963.

The main purpose of the Colleges is to train agricultural technologists in the basic technical and scientific principles underlying all aspects of agriculture. Lectures on all topics are complementary with demonstrations, tours, laboratory work and practical farm work, the latter being given on large farm areas attached to each College—6,048 acres at Dookie and 2,386 acres at Longerenong. Although the emphasis is placed on training technologists to assist in agricultural research and extension, intending farmers will gain a sound technical and scientific background to enable them to make best use of modern agricultural and economic developments in operating their own properties.

In 1966, a completely revised syllabus was introduced at Dookie and Longerenong and after successful completion of the three-year course, students gain a Diploma of Agricultural Science. The minimum entrance standard is a pass in five subjects including English and Chemistry at the Leaving or Leaving Technical examination. Short intensive courses for farmers, farmers' sons, and others engaged in rural pursuits are provided at Dookie Agricultural College.

In 1967, the three-year course for the Diploma of Horticultural Science was introduced at the Burnley Horticultural College, with the same pre-requisite entrance requirements as for the Agricultural Colleges. This replaced the Diploma of Horticulture course introduced in 1958. The new course is very comprehensive, giving tuition and practical experience in fruit and vegetable production, ornamental horticulture, nursery management, and landscape design ; as well as training in the basic physical, biological, and applied sciences.

Part-time evening classes in horticultural, agricultural, and associated science subjects are also conducted at Burnley. The Agricultural Education Division also administers the Government Grant to the Senior Young Farmers of Victoria.

University of Melbourne School of Agriculture

The Faculty of Agriculture was set up in its present form by the *Agricultural Education Act* 1920, which provided for permanent staff, for a building, and for the employment of graduates as scientific officers in the State Public Service. (There had been less permanent arrangements for teaching agriculture in the University earlier in the century.) The first full-time Professor took up his appointment in 1926.

The primary purpose of the four-year University course has been to give all students a common basic training in applied biology. The first year is devoted to pure science subjects. This is followed by three years in which the scientific principles upon which agriculture is based are presented and in which students learn of their application to the practice of agriculture. The subjects of the later years include more advanced chemistry and biochemistry, plant physiology and pathology, soils, microbiology, genetics, animal physiology and husbandry, agronomy, economics, and land utilisation. The students in Agricultural Science also attend courses in engineering subjects, while a full-time degree in Agricultural Engineering is conducted elsewhere in the University.

The second year of the course is spent in residence at the University's field station at Mount Derrimut (near Deer Park). This is a property of 800 acres on which the students are shown the regular farm operations and live through a farming year, while spending their mornings on regular lecture classes and coming to Melbourne University for one day a week.

Since the establishment of the Faculty of Agriculture, 858 graduates have entered the profession. A quota of 70 is now placed on the numbers in the first year of the course, and the number of graduates is between 40 and 50 per annum. There are now sixteen students for higher degrees (M.Agr.Sc. and Ph.D.) working either at the University or at Mount Derrimut. Substantial buildings have been established at Mount Derrimut from various industrial research funds for beef cattle, poultry, sheep and wool, and wheat.

Further Reference, 1967; Research, 1967

Agricultural Extension Services

General

The Department of Agriculture is the recognised authority for advising primary producers about all developments which contribute to the progress of Victoria's agricultural, pastoral, and horticultural industries. This advice is planned on a continuing basis rather than being restricted to specific questions from individual producers. Nevertheless, individual problems are answered when necessary. Most of these developments arise from research work within Victoria. Others are applications of discoveries in other States and countries. Some arise from the experiences of primary producers.

In the short term, extension work in Victoria often involves campaigns to control problems such as transitory diseases and pests, e.g., bloat problem in cattle or cockchafer grubs in pastures. Timely warnings, e.g., against frost in the dried fruit areas, and conditions which produce brown rot in peaches, are also part of the extension service, as is the transmission of the results of research to farmers. In the long term, however, extension is a continuing educational programme in which specialists use all available information to stimulate primary producers, cater for their needs, and help them to integrate the knowledge into their farming programmes.

No firm recommendation can be made without reason to believe that it can be applied practically and economically. To do this, an extension specialist must have a keen appreciation of farmers' goals and resources as well as awareness of markets and values. Thus, he

must have a background of sociology and agricultural economics as well as the scientific and technical aspects of agriculture. Farmers, too, play their part by helping extension workers with the practical application of new ideas, and keeping them informed about problems which arise on properties and many Victorian farmers make available small areas of land for the scientific testing of new developments in various environments.

Departmental Extension Services

The Department of Agriculture's extension service is led by broadly experienced University graduates in agricultural science. These men are supported by others with special qualifications. Victoria's extension services are decentralised throughout the State and technical and informational support is given from headquarters in Melbourne. Groups of specialised extension officers are established in the main country towns which serve Victoria's surrounding agricultural regions. Some advisory officers, especially those with regulatory duties are located in smaller centres, with a few at research stations.

In large country centres such as Ballarat, Bendigo, and Shepparton, the senior extension scientist coordinates activities of several extension specialists. The Department's first large Extension Centre has recently been established at Bendigo. Here, all of the extension scientists and appropriate research workers for the Central Highlands Region are located together at one centre. Some of these serve an industry such as dairying, sheep and wool production, and cattle raising. Others are specialists in crops such as cereals, pastures, fruit, or vegetables.

Where practicable, visits are made to individual farms but, through necessity as well as deliberate design, much of Victoria's extension work is done through the mass media such as publications, radio, films, and television, as well as group methods such as meetings and field days.

The Department's extension staff is not expected to give an individual service on call to each of Victoria's 70,000 primary producers. People who need such a continuing personal service can engage private agricultural consultants who obtain much of their information from the Department of Agriculture.

Extension Media

In addition to providing weekly items through the newspapers, the Department of Agriculture publishes a monthly *Journal of Agriculture* and a series of quarterly *Digests*. These *Digests* are mailed to every dairy farmer, pastoralist, fruitgrower, vegetable grower, and apiarist in Victoria. These regular publications are supplemented by special guide books, reports, bulletins, booklets, and advice notices, e.g., spray warnings, which keep primary producers advised of latest developments, current problems, and answers to pertinent questions.

Weekly radio programmes and news items are available to the Australian Broadcasting Commission and country commercial radio stations. Some country officers give their own programmes on local radio stations. Television services are provided by trained officers at country television stations.

The Department of Agriculture has a well equipped motion picture film unit whose documentary productions are screened to appropriate audiences throughout Victoria. Some of these films are used in other States and some are sent to other countries for use by agencies such

as the Food and Agriculture Organisation of United Nations. Documentary films are also used on television. However, most of the Department of Agriculture's motion picture production for television is concerned with weekly news items, series of short films on a special subject, e.g., calf rearing, and as special aids for officers who are appearing personally on this medium. Still pictures and art work are also used widely in television, as well as in publications and exhibits.

Field Work

The Department of Agriculture's extensive programme of group work in the field includes annual events such as field days, meetings, farm competitions, agricultural shows, exhibits, farmers' schools, and farmers' discussion groups.

At each of the major research stations serving most primary industries throughout Victoria, an annual field day usually attracts an attendance of many hundreds of farmers. Attendances of thirty to fifty persons of the locality are recorded at the many field days at small trial plots. Farmers are also welcome to make private visits to research stations during the year.

Farm competitions, especially in the cereal growing districts, have always been an important part of the Department of Agriculture's extension programme. The Department's officers also judge some competitions which are conducted by other organisations such as the Royal Agricultural Society of Victoria.

Training Courses

Every year, the Department conducts several short courses for farmers in various aspects of primary production such as irrigation, dairying, sheep husbandry, farm mechanisation, and management. Most residential courses of this type are held at Dookie Agricultural College. Farmers' schools which cover special sections of a district's agriculture, are held in country towns. Some of these schools are residential; others are on a day to day basis. Instruction in the keeping of farm accounts has become an increasingly important service during recent years.

Discussion Groups

Department of Agriculture specialists also participate in seminars conducted by agricultural societies and other adult education organisations. During recent years particularly, discussion groups have become important in the Department of Agriculture's extension programme. These groups comprise up to ten farmers who meet regularly, mostly at monthly intervals, for frank discussions of their mutual problems and the application of new developments to their own farming situations. While encouraging free expression of ideas and the exchange of opinion among the farmers, the Department's specialists provide resource information and, where necessary, guidance to the discussions. There are over 100 discussion groups in Victoria; most of them are in dairying districts and in horticultural areas.

The Department of Agriculture keeps close contact with the Senior Young Farmers' Clubs of Victoria. The Chief, Division of Agricultural Education, is Chairman of the Senior Young Farmers' Advisory Committee. Another senior officer of the Department is a member of the committee. Contact is also maintained with commercial firms and other agencies through which agricultural information reaches primary producers.

Training of Extension Officers

Many of the Department of Agriculture's extension specialists have had training and experience in other countries. Close contact is kept with such services as the National Agricultural Advisory Service in the United Kingdom, and the Cooperative Extension Service in the United States of America.

Several extension specialists have obtained their postgraduate diploma in agricultural extension at the University of Melbourne, after graduating with the basic degree in agricultural science. This post-graduate course provides advanced instruction in rural sociology, the principles of extension education, agricultural economics, extension skills, and the organisation of extension work.

In-service departmental training has for many years been given to the officers in the principles and methods of extension work, as well as in scientific and technological advances. Additional training in agricultural economics is now given.

Conferences between the Department of Agriculture's research workers and appropriate extension specialists, e.g., in horticulture or in pasture production and conservation, are held from time to time.

Conclusion

The Department of Agriculture's extension service is well equipped to operate a continuous educational programme which helps Victorian primary producers to integrate the latest developments into their farming programmes with as little delay as possible. With this help, primary producers are aided to continue and increase their contribution to the national economy and to maintain progressive and efficient practices.

Bureau of Agricultural Economics, 1966; Farm Management, 1967

Farming

Introduction

Collection of Statistics

Since 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 annual returns of agricultural, pastoral, and dairying production collected from some 70,000 rural holdings in Victoria at 31 March each year. Schedules are distributed to farmers by 323 local police officers who act as collectors of statistics. 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 31 March thus including crops which are sown and harvested, or harvested, during the twelve months ended 31 March.

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

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

Summary of Australian Statistics

The following table, which summarises the principal farming activities in Australia during the 1965–66 season, shows the position of farming in Victoria relative to other States :

AUSTRALIA—PRINCIPAL ITEMS OF FARM ACTIVITY, 1965–66

Particulars	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	N.T. and A.C.T.	Australia
Rural Holdings—								
Number	76,158	69,199	43,914	28,759	22,853	10,777	508	252,168
Area ('000 acres)	171,161	37,844	380,325	159,394	270,054	6,496	176,217	1,201,492
Principal Crops—								
Wheat—								
Area ('000 acres)	4,577	3,074	954	2,745	6,150	14	1	17,515
Production ('000 bush.)	39,117	60,591	17,429	39,976	102,156	368	28	259,666
Oats—								
Area ('000 acres)	1,033	966	45	455	1,240	28	1	3,768
Production ('000 bush.)	12,607	17,784	735	5,622	23,279	677	37	60,739
Barley—								
Area ('000 acres)	236	192	338	1,098	413	20	..	2,298
Production ('000 bush.)	3,802	3,217	9,137	18,514	6,481	684	..	41,835
Hay—All Types—								
Area ('000 acres)	733	1,150	154	299	291	148	5	2,780
Production ('000 tons)	978	1,873	282	368	414	257	6	4,179
Tobacco—								
Area (acres)	1,742	9,230	12,509	..	..	..	..	23,481
Production (dried leaf '000 lb)	1,698	11,083	14,580	..	..	..	..	27,361
Onions—								
Area (acres)	999	2,955	2,748	1,148	331	69	*	8,250†
Production (tons)	8,764	17,115	17,728	10,069	3,948	500	*	58,124†
Potatoes—								
Area (acres)	21,913	34,333	16,080	5,748	6,229	11,993	15	96,311
Production (tons)	104,623	240,786	97,744	56,471	62,865	76,400	87	638,976
Other Vegetables–Area (acres)	43,996	54,319	44,074	9,668	8,528	23,970	262	184,817
Fruit—Area (acres)	97,212	75,001	47,715	43,986	26,715	22,426	152	313,207
Vineyards—Area (acres)	21,292	48,617	3,268	58,730	8,215	..	..	140,122
Grapes for Table (tons)	7,699	9,706	4,600	1,210	2,310	..	..	25,525
Wine Made ('000 gals)	6,439	3,151	24	22,559	842	..	..	33,015
Currants (tons)	449	3,127	..	3,153	1,306	..	..	8,035
Sultanas and Raisins (tons)	11,480	59,418	..	11,915	116	..	..	82,929
Livestock Numbers, 31 March 1966—								
Sheep ('000)	61,396	30,968	18,384	17,993	24,427	4,127	267	157,563
Cattle ('000)	4,153	3,397	6,888	690	1,271	492	1,045	17,936
Pigs ('000)	480	384	417	224	144	96	2	1,746
Livestock Slaughtered for Human Consumption—								
Sheep ('000)	6,119	8,160	2,407	1,981	1,677	567	53	20,964
Lambs ('000)	4,948	5,205	362	1,493	858	597	41	13,504
Cattle ('000)	1,243	917	1,515	184	298	108	79	4,344
Calves ('000)	537	661	38	93	16	47	1	1,393
Pigs ('000)	774	705	640	298	195	146	12	2,770
Wool Production ('000 lb)	579,475	366,943	192,773	232,296	247,530	41,858	1,961	1,662,836
Whole Milk Production—								
All Purposes ('000 gals)	300,741	750,915	221,086	98,398	61,865	87,890	1,118	1,522,013
Principal Items of Machinery on Rural Holdings—								
Tractors (No.)	80,994	76,161	64,990	33,998	32,312	11,947	491	300,893
Shearing Machines (Stands)	70,935	41,689	19,139	29,291	22,486	4,652	308	188,500
Milking Machines (Units)	41,799	105,004	42,199	18,833	9,780	15,894	120	233,629
Gross Value of Production —								
Agriculture ($'000)	245,734	262,852	274,221	144,017	216,711	40,523	513	1,184,571
Pastoral ($'000)	468,443	413,558	256,027	152,224	157,249	37,350	13,484	1,498,335
Dairying ($'000)	158,338	190,141	71,409	39,293	22,937	25,300	555	507,973

* Not available for publication.

† Incomplete.

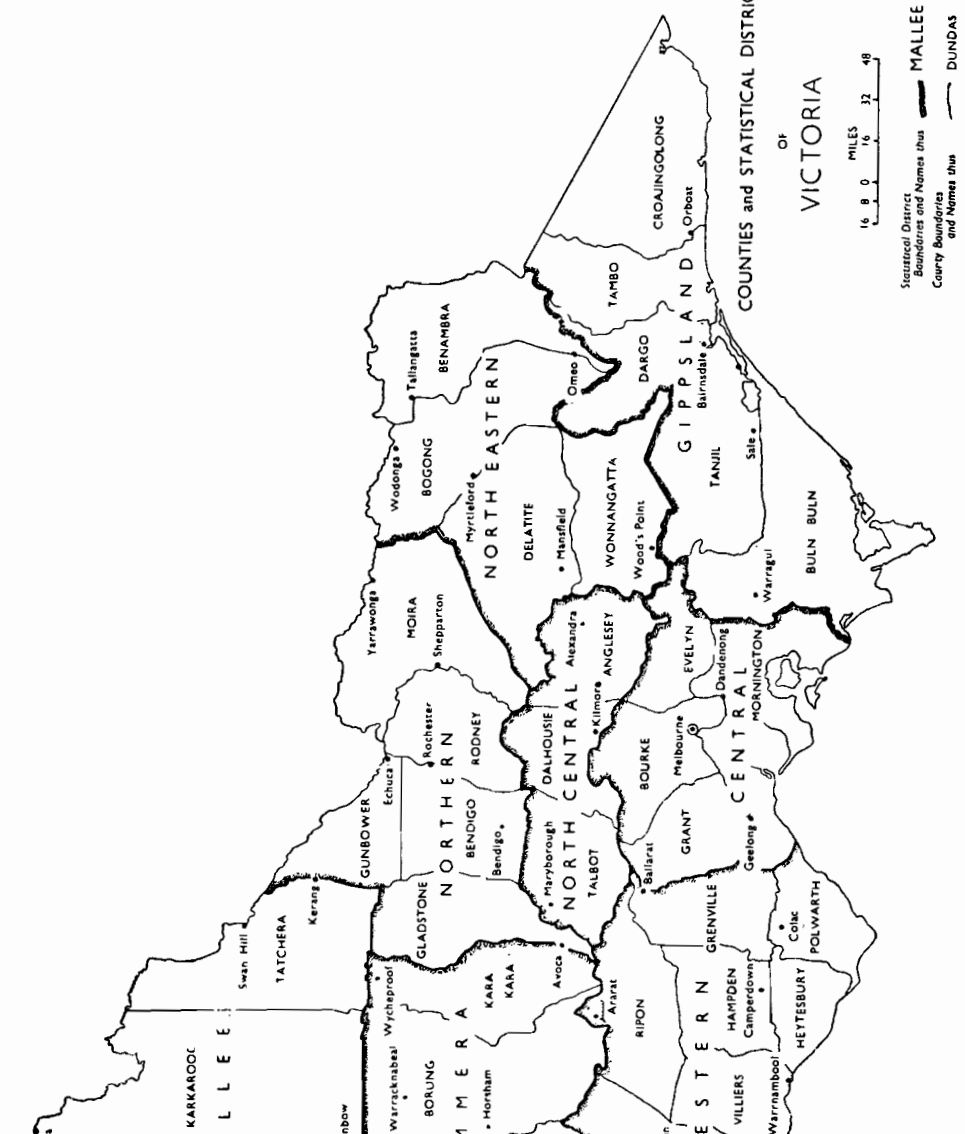


FIGURE 11. Counties and Statistical Districts of Victoria

Land Occupied in Different Districts, 1965–66

For the season 1965–66, the number of occupiers of rural holdings was 69,199, the area devoted to agriculture 7,589,762 acres, and the total area occupied 37,843,603 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 on the previous page.

VICTORIA—LAND IN OCCUPATION IN EACH DISTRICT, SEASON 1965–66

(Areas of 1 acre and upwards)

Statistical District	Total Area of Districts (Acres)	Number of Holdings	Acres Occupied				
			For Agricultural Purposes*	For Pasture		Unproductive	Total
				Sown Grasses, Clover, or Lucerne†	Natural Grasses		
	'000		'000				
Central	4,065	14,220	287	1,501	643	198	2,630
North-Central ..	2,930	4,365	111	859	969	123	2,063
Western ..	8,775	12,633	395	4,547	1,280	382	6,603
Wimmera ..	7,395	6,052	2,101	2,095	1,436	435	6,067
Mallee	10,784	6,089	3,076	1,231	2,521	683	7,511
Northern ..	6,337	11,829	1,387	2,108	1,873	142	5,511
North-Eastern ..	7,220	4,985	138	1,270	1,662	536	3,605
Gippsland ..	8,739	9,026	95	1,620	1,334	804	3,853
Total ..	56,246	69,199	7,590	15,231	11,719	3,304	37,844
	PERCENTAGE OF ABOVE TO AREA OCCUPIED						
Central	..	..	10·91	57·09	24·47	7·53	100·00
North-Central ..	..	..	5·38	41·65	46·99	5·98	100·00
Western ..	..	..	5·98	68·86	19·38	5·78	100·00
Wimmera ..	..	..	34·63	34·53	23·67	7·17	100·00
Mallee	..	..	40·95	16·38	33·58	9·09	100·00
Northern ..	..	..	25·17	38·26	33·99	2·58	100·00
North-Eastern ..	..	..	3·82	35·22	46·11	14·85	100·00
Gippsland ..	..	..	2·47	42·04	34·62	20·87	100·00
Total ..	..	..	20·06	40·25	30·97	8·72	100·00
	PERCENTAGE IN EACH DISTRICT OF TOTAL IN STATE						
Central	7·23	20·55	3·78	9·86	5·49	5·99	6·95
North-Central ..	5·21	6·31	1·46	5·64	8·27	3·73	5·45
Western ..	15·60	18·26	5·20	29·85	10·92	11·56	17·45
Wimmera ..	13·14	8·75	27·68	13·75	12·25	13·17	16·03
Mallee	19·17	8·80	40·53	8·08	21·52	20·67	19·85
Northern ..	11·27	17·09	18·28	13·84	15·98	4·32	14·56
North-Eastern ..	12·84	7·20	1·82	8·34	14·18	16·21	9·53
Gippsland ..	15·54	13·04	1·25	10·64	11·39	24·35	10·18
Total ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00

* Excludes area of clover and grasses cut for hay and seed.
† Includes oats and barley sown for grazing and lucerne fed off.

Classification of Rural Holdings by Size and Type of Activity

Tabulations classifying rural holdings by principal characteristics have, in the past, been undertaken at irregular intervals. Since the Second World War they have been prepared for each of the years

1947–48, 1949–50, 1955–56, 1959–60, and 1965–66. The second detailed classification of holdings by principal type of activity was carried out in conjunction with the size classification of rural holdings 1965–66. The following tables show some of the information, in summary form, from the 1965–66 classification of rural holdings by size and type of activity :

VICTORIA—HOLDINGS CLASSIFIED ACCORDING TO SIZE OF HOLDING : NUMBER AND TOTAL AREA OF HOLDINGS, 1965–66

Size of Holding	Number of Holdings	Total Area of Holdings
acres		acres
1– 99	21,340	805,121
100– 199	12,219	1,742,700
200– 299	6,693	1,623,245
300– 399	5,312	1,803,816
400– 499	3,297	1,470,439
500– 999	11,037	7,797,393
1,000–1,399	3,738	4,404,898
1,400–1,999	2,573	4,255,922
2,000–2,999	1,599	3,817,242
3,000–4,999	926	3,453,964
5,000 and over	465	6,668,863
Total	69,199	37,843,603

VICTORIA—NUMBER OF HOLDINGS GROWING WHEAT, AND NUMBER OF HOLDINGS ON WHICH LIVESTOCK WERE DEPASTURED, CLASSIFIED ACCORDING TO SIZE OF HOLDING, 1965–66

Size of Holding	Holdings with—				
	Wheat	Sheep	Cattle for		Pigs
			Milk Production	Beef Production	
acres	No.				
1– 99	159	2,544	6,958	5,057	2,259
100– 199	327	3,199	8,521	4,037	2,031
200– 299	418	2,926	4,259	3,046	1,127
300– 399	781	3,245	2,703	2,716	849
400– 499	705	2,483	1,417	1,947	467
500– 999	4,311	9,615	3,577	6,866	1,341
1,000–1,399	1,998	3,472	1,045	2,348	414
1,400–1,999	1,494	2,423	654	1,644	272
2,000–2,999	1,031	1,529	621	1,059	293
3,000–4,999	599	890		638	
5,000 and over	246	418	103	343	56
Total	12,069	32,744	29,858	29,701	9,109

VICTORIA—HOLDINGS CLASSIFIED ACCORDING TO TYPE OF ACTIVITY : NUMBER AND TOTAL AREA OF HOLDINGS AND AREA USED FOR VARIOUS PURPOSES, 1965–66

Type of Activity	Number of Holdings	Total Area of Holdings	Area Used for—				
			Fruit	Crops (Excluding Fruit)	Fallow	Sown Grasses and Clovers	Balance of Holding
			acres				
Sheep—Cereal Grain ..	6,160	8,285,531	26	2,215,984	1,074,082	2,411,438	2,584,001
Sheep	13,093	13,039,405	536	483,573	122,617	6,871,486	5,561,193
Cereal Grain	3,453	4,712,777	262	1,903,412	1,187,381	580,179	1,041,543
Beef Cattle	3,111	3,497,707	193	38,122	16,082	929,783	2,513,527
Dairying	20,087	4,474,207	1,500	239,007	57,339	2,781,603	1,394,758
Vineyards	2,165	85,878	48,803	3,694	1,526	7,546	24,309
Fruit (Other than Vine) ..	2,131	144,005	64,244	3,891	2,845	27,125	45,900
Vegetables—							
Potatoes	923	140,138	228	37,444	5,225	56,408	40,833
Other and Mixed ..	1,528	265,154	2,549	76,149	8,236	113,765	64,455
Poultry	1,008	53,321	683	5,798	2,915	18,674	25,251
Pigs	273	33,337	33	2,718	2,925	8,959	18,702
Tobacco	284	65,887	60	10,285	1,182	16,469	37,891
Other	353	27,370	504	5,006	2,075	6,158	13,627
Multi-Purpose	2,193	1,525,082	2,368	227,300	68,613	668,373	558,428
Total Classified Holdings	56,762	36,349,799	121,989	5,252,383	2,553,043	14,497,966	13,924,418
Unclassified Holdings—							
Sub-Commercial ..	7,848	750,292	1,964	19,802	25,885	215,197	487,444
Unused, Special, etc. ..	4,589	743,512	797	1,294	41,398	90,710	609,313
Total All Holdings ..	69,199	37,843,603	124,750	5,273,479	2,620,326	14,803,873	15,021,175

Artificial Fertilizers

Fertilizers have played a major role in the development of Australian agriculture in recent years. Superphosphate, which was first used in Australia early this century, lifted production in wheat areas dramatically and later allowed the establishment of clover pastures. More recently, research has shown that increased yields of pastures can be achieved by the use of elements such as molybdenum, potassium, copper, and zinc.

The main elements which can be added to soils by the use of fertilizers are phosphorus, potassium, and nitrogen. There are also various trace elements.

Most of Australia, including Victoria, is deficient in phosphorus. Irrespective of how the soil was formed, the story is much the same—a natural supply of 200 parts per million in the surface soil with less in the sub-soil. Notable exceptions include the Darling Downs area of Queensland and small areas of volcanic soil in the Victorian Western District. The addition of one cwt of superphosphate, which contains 11 lb of elemental phosphorus, is equivalent to the amount of phosphorus removed from the area by the sale of 27 prime lambs or 75 bushels of wheat.

Soil reserves of potassium are adequate in the drier wheat areas. However, in the wetter areas where leaching has taken place, deficiencies occur. This particularly applies to sandy soils. Clovers are generally the first plants to show visible symptoms of potassium deficiency and this often shows first in the outer paddocks of dairy farms or in paddocks continually cut for hay.

Very little nitrogen fertilizer is applied to crops other than high value crops such as fruit and vegetables. The less intensive agricultural pursuits rely on the fixation of atmospheric nitrogen by the nitrogen fixing bacteria associated with leguminous plants.

The significance of trace elements has become more apparent in recent years following the development of more refined experimental techniques. Some of the more important of these elements include molybdenum and copper.

Experiments have shown that substantial increases in clover growth can be obtained by spreading two ounces of molybdenum an acre in superphosphate, particularly in the high land of the Dividing Range. Recent work has shown that this application may have to be repeated after five to seven years.

Copper deficiencies are common in Victoria on the sandy podsolic soils, particularly in the coastal areas.

In 1965–66 artificial fertilizers were used on 3,056,566 acres of wheat; 1,271,974 acres of other cereal crops; 80,805 acres of vegetables; 85,915 acres of orchards; 168,634 acres of other crops; and 11,730,252 acres of pastures. Superphosphate is the main fertilizer used on both crops and pastures and in 1965–66 amounted to 204,948 tons or 80·4 per cent of the total artificial fertilizer used on all crops and 743,062 tons or 92·9 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 1961–62 to 1965–66 :

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
1961–62 ..	32,965	4,193	211	40,166	9,661	567
1962–63 ..	32,028	4,530	227	40,144	9,940	596
1963–64 ..	31,224	4,478	225	39,531	10,525	656
1964–65 ..	31,181	4,703	248	40,291	11,496	741
1965–66 ..	30,582	4,664	255	40,637	11,730	800

Aerial Agriculture

The aerial agriculture industry in Victoria has grown rapidly and aircraft are now extensively used for topdressing and sometimes for seeding, crop spraying with weedicides and insecticides, and the control of rabbits by the dropping of poisoned carrot baits. A more recent phase of aerial development is the dropping of young fish into Victorian lakes and streams. A full description of aerial agriculture will be found on page 494 of the Victorian Year Book, 1966.

Since 1956–57, statistical information has been collected by the Department of Civil Aviation and details for each of the years 1961–62 to 1965–66, are shown in the following table :

VICTORIA—AERIAL AGRICULTURE

Particulars	Unit	Year Ended 31 March—				
		1962	1963	1964	1965	1966
Total Area Treated * †	acres	972,269	923,776	1,512,819	1,896,461	2,471,941
Topdressed or Seeded.. ..	acres	676,219	659,975	1,165,183	1,429,159	1,629,693
Sprayed or Dusted	acres	231,098	206,711	281,331	386,102	702,338
Materials Used—						
Superphosphate ..	cwt	877,200	888,060	1,427,640	1,844,260	2,211,000
Seed	lb	5,135	2,128	39,190	162,140	55,623
Aircraft Utilisation (Flying Time) ..	hours	8,545	8,238	11,190	14,649	19,832

* Areas treated with more than one type of material in one operation are counted once only.

† Includes 64,952 acres baited for rabbit destruction in 1962, 57,090 acres in 1963, 66,305 acres in 1964, 81,200 acres in 1965, and 139,910 acres in 1966.

Farm Machinery

The numbers of the principal items of farm machinery on rural holdings at 31 March during each of the five years from 1962 to 1966 are given in the table below :

VICTORIA—FARM MACHINERY ON RURAL HOLDINGS

Particulars	Number at 31 March—				
	1962	1963	1964	1965	1966
Milking Machines—Units ..	95,661	97,372	98,321	101,994	105,004
Shearing Machines—Stands ..	38,758	39,162	39,433	41,112	41,689
Tractors—Wheeled Type ..	65,487	66,479	68,954	71,950	73,668
—Crawler Type ..	1,931	1,936	2,451	2,574	2,493
Rotary Hoes	9,777	9,899	10,205	11,757	12,016
Fertilizer Distributors and Broadcasters	29,349	29,188	28,757	29,212	28,219
Grain Drills—Combine	19,016	28,957	28,785	19,442	19,604
—Other	9,709			9,846	9,586
Maize Planters	*	*	*	756	762
Headers, Strippers and Harvesters	14,065	14,646	14,131	14,177	13,963
Pick-up Balers	9,282	10,107	10,789	11,405	11,972
Forage Harvesters	892	1,289	1,284	1,305	1,625

* Not collected.

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

Mechanisation of Farming, 1962

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 1840 this figure had increased to 3,210 acres. This progress continued until 1852 when 57,471 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 annual average area under cultivation in each decennium from 1856 to 1965 and the actual area for each of the five seasons 1962 to 1966 :

VICTORIA—ACREAGE CULTIVATED ANNUALLY

Period or Year (Ended March)	Annual Average Area in Each Decennium, 1856–1965, and Actual Area Each Year 1962–1966, under—		
	Crop*	Fallow	Total Cultivation*
		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
1946–55	4,635,982	2,311,401	6,947,383
1956–65	4,222,393	2,191,000	6,413,393
1962	4,532,686	2,286,771	6,819,457
1963	5,036,686	2,521,355	7,558,041
1964	4,899,557	2,524,863	7,424,420
1965	5,019,479	2,484,423	7,503,902
1966	4,969,436	2,620,326	7,589,762

* Until 1960 the area of crop included pasture cut for hay and seed. For the decennium 1956–65 and 1961 onwards, area of pasture cut for hay and seed is included under pasture.

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 1965–66 :

VICTORIA—AREA, YIELD, AND GROSS VALUE OF CROPS, 1965–66

Crop	Area	Yield	Gross Value*
	acres		$'000
Cereals for Grain—			
Barley—			
2 row	181,175	3,038,261 bushels	3,507
6 row	11,103	179,395 bushels	155
Maize	1,683	101,489 bushels	121
Oats	965,702	17,783,622 bushels	15,287
Rye	13,409	65,821 bushels	87
Wheat	3,074,103	60,591,349 bushels	89,939
Hay—			
Barley and Rye	7,451	11,978 tons	220
Lucerne	83,338	167,044 tons	3,379
Meadow	796,140	1,313,285 tons	28,864
Oaten	223,645	325,187 tons	7,138
Wheaten	39,771	55,340 tons	1,152
Green Fodder	98,859	..	1,796
Grey and Other Field Peas	11,979	168,669 bushels	420
Grass and Clover Seed	26,718	41,392 centals	1,174
Industrial Crops—			
Broom Millet	158	740 cwt fibre 592 cwt seed	16 2
Linseed	7,370	101,536 bushels	358
Hops	678	9,063 cwt	842
Mustard	920	3,224 cwt	40
Tobacco	9,230	98,953 cwt	12,377
Vegetables—			
Onions	2,955	17,115 tons	1,814
Potatoes	34,333	240,786 tons	11,050
Other	54,319	250,388 tons	20,809
Stock Fodder—			
Pumpkins and Root Crops	15,693	..	738
Vineyards—			
Grapes—			
Table	2,814	9,706 tons	1,640
Wine	4,744	16,961 tons	613
Drying	37,230	256,353 tons	..
		52,358 tons of sultanas	15,831
		7,060 tons of raisins	2,042
		3,127 tons of currants	1,056
Vines, Unproductive	3,829	..	..
Orchards—			
Productive	57,351	..	34,977
Unproductive	17,650	..	..
All Other Crops	7,944	..	5,408
Total Crops	5,792,294	..	262,852

* The gross value is based on the wholesale price realised 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 1965–66.

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 1965-66

Crops Grown	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat ..	608	341	704	3,766	2,701	3,441	460	48	12,069
Oats ..	450	493	1,847	2,697	1,330	2,637	731	30	10,215
Barley ..	543	79	324	406	562	665	84	87	2,750
Maize ..	2	..	2	..	..	..	41	110	155
Green Fodder—									
Maize ..	322	36	89	4	1	15	40	463	970
All Other ..	957	410	1,248	51	69	523	394	961	4,613
Other—									
Potatoes ..	1,507	425	488	8	10	19	133	435	3,025
Onions ..	222	..	186	3	11	4	..	17	443
Other Vegetables	1,346	46	414	38	339	498	53	187	2,921
Orchards ..	1,703	159	56	94	1,246	1,015	111	51	4,435
Vineyards ..	3	2	1	4	2,384	144	23	..	2,561
Grass and Clover Seed	8	57	113	34	33	60	178	5	488
Tobacco ..	..	..	..	..	..	28	317	..	345*

* Excluding share-farmers.

A summary of the area under cultivation in each statistical district of the State for the season 1965-66 is given in the following table :

VICTORIA—AREA UNDER CULTIVATION, SEASON 1965-66 (Acres)

Crop	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat ..	40,932	22,133	58,025	909,789	1,408,035	586,271	45,520	3,398	3,074,103
Oats ..	20,873	24,248	148,160	274,175	223,901	242,570	30,738	1,037	965,702
Barley ..	40,836	1,709	11,379	28,215	67,240	36,388	2,981	3,530	192,278
Maize ..	13	..	4	..	..	..	502	1,164	1,683
Field Peas ..	4,332	348	2,321	3,644	783	110	169	272	11,979
All Hay ..	153,830	60,031	308,451	82,793	37,077	273,536	90,621	144,006	1,150,345
Green Fodder ..	24,391	9,215	37,611	1,058	1,834	11,259	6,435	22,749	114,552
Grass and Clover for Seed ..	293	3,193	6,210	1,873	3,701	3,504	7,872	72	26,718
Tobacco ..	..	..	..	..	..	477	8,753	..	9,230
Potatoes ..	18,341	5,055	5,235	20	102	63	604	4,913	34,333
Onions ..	943	..	1,835	1	32	4	..	140	2,955
All Other Vegetables ..	21,544	624	18,042	125	3,133	4,743	413	5,695	54,319
Vines ..	6	70	58	822	45,386	824	1,451	..	48,617
Orchards ..	24,516	2,379	542	3,675	8,469	33,264	1,621	535	75,001
All Other Crops	3,210	145	8,124	486	13,373	3,148	1,108	885	30,479
Total Area under Crop ..	354,060	129,150	605,997	1,306,676	1,813,066	1,196,161	198,788	188,396	5,792,294
Land in Fallow	50,511	21,393	38,592	825,435	1,273,904	363,731	14,638	32,122	2,620,326
Total Area under Cultivation ..	404,571	150,543	644,589	2,132,111	3,086,970	1,559,892	213,426	220,518	8,412,620

The following table shows the yields, in statistical districts, of the principal crops for the season 1965–66 :

VICTORIA—YIELDS OF PRINCIPAL CROPS, SEASON 1965–66

Crop	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Grain Crops—									
Wheat bush	969,878	483,678	1,251,988	20,899,439	25,251,844	10,493,342	1,163,064	78,116	60,591,349
Oats ,,	556,267	626,779	4,882,705	4,622,524	2,019,517	4,186,946	869,539	19,345	17,783,622
Barley ,,	931,146	29,259	285,992	417,541	802,382	616,488	71,699	63,149	3,217,656
Maize ,,	390	..	60	..	..	..	22,307	78,732	101,489
Field Peas ,,	71,775	6,732	46,278	34,089	3,555	270	3,459	2,511	168,669
All Hay tons	253,255	91,274	494,406	103,176	42,204	447,038	167,407	274,074	1,872,834
Grass and Clover for Seed centals	319	4,999	11,278	3,035	5,425	4,522	11,763	51	41,392
Tobacco cwt	..	..	..	..	..	4,224	94,729	..	98,953
Potatoes tons	125,636	40,213	36,104	113	824	242	3,176	34,478	240,786
Onions ,,	5,905	..	10,209	5	208	21	..	767	17,115
Wine Made gal	*	*	*	*	*	*	*	*	3,151,285
Dried Vine Fruits—									
Raisins tons	..	..	..	..	7,037	23	..	..	7,060
Sultanas ,,	..	..	..	..	52,358	..	..	..	52,358
Currants ,,	..	..	..	..	3,117	10	..	..	3,127

* Details for 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 of all main crops grown in the State including those mentioned above.

Wheat

The acreage sown to wheat in recent years has been approximately 3 mill. acres. This is about half the total area under crop in the State. Virtually all the wheat crop is used for grain production, only about 1 per cent being cut for hay. The average annual production for the five years ended 1965–66 was about 68 mill. bushels of which about 65 per cent was exported. Grain yields during the past five years averaged about 22 bush (60 lb per bush) per acre, but yields as high as 60 bush per acre are harvested on individual farms in most seasons. The highest officially recorded yield is 78·8 bush per acre for 50 acres grown near Murtoa in 1960.

The main wheat belt lies in the northern part of the State, in the Mallee, Wimmera, and Northern Districts, where about 94 per cent of the crop is grown. The average annual rainfall varies from about 12 in in the north-west of the State to about 20–23 in at the eastern and southern margins. About three-quarters of the wheat crop is sown on bare fallowed land.

Superphosphate is applied at seeding to virtually all crops. Zinc sulphate is added in the Wimmera District, applications normally being made to each third or fourth wheat crop. Small amounts of nitrogenous fertilizers have been used in particular circumstances, especially in view of the more favourable wheat/nitrogen fertilizer price relationships now existing. Diseases are not normally a major problem, but occasionally some heavy losses occur due to stem rust and foot rots. Ball smut is effectively controlled by pickling with fungicide powder which is done at the same time as the seed is graded. Weeds are controlled by fallow cultivation or by crop spraying. The crop is harvested from mid-November in the early districts to January under late conditions.

Wheat is grown in rotation with fallow, other crops, and pastures. The use of subterranean clover and medic leys has greatly improved soil fertility, with resultant benefit to wheat yields and quality. (See Victorian Year Book 1963, pages 517 to 519.) Sheep grazed on these, and on native pastures, contribute materially to the State's wool and prime lamb production, especially to the production of early prime lambs.

Wheat is grown on three major soil types: (1) Mallee soils referred to as solonised brown soils; (2) self-mulching grey soils of heavy texture and high fertility in the southern Wimmera; and (3) red-brown earths of varying texture in the northern Wimmera and the Northern District.

Most wheat varieties grown in Victoria are of the soft white class. The environment generally does not favour the production of wheat of the harder types, but increased areas of a semi-hard variety are being sown in the eastern Mallee where wheat of the highest protein content in Victoria is produced. Substantial improvement in wheat quality has been achieved by plant breeding during the past 30 years, and one of the leading soft wheats at present is in the medium to strong class. The adoption of clover and medic ley rotation systems has led to a substantial improvement in the protein content, and thus the quality, of Victorian wheat.

Virtually the whole of the wheat crop is handled, stored, and transported in bulk. The crop is marketed through the Australian Wheat Board. The greater part of the crop is marketed as one grade known as f.a.q. (fair average quality). A small amount of hard wheat grown in the eastern Mallee is segregated for separate sale.

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, 220 country receiving elevators and a shipping terminal have been constructed, the necessary finance being obtained from loans totalling $25,459,000. Repayment of the principal and interest are guaranteed by the Victorian Government. In 1963, the Act was amended to provide for the handling of barley in bulk by the Grain Elevators Board.

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

The Board's Geelong Terminal is operated 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 has under its control storage for 107·5 mill. bushels of wheat. A record was established during the 1964–65 season when 79,492,687 bushels were delivered. In addition, during the 1964–65 season, 1,355,691 bushels of bulk barley were delivered to the Board. During the 1966–67 season, 73,700,000 bushels of bulk wheat and 3,170,000 bushels of bulk barley were delivered.

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 31 October—				
	1962	1963	1964	1965	1966
REVENUE					
Operating and Maintenance Expenses	1,388	1,484	1,726	1,763	1,731
Capital Facilities Allowance	752	930	1,258	1,946	2,205
Interest on Investments	308	340	326	358	373
Other	2	..	13	..	..
Total Revenue	2,450	2,754	3,324	4,067	4,309
EXPENDITURE					
Operating and Maintenance Expenses	862	890	1,023	1,362	1,317
Administration Expenses	270	270	336	400	414
Depreciation and Renewals	256	324	392	421	504
Interest on Loans	534	682	826	1,058	1,230
Sinking Fund Charges	100	128	158	212	231
Appropriations to Reserves	412	446	637	293	493
Other	12	..	..	3	45
Total Expenditure	2,446	2,740	3,372	3,749	4,234
Net Surplus	4	14	—48	318	75
Fixed Assets (At 31 October)	11,256	14,524	19,157	23,880	26,611
Loan Indebtedness (At 31 October)—					
State Government	1,826	1,804	1,780	1,755	1,729
Public	9,334	12,192	15,099	20,424	22,202

Australian Wheat Board

The Australian Wheat Board is the sole constituted authority for the marketing of wheat within Australia and for the marketing of wheat and flour for export from Australia during the period of the present Wheat Industry Stabilisation Plan. The Board consists of a chairman and four other Commonwealth Government appointees and ten members who are representatives of wheat growers in the five main wheat growing States, each State being represented by two members.

The current five year Wheat Industry Stabilisation Plan commenced with the 1963–64 crop and provides for a guaranteed price to wheat growers on up to 150 mill. bushels of exports from each season's wheat. The guaranteed price of 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 Wheat Industry Stabilisation Act and for seasons 1963–64, 1964–65, and 1965–66, it was fixed at $1.44, $1.45, and $1.51 per bushel, respectively. For the fourth year (1966–67) of the Stabilisation Plan the cost of production and thus the guaranteed price was determined at $1.55 per bushel. The prices referred to are on a bulk wheat basis f.o.r. ports.

Total deliveries by wheat growers to the Victorian Branch of the Australian Wheat Board during season 1965–66 were 60,923,338 bushels including 3,009,000 bushels of southern New South Wales wheat delivered to railway stations operated by Victorian Railways in New South Wales, and 1,279,000 bushels of southern New South Wales wheat delivered to Victorian stations.

After good May rainfall, sowing, on an area of 3,074,103 acres, commenced in June but was not completed in some areas until July. However, with satisfactory July–August rains, crops were in excellent condition by mid September. The Wimmera–Mallee areas suffered from heavy frosts and/or hot north winds until crops responded to timely rainfall in November. The appearance of the Mallee and East Northern wheat was affected by bleaching due to rain during the harvest period.

The State yield per acre was 19·71 bushels and the f.a.q. was fixed at 63¾ lb per bushel.

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.

Farmers Growing Wheat for Grain, Area Sown, Production, Gross Value, and F.A.Q.

In the following table the number of holdings growing 20 acres or more of wheat for grain, the area, production, average yield, gross value of production of wheat, and the f.a.q. standard determined in Victoria

for each of the seasons 1961–62 to 1965–66 are shown :

VICTORIA—WHEAT STATISTICS

Season	Holdings Growing Wheat (20 Acres and over)	Area	Production	Yield per Acre	Gross Value	Weight of Bushel of Wheat, f.a.q.
	No.	'000 acres	'000 bush	bush	$'000	lb
1961–62 ..	11,648	2,849	56,878	19·97	85,394	64
1962–63 ..	12,166	3,125	67,899	21·73	98,910	65½
1963–64 ..	11,370	3,109	76,302	24·54	108,498	65½
1964–65 ..	11,981	3,237	78,166*	24·15	109,396	64
1965–66 ..	10,714	3,074	60,591	19·71	89,939	63¾

* Record production.

Wheat Breeding

The objective of wheat breeding in Victoria is to produce new varieties which will give higher yields of better quality grain than existing varieties. Included in the yield objective is the reduction of losses due to drought and various diseases which include stem rust (the most important), leaf rust, septoria, loose smut, and eye spot lodging. The breeding work is a function of the Victorian Department of Agriculture, which undertakes plant breeding, field testing, and quality evaluation. The wheat breeding activities of the Department are centred on the State Research Farm at Werribee where the hybridisation is carried out, the early generations raised, and the primary quality and disease testing done. This station is supplemented by regional selection centres in the main wheat growing districts. Field testing is undertaken in all districts at departmental research stations and colleges and on farmers' properties. There are nearly 40 centres for varietal testing in Victoria. Disease testing is carried out at research stations in appropriate areas and at the Victorian Plant Research Institute at Burnley. Quality evaluations, including test baking, are undertaken at the Department's Cereal Laboratories in Melbourne.

The wheat breeding work of the Department has been very successful. During the past 50 years, over 40 new varieties of wheat have been released for cultivation by farmers. The most widely grown of these have been Free Gallipoli (1923), Ghurka (1924), Ranee 4H (1930), Magnet (1939), Quadrat (1941), Insignia and Pinnacle (1946), Sherpa (1953), and Olympic (1956). Well over 90 per cent of the wheat acreage in Victoria is sown to varieties bred by the Department. Since 1930, the baking quality of Victorian wheat has improved markedly. This has been due partly to varietal improvement and partly to the improvement of soil fertility by legume leys with a resultant perpetual effect on grain protein content.

The varieties released for sowing since 1946 are : 1946—Insignia, 1946—Pinnacle, 1947—Diadem, 1953—Sherpa, 1956—Olympic, 1957—Beacon, 1960—Stockade, 1963—Emblem, and 1966—Summit.

The following table shows the areas under the principal varieties of wheat, including wheat for hay, for the seasons 1963–64, 1964–65, and 1965–66. Varieties are tabulated in order of popularity for the last mentioned season.

VICTORIA—PRINCIPAL VARIETIES OF WHEAT SOWN

Variety (In Order of Popularity), Season 1965–66	1963–64		1964–65		1965–66	
	Acres Sown	Percentage of Total Area Sown	Acres Sown	Percentage of Total Area Sown	Acres Sown	Percentage of Total Area Sown
Insignia ..	1,635,619	52·13	1,691,276	51·89	1,465,356	47·06
Olympic ..	463,827	14·79	583,900	17·92	722,294	23·19
Pinnacle ..	681,159	21·71	610,348	18·73	583,162	18·73
Heron ..	53,432	1·70	89,721	2·75	82,306	2·64
Insignia 49 ..	86,813	2·77	73,344	2·25	66,537	2·14
Emblem ..	1,261	0·04	28,686	0·88	57,114	1·83
Sherpa ..	68,814	2·19	62,561	1·92	46,922	1·51
Beacon ..	23,091	0·74	22,888	0·70	20,384	0·65
Quadrat ..	43,722	1·39	28,483	0·87	18,269	0·59
Falcon ..	5,453	0·17	12,410	0·38	13,077	0·42
Stockade ..	29,218	0·93	26,347	0·81	10,384	0·33
All Other Varieties ..	44,908	1·44	29,296	0·90	28,069	0·91
Total ..	3,137,317	100·00	3,259,260	100·00	3,113,874	100·00

Oats

Oats are the second most widely grown crop in Victoria, and in recent years the area of this cereal has averaged about 1·3 mill. acres. Nearly 72 per cent of this is harvested for grain, some of it after winter grazing. Although oaten hay was important in the past, only about 15 per cent of the acreage is now harvested for this purpose, the remainder (13 per cent) of the area being used solely for grazing.

As the land on which oats are grown is normally not fallowed nor as well prepared as that intended for wheat, oat production shows greater fluctuations than wheat production. This seasonal variability is particularly marked in the northern parts of the State. The average annual grain production is about 21 mill. bushels (40 lb per bushel), ranging in the last ten years from 9·5 mill. bushels in 1957–58 to 27 mill. bushels in 1962–63.

Over half the oat grain produced in Victoria is held on farms or is used within Victoria for stock feed. Large quantities are retained for feeding during periods of seasonal shortage or in drought conditions. About a quarter of the crop goes to mills, but only a relatively small proportion is used to manufacture foods for human consumption. Milling quality oats usually command a premium of 2 cents to 10 cents

per bushel above feed oats. The other uses of the grain by the mills are for the manufacture of stock foods and for the manufacture of unkilned rolled oats, mainly for export. The remaining quarter of the crop is exported as grain. More than 95 per cent of the oats exported are sold as " Victorian No 1 " grade. Oat grain is sold in an open market through merchants or through the voluntary oat pool, and prices fluctuate widely according to seasonal conditions and supplies available. The merchants and the oat pool provide facilities for bulk deliveries at most main centres.

With the decline in the number of horses throughout the State, there has been a corresponding decline in the area of oats used for hay production, particularly in the main cereal growing districts. However, during the past ten years, the area cut for hay has fluctuated around 200,000 acres. The hay may be cut either for farm use or for sale (mainly to chaff mills near Melbourne, Ballarat, and Maryborough).

Most of the area fed-off completely is grazed by sheep in the winter, but in dairying districts oats are sometimes sown for autumn and winter grazing to supplement pasture growth. About 30 per cent of the oats completely grazed are in the Mallee District.

The main oat grain producing areas are in the Mallee, Wimmera, Northern, and Western Districts. The popularity of varieties has undergone marked changes in recent years. After having held supremacy for more than 40 years, Algerian was superseded as the leading variety by Orient in 1962, while Avon now holds this position. The area sown to the five leading varieties—Avon, Orient, Algerian, Kent, and Ballidu—is about 90 per cent of the total oat acreage in the State.

The area harvested (season 1965–66) for hay was 223,645 acres, and for grain 965,702 acres, which produced 325,187 tons of hay, and 17,783,622 bushels of grain, respectively. The area of oats sown for grazing purposes amounted to 210,050 acres. The following table shows the area, yield, and gross value of oats for grain for each of the five seasons 1961–62 to 1965–66 :

VICTORIA—OATS FOR GRAIN

Season	Area	Production	Yield per Acre	Gross Value
	'000 acres	'000 bush	bush	$'000
1961–62	774	16,312	21·06	11,464
1962–63	932	27,042*	29·01	18,412
1963–64	910	19,885	21·85	13,849
1964–65	966	22,446	23·23	16,237
1965–66	966	17,784	18·42	15,287

* Record production.

Barley

The maximum barley production was in 1958–59, when about 362,000 acres (2- and 6-row) were sown, with a production of approximately 8·6 mill. bushels (50 lb per bushel), but, since then, area and production have declined. About 95 per cent of the barley grown in Victoria is of 2-row or malting type. The remainder is sown with 6-row varieties, which are used primarily for feed.

Although some barley is grown in all districts, the main production is centred in two distinct areas where high quality grain is produced. The largest production is in the south-western Mallee and the adjacent area of the north-western Wimmera. While wheat is the main cereal throughout the cereal growing districts, the barley crop occupies second position in the areas noted above, whereas, in most other portions of northern Victoria, oats occupy this position.

In this northern barley growing area, the best quality barley is grown on the sandier soil types. The crop is sown either on ley land cultivated in the autumn just prior to sowing or on wheaten stubble land. The variety Prior is almost exclusively sown in this area, and superphosphate is the standard fertilizer applied. Average district yields are about 19 bushels per acre.

The other important area is in southern Victoria between Melbourne, Geelong, and Bacchus Marsh. Here, barley is the main crop, and the normal practice is to sow it with superphosphate on fallowed land. The main variety has been Research, but Resibee and Anabee, released by the Department of Agriculture in 1962 and 1963, respectively, are now being grown to an increasing extent. While Research produced very good malting quality grain in this area, the new varieties have quality characteristics slightly superior to those of the older variety. Yields are considerably higher than those obtained in the north, the average yield being about 32 bushels per acre. This region is close to the main barley shipping terminals, and growers' freight costs are considerably lower than in the northern areas.

Following an enquiry by the State Development Committee in 1962–63, the Victorian Grain Elevators Board was authorised to provide a bulk handling scheme for barley and in 1963, the first bulk deliveries were successfully received and stored at Beulah in the southern Mallee. Since that time the provision of extra facilities, including the building of special aerated storages at Hopetoun, Rainbow, and Jeparit, and terminal storages at Geelong and Sunshine, and the use of existing elevators on a throughput basis before the wheat harvest, have made it possible for the crop to be handled in bulk in almost all the districts where it is grown.

Barley is marketed through the Australian Barley Board, which operates in Victoria and South Australia and provides an orderly marketing system for barley grown in those States. The barley is classified to suit specific purposes on delivery. Classification is, firstly, on varietal type—Chevalier (Prior and similar varieties) and Research (Research, Resibee, Anabee)—and, secondly, on quality—Malting, Milling (No. 3), and Feed (Nos. 4 and 5). There are price differentials between each grade.

Practically all the barley produced in Victoria is used within the State. The Victorian malting industry takes all of the malting quality grain for malt for local use and also uses much of the lower grade grain for producing malt for export—principally to Eastern Asia, the Pacific Islands, and Africa. The balance is used for stock feeding as whole grain and manufacturing in the distilling, pearling, and prepared stock feed industries.

The following table shows the area, yield, and gross value of barley for each of the five seasons 1961–62 to 1965–66 :

VICTORIA—BARLEY PRODUCTION

Season	Area		Production		Yield per Acre			Gross Value
	Malting (2 row)	Other (6 row)	Malting (2 row)	Other (6 row)	Malting (2 row)	Other (6 row)	Total	
	'000 acres		'000 bush		bush			$'000
1961–62 ..	212	13	4,415	239	20·79	18·26	20·64	5,056
1962–63 ..	180	14	5,129	340	28·45	24·22	28·14	5,310
1963–64 ..	180	10	3,833	192	21·32	18·67	21·17	3,802
1964–65 ..	177	10	4,140	194	23·36	20·01	22·65	4,828
1965–66 ..	181	11	3,038	179	16·77	16·16	16·73	3,762

Maize

Maize is grown in Victoria both for grain and for green fodder and cultivated mainly in Gippsland. The area, yield, and gross value of maize for each of the five seasons 1961–62 to 1965–66 are given in the following table :

VICTORIA—MAIZE PRODUCTION

Season	For Green Fodder	For Grain							
		Area			Production			Yield per Acre	Gross Value
		Hybrid	Other	Total	Hybrid	Other	Total		
	acres				bush				$'000
1961–62 ..	15,440	2,999	310	3,309	181,745	10,029	191,774	57·96	248
1962–63 ..	15,970	3,138	496	3,634	197,376	18,788	216,164	59·48	286
1963–64 ..	11,741	3,108	291	3,399	194,585	8,820	203,405	59·84	273
1964–65 ..	5,793	2,148	205	2,353	107,911	6,271	114,182	48·53	213
1965–66 ..	4,161	1,497	186	1,683	93,938	7,551	101,489	60·30	121

Rye

Cereal rye is of minor importance in Victoria and is not grown primarily as a cash crop. European migrants to Australia have created a small demand for this cereal for human consumption, thus helping to stabilise the market for rye grain.

The chief purpose for which rye is grown is the stabilisation of loose sand or sandhills in the Mallee District. There is some interest in it for winter grazing in cold districts during the winter months.

The following table shows the area, yield, and gross value of rye for each of the five seasons 1961–62 to 1965–66 :

VICTORIA—RYE PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	bush		$'000
1961–62	17,849	136,725	7·66	185
1962–63	17,551	114,639	6·53	171
1963–64	15,275	95,200	6·23	155
1964–65	13,581	109,162	8·04	139
1965–66	13,409	65,821	4·91	87

Hay

The pattern of hay production in Victoria changed considerably in the post-war period. More complete mechanisation and the virtual disappearance of the working horse removed the previous emphasis from cereal hay. The harvesting of large areas of cereal crops, particularly oats, grown specifically for the production of hay for the maintenance of horse teams, is no longer necessary and so there has been a marked decline in the amount of cereal hay produced.

On the other hand, there were spectacular increases in the production of other forms of fodder. The annual production of meadow hay increased from about 400,000 tons to over 2 mill. tons during this period. There was also a substantial increase in the amount of lucerne hay conserved. Silage made mainly from pasture growth increased from about 25,000 tons annually to over 300,000 tons in the post-war period, yet it still supplies something under 10 per cent of the dry nutrients in Victoria's fodder reserves.

This increase in fodder conservation has resulted in more efficient utilisation of the extra herbage grown as the result of pasture improvement in all districts. Large numbers of livestock are now being maintained with greater safety following the conservation of portion of the surplus spring growth for feeding out during periods of seasonal shortage or in drought.

As pastures have been improved and livestock production intensified, the provision of supplementary fodder has become an important factor in the Victorian grazing industry. The conservation of meadow hay fits in well with farm management routine and is a convenient method of ensuring continuity of fodder supplies.

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

VICTORIA—HAY PRODUCTION, 1965–66

Kind	Area	Production	Yield per Acre
	acres	tons	tons
Wheaten	39,771	55,340	1·39
Oaten	223,645	325,187	1·45
Lucerne	83,338	167,044	2·00
Barley, Rye, etc.	7,451	11,978	1·61
Meadow	796,140	1,313,285	1·65
Total	1,150,345	1,872,834	1·63

The following table shows, in respect of each statistical district of the State, the quantity of ensilage made during the 1965–66 season, and the stocks of ensilage and hay held on rural holdings at the 31 March 1966 :

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

Statistical District	Ensilage Made, 1965–66	Stocks at 31 March 1966	
		Ensilage	Hay
Central	63,703	38,884	230,660
North-Central	4,640	5,812	82,965
Western	21,462	18,043	485,397
Wimmera	1,954	5,247	136,474
Mallee	1,806	7,692	49,586
Northern	6,274	12,188	446,945
North-Eastern	28,047	23,044	191,625
Gippsland	100,553	46,224	292,041
Total	228,439	157,134	1,915,693

Potatoes

Victoria is the largest producer of potatoes in Australia, contributing a little more than one-third of the total annual requirement. Potatoes are generally used as a fresh vegetable, but there is increasing interest in processed forms. Generally regarded as a summer crop, potato planting goes on in one district or another for ten months of the year, while harvest extends over the whole year.

Early crops are grown in favoured localities where the risk of frost is not great, such as in the Bellarine Peninsula and the market garden areas south-east of Melbourne. These are lifted from October (or sooner) to December. Mid-season crops come on the market in January, February, and March from districts such as Koroit, Gembrook, Koo-Wee-Rup, and parts of Gippsland. The late or main crop is produced in the Central Highlands (Ballarat to Trentham), Kinglake, Otways, and the Gippsland hill country. Its harvest commences in April and runs on until October.

Spray irrigation is now common in most districts and has proved useful in tiding crops over the short but critical dry periods that occur in mid-summer in the State's higher rainfall areas. Potato growing has become increasingly mechanised and production has therefore tended to pass into the hands of specialist growers having larger individual areas.

The following table shows the area, yield, and value of potatoes for each of the five seasons 1961–62 to 1965–66 :

VICTORIA—POTATO PRODUCTION

Season	Area	Production*	Yield per Acre	Gross Value
	acres	tons		$'000
1961–62	36,469	196,032	5·38	13,048
1962–63	43,024	254,473	5·91	6,612
1963–64	39,626	200,384	5·06	15,586
1964–65	32,931	183,665	5·58	24,820
1965–66	34,333	240,786	7·01†	11,050

* Includes amounts held on farms for seed, stock feed, etc., as follows : 25,506 tons in 1961–62 ; 32,688 tons in 1962–63 ; 22,897 tons in 1963–64 ; 23,795 tons in 1964–65 ; and 27,851 tons in 1965–66.

† Record average yield.

Onions

The principal onion growing areas are in the Central and Western Districts. In the season 1965–66, these areas were responsible for 94 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 1961–62 to 1965–66 :

VICTORIA—ONION PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	tons		$'000
1961–62	4,456	23,784	5·34	1,588
1962–63	4,634	26,175	5·65	1,390
1963–64	3,756	17,946	4·78	1,138
1964–65	3,825	22,963	6·00	1,440
1965–66	2,955	17,115	5·79	1,814

Linseed

Linseed is the major oil producing crop grown in Victoria. Its commercial production, which began in 1947, has increased to over 25,000 acres in suitable years, with an output in excess of 300,000 bushels. In wet seasons, however, such as 1963, weather and soil conditions seriously cut the intended acreage. In 1965 and 1966 acreage was restricted following a production surplus in New South Wales and Queensland in 1964.

Linseed has proved to be well adapted to broad acre production over a wide area of mixed farming and pastoral country in the 20 to 30 in rainfall zone in the western part of Victoria. Initially, the industry was developed on imported varieties, and, in the period up to 1955, yields were low because these varieties were not fully suited to Victorian conditions and because of their susceptibility to disease.

Greater stability has been given to the industry with the release by the Victorian Department of Agriculture of disease resistant and better adapted varieties. Other factors influencing the expansion of the industry have been the improved technical knowledge available to growers, price stability, and the decline of flax growing.

Victorian linseed contains 38 to 40 per cent of oil of satisfactory quality. Linseed oil is one of the main components of paints, varnishes, and linoleum, and also has many other industrial uses. The meal or press cake which remains after the oil has been extracted is a valuable stock food.

The following table shows the area, yield, and value of linseed for each of the five seasons 1961–62 to 1965–66 :

VICTORIA—LINSEED PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	bush		$'000
1961–62	17,711	243,700	13·76	853
1962–63	25,232	327,216	12·97	1,145
1963–64	16,240	190,322	11·72	666
1964–65	9,953	106,824	10·73	394
1965–66	7,370	101,536	13·78	358

Tobacco

Flue-cured Virginia tobacco is the only type produced in Australia and is mainly absorbed in the manufacture of cigarettes. The use of domestic leaf is encouraged by a statutory mixing percentage applied in conjunction with concessional rates of import duty. The statutory percentage is currently set at 50 per cent and at the present high level of usage, it is important that only leaf of desirable smoking quality is produced. Such leaf can be grown with some certainty only in areas having sandy friable soils and, during the summer months, appreciable rainfall, moderate temperatures, and high atmospheric humidity.

The Victorian crop usually accounts for rather more than one-third of the total Australian tobacco production. Suitable growing conditions are found in the north-eastern river valleys, and the industry is concentrated at present along the Ovens and King Rivers and their tributaries, with small outlying areas in the northern part of the State. Recent trends disclose a concentration of production in the higher parts of these valleys, with some contraction at certain climatically less favoured downstream centres and in the inundated area above the Buffalo River dam. The Mount Beauty district in the upper Kiewa Valley has latterly become established as a reliable centre for the production of good quality leaf.

Tobacco growing in Australia has traditionally been regarded as a rather speculative proposition due to wide fluctuations in production and market conditions, and it is only in the past decade that any degree of stability has become apparent due to a consistent upward trend in average yield which has resulted in the Victorian figure approaching a level comparable to that achieved by the world's major tobacco producing countries.

The fungus disease, blue mould, has often brought about drastic reduction of yield and has been the prime cause of most short Victorian crops in the past. At present growers are able to control this disease by implementing newly developed fungicidal spray programmes, and this is perhaps the main factor in current yield improvement.

The establishment of a Tobacco Leaf Marketing Board has lent further stability to the industry through its policy of orderly crop disposal.

Victorian tobacco producers are assisted in their efforts to increase yield and improve leaf quality by the Department of Agriculture, which conducts research in agronomy, plant pathology, and plant breeding at the Tobacco Research Station at Myrtleford and its sub-station at Gunbower, and also provides an intensive farm to farm advisory service for growers.

The following table shows the area, yield, and gross value of tobacco in each of the five seasons 1961–62 to 1965–66 :

VICTORIA—TOBACCO PRODUCTION

Season	Area	Production	Yield per Acre	Gross Value
	acres	cwt (dry)		$'000
1961–62	9,286	58,168	6·26	7,278
1962–63	9,844	84,351	8·57	10,210
1963–64	10,519	129,096	12·27	14,060
1964–65	9,720	107,855	11·10	11,678
1965–66	9,230	98,953	10·72	12,377

Further Reference, 1963

Fruit Industries

Victoria is a major producer of a wide variety of fruit and over 120,000 acres are used for orchards or vineyards. The three most important districts are the area within 50 miles of Melbourne (apples, dessert tree fruits, and berries), the Goulburn Valley (canning fruit), and the Mallee region (dried vine fruit and citrus).

Most of the fruit growing districts south of the Dividing Range receive an annual rainfall of between 25 and 35 in. This rainfall is fairly evenly spread, but in many areas additional irrigation is essential during January–March. This water is supplied from natural catchments, rivers, or town supplies. The north-eastern section of the State has a rainfall of from 20 to 40 in, but the average rainfall in the Goulburn Valley is 19 in and in the Mallee only 10 in. In these districts elaborate irrigation schemes of the Lower Murray Valley and of the Goulburn and Campaspe Rivers make possible the large scale development of the fruit industry. The distribution of water is effected mainly by gravity except for small areas of citrus under spray irrigation.

Because of the high capital expenditure invested in orchard land and equipment and with the keen competition for local and overseas markets, most Victorian growers realise that they have to produce increased quantities of better quality fruit without increasing costs. To achieve this, labour expenses are cut by high capacity spraying units for pest control and by bulk handling of the crop. Many orchardists

use fruit thinning sprays to make hand thinning less time consuming. The increasing use of weedicides in orchards and vineyards has reduced the need for cultivations. Lighter pruning of apples is showing promising results in southern Victoria and this trend could also become an important factor in reducing labour costs.

Statistics on fruit growing are collected from all persons who grow fruit for sale (for all purposes). Particulars of fruit production (excluding vines) for the five seasons 1961–62 to 1965–66 are given in the following table :

VICTORIA—FRUIT GROWING

Particulars		1961–62	1962–63	1963–64	1964–65	1965–66
Number of Growers		4,700	4,807	4,769	4,486	4,435
Area	acres	72,712	75,855	76,796	75,509	75,001
Gross Value of Fruit Produced	($'000)	25,356	23,546	26,396	28,433	34,977
Kind of Fruit—						
Apples	bushels	3,045,808	4,059,045	3,298,851	4,394,197	4,206,028
Pears	"	4,605,808	3,848,614	4,771,604	4,025,455	5,453,339
Quinces	"	32,564	22,017	29,909	19,915	21,946
Apricots	"	631,810	535,235	352,557	293,497	545,547
Cherries	"	137,494	116,920	109,783	117,721	140,207
Nectarines	"	16,940	20,713	21,717	28,910	33,323
Peaches	"	1,686,496	1,811,799	1,827,910	2,362,620	2,602,822
Plums	"	184,723	141,953	137,431	144,069	154,453
Prunes	"	24,383	24,346	19,332	28,360	20,397
Lemons	"	150,738	212,693	105,115	148,237	120,554
Oranges—						
Navels	"	399,168	531,249	479,580	541,371	437,318
Valencias	"	543,832	586,991	605,916	662,585	537,940
Other Oranges	"	42,167	45,495	48,879	40,337	36,389
Mandarins	"	27,824	41,297	36,410	46,668	41,207
Grapefruit	"	80,902	97,217	88,596	83,650	82,399
Figs	"	2,349	2,264	2,462	1,362	1,314
Passion-fruit	"	2,288	3,601	5,762	3,844	3,520
Olives	"	13,178	14,845	36,367	11,004	36,471
Gooseberries	cwt	775	865	606	722	735
Loganberries	"	1,787	1,684	1,451	1,193	1,098
Raspberries	"	2,936	2,848	3,018	2,827	3,268
Strawberries	"	10,712	15,172	16,817	20,112	19,947
Youngberries	"	4,649	4,891	3,607	4,221	4,711
Other Berries	"	679	964	978	657	666
Almonds	lb	141,819	64,599	69,366	45,750	51,322
Filberts	"	15,510	6,608	14,750	11,420	12,060
Walnuts	"	135,254	146,020	150,982	99,270	138,930

The production of the principal 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 pages 335 to 338.

VICTORIA—DRIED TREE-FRUITS
(lb)

Year Ended 31 March—	Apricots	Peaches	Pears	Prunes	Others	Total
1962	17,844	..	3,925	397,841	620	420,230
1963	31,421	2,278	4,652	590,323	1,988	630,662
1964	19,810	5,390	6,714	481,648	309	513,871
1965	27,170	28,125	16,665	380,803	..	452,763
1966	6,824	2,340	2,467	447,760	3,332	462,723

Information on the number of trees of each variety is collected triennially; the latest figures available are for the season 1964–65. The extent of cultivation of each important class of fruit and nuts on holdings of 1 acre and upwards during the seasons 1961–62 and 1964–65 is shown in the following table :

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

Fruit and Nuts	Number of Trees, Plants, etc.					
	1961–62			1964–65		
	Bearing	Not Bearing	Total	Bearing	Not Bearing	Total
Apples	1,531,839	664,194	2,196,033	1,622,392	642,444	2,264,836
Pears	1,189,246	548,139	1,737,385	1,269,225	491,594	1,760,819
Quinces	13,099	481	13,580	8,269	716	8,985
Plums	137,450	48,047	185,497	125,662	41,901	167,563
Prunes	26,990	8,575	35,565	21,652	6,086	27,738
Cherries	117,078	65,327	182,405	121,270	94,184	215,454
Peaches	842,117	634,192	1,476,309	1,176,184	291,910	1,468,094
Apricots	317,157	68,495	385,652	298,434	37,010	335,444
Nectarines	13,252	12,219	25,471	21,937	14,593	36,530
Oranges—						
Navels	175,563	60,572	236,135	180,459	82,914	263,373
Valencias	208,758	89,498	298,256	226,765	123,886	350,651
Other Oranges ..	18,904	2,874	21,778	13,751	6,453	20,204
Mandarins	13,049	23,144	36,193	29,611	28,032	57,643
Grapefruit	21,898	4,663	26,561	20,988	5,640	26,628
Lemons and Limes ..	80,162	27,326	107,488	71,284	26,531	97,815
Figs	3,402	1,294	4,696	1,830	842	2,672
Raspberries	223,000	32,250	255,250	221,500	30,000	251,500
Loganberries	49,890	1,395	51,285	72,146	1,590	73,736
Strawberries	6,877,500	686,250	7,563,750	8,302,500	495,000	8,797,500
Gooseberries	40,500	9,000	49,500	28,500	5,100	33,600
Youngberries	79,489	9,532	89,021	64,883	3,536	68,419
Other Berries	19,737	2,127	21,864	10,106	..	10,106
Olives	73,931	53,660	127,591	86,032	51,830	137,862
Passion-fruit	9,011	3,657	12,668	8,484	4,282	12,766
Almonds	23,568	3,247	26,815	15,307	1,264	16,571
Walnuts	6,134	1,054	7,188	5,895	1,623	7,518
Filberts	5,592	120	5,712	4,876	282	5,158

The distribution of the fruit industry over the State is set out in the following table, where the number of trees of each kind in each statistical district is given for the season 1964–65 :

VICTORIA—NUMBER OF FRUIT TREES, PLANTS, ETC., SEASON 1964–65

Particulars	Statistical District								
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	Total
Growers .. No.	1,716	155	54	99	1,276	1,030	112	44	4,486
Area .. .. acres	24,866	2,509	569	3,757	8,274	33,310	1,698	526	75,509
Apples .. trees	1,595,254	167,799	52,327	17,026	18,673	272,736	104,246	36,775	2,264,836
Pears .. ,,	199,594	64,896	795	6,754	3,722	1,482,229	523	2,306	1,760,819
Peaches .. ,,	274,021	2,625	107	19,308	26,420	1,140,933	1,347	3,333	1,468,094
Apricots .. ,,	30,485	556	556	10,675	57,619	234,845	344	364	335,444
Plums .. ,,	73,096	4,871	556	2,449	30,081	56,071	178	261	167,563
Prunes .. ,,	413	..	831	10,504	8,569	7,394	19	8	27,738
Cherries .. ,,	185,807	4,377	..	1,117	372	15,072	7,489	1,220	215,454
Quinces .. ,,	5,540	126	..	341	90	2,835	35	18	8,985
Nectarines .. ,,	17,571	261	18	168	10,674	7,050	375	413	36,530
Figs .. .. ,,	830	4	5	45	272	1,496	13	7	2,672
Olives .. ,,	542	35	..	107,800	26,658	1,005	1,822	..	137,862
Oranges .. ,,	223	..	..	183	494,651	137,167	2,004	..	634,228
Mandarins .. ,,	3	..	..	11	53,987	3,570	72	..	57,643
Grapefruit .. ,,	257	..	..	2	20,186	6,002	181	..	26,628
Lemons and Limes ,,	60,151	45	..	307	18,807	17,883	572	50	97,815
Passion-fruit .. vines	2,144	..	..	..	66	2,473	3,303	4,780	12,766
Strawberries .. plants	8,677,500	41,250	..	3,750	48,750	26,250	..	..	8,797,500
Raspberries .. bushes	248,000	1,000	..	..	..	500	..	2,000	251,500
Loganberries .. ,,	73,338	..	..	..	..	199	199	..	73,736
Gooseberries .. ,,	30,600	3,000	..	..	..	..	..	..	33,600
Youngberries .. ,,	67,957	..	..	..	..	154	308	..	68,419
Other Berries .. ,,	9,780	..	..	..	..	..	326	..	10,106
Almonds .. trees	310	92	..	1,544	7,047	2,364	5,214	..	16,571
Walnuts .. ,,	280	3	..	6	421	370	5,195	1,243	7,518
Filberts .. ,,	189	..	..	..	100	..	4,869	..	5,158

Cool Storage

The fruit industry has been well aware of the importance of refrigeration since the end of the last century. Before the First World War several co-operative and privately owned cool stores had been built, beside the first Government Cool Stores, at Flinders Street, Melbourne. The Government also built and operated five further stores situated in the fruit growing districts close to Melbourne. These have been gradually handed over to growers' co-operatives.

The extension of electric power to rural areas throughout the State has resulted in the construction of numerous small private cool stores. More efficient refrigeration techniques and insulating materials have also helped to spread the idea of cool storage. Since the Second World War there has been a rapid increase of cool store capacity in

Victoria, mainly because of the very rapid development of small cool stores built in individual orchards as illustrated by the following table :

VICTORIA—FRUIT GROWERS' COOL STORES, 1948 TO 1963

Year	Number	Capacity
		'000 bush
1948	72	600
1958	218	1,500
1961	311	1,800
1963	357	2,600

Including co-operative and proprietary stores, the total for 1963 is 432 stores with a capacity of 5·8 mill. bushels.

Many of the small orchard cool stores are used to pre-cool highly perishable soft fruits (apricots, peaches, plums, and berries) and tomatoes before they are forwarded to Melbourne or interstate markets. These fruits ripen in the summer and at high summer temperatures often become over-ripe and worthless in the interval between picking and marketing, unless pre-cooled at the orchard within a few hours of picking.

Most of the orchard cool stores situated within 50 miles of Melbourne are used together with the larger co-operative and proprietary stores to achieve a more gradual marketing of Victoria's apple and pear crop. This supply of good quality fruit from store at regular intervals for a period of 6–9 months calls for considerable skill and knowledge. The fruit picked is still alive and it continues its living processes for a certain time, influenced by the variety, its ripeness at the time of harvesting ("picking maturity"), interval between harvesting and beginning of cool storage, temperature and humidity of cool chambers, and other factors. Cool storage behaviour of the fruit and the type of storage provided are also of great importance with the fruit exported to overseas markets.

To assist the industry with cool storage research, Experimental Cool Chambers were set up at the Government Cool Stores, Victoria Dock, in 1923. In 1956, these were transferred to the Scoresby Horticultural Research Station, where large and better experimental chambers were constructed for this purpose.

Vine Fruits

Most vine fruits grown in Victoria are marketed as dried fruits (currants, sultanas, and raisins). Smaller quantities are sold as fresh fruit or are used for wine production. Some 40,000 acres of vines are grown in the irrigated districts of the River Murray at Mildura, Robinvale and Swan Hill. The climate at Mildura and Robinvale provides the high temperatures and clear sunny conditions during the growing season and drying period which are essential for the production of first

quality dried fruit. The Swan Hill district with slightly lower temperatures and higher rainfall is less suitable than Robinvale and Mildura.

After dipping and sun drying by the grower, the dried fruit is processed and packed in packing houses. The production of dried fruits in Victoria for season 1965–66 amounted to 52,357 tons of sultanas, 3,127 tons of currants, and 7,060 tons of raisins. Approximately 70 per cent of this produce was exported to the United Kingdom, Canada, and New Zealand.

During recent years the growing of grapes for table use has expanded rapidly and with some growers has become a specialised industry. The main varieties are Waltham Cross, Purple Cornichon, Ohanez, Sultanas, and Muscats. Melbourne and Sydney are the main market outlets, but Indonesia, Colombo, and Singapore may grow in importance as export markets.

Grapes are grown specifically for wine production at Rutherglen, Great Western, and Nagambie. While the wine growing area around Rutherglen is gradually declining, increasing quantities of grapes for winemaking are produced in the River Murray Irrigation districts. In 1965–66, 3·2 mill. gals of wine were produced.

Grapes for Wine, 1964; Dried Fruits Industry, 1967

Wine

Victoria produces an average of 3·0 mill. gals of wine a year. This figure compares with the Commonwealth's total of an average over the last ten years of 31 mill. gals or with South Australia's 23·6 mill. gals. The output ranges from the lightest of dry white and red wines to rich dessert wines. Apart from home consumption, a considerable portion of Victorian wine is exported to Britain, Canada, New Zealand, and Asia.

Until late in the 19th century when *Phylloxera* gravely affected Victorian viticulture, the State was a prolific wine producer for its size. However, many vineyards, destroyed by *Phylloxera,* were never replanted and were given over to other rural pursuits.

Victoria's early vineyards were centred around Melbourne. Some flourished where present suburbs near the city (South Yarra, Toorak, and Caulfield) now stand. William Ryrie planted cuttings in 1838 at "Yering", near Lilydale, about 30 miles from Melbourne and in ten years' time had 100 acres under grape. Lilydale became a well known wine producing area. Two Swiss vignerons, Paul and Hubert de Castella, who bought Ryrie's property, and de Pury whose vineyard

was known as " Yeringberg ", all produced high quality wines. But spreading urban development and the growth of dairying diminished cultivation at Lilydale. Its last vintage was in 1924.

Soon after Ryrie's start at Lilydale, vines were planted near Geelong, about 50 miles to the south-west of Melbourne, and later in the Bendigo area to the north of the capital. Geelong's vineyards were destroyed by *Phylloxera* and Bendigo's lapsed during the great gold rush of the 1850s.

At the same time other wine growing districts were developing, notably in the north-east of the State on the south side of the River Murray. This district—known as the Rutherglen area—takes in Wahgunyah, Chiltern, Barnawartha, and Bundarra. By 1860, it was leading the rest of the State in wine production. Some of Victoria's best sherries, muscats, and ports come from it but there are also full-bodied dry wines, both red and white. In the central districts of the State, vines were planted at Chateau Tahbilk, on the Goulburn River, in the 1860s and at Milawa, near Wangaratta, about a decade later.

The mid-century gold rush brought many persons to Victoria, not all of whom were to make their fortunes from mining. Among them were a young French girl, Anne Marie Blampied, and her brother, Emile. After disappointment over not finding gold the two, who had been brought up on a vineyard, decided to try the family trade instead. They—and, later, Hans Irvine and the brothers Best—pioneered the Great Western region in Victoria's north-west. Although it produces quality " still " table wines, it is for its champagne that the district is best known.

The greatest expansion made by Victorian wine growing, however, came with the arrival in the 1880s of two Californian irrigation experts, William Chaffey and his brother, George. Through their efforts an irrigation scheme has evolved (centred around Mildura on the River Murray) by which grapes have flourished with almost every other kind of fruit in the soil of the zone. It has made Mildura and its surroundings the largest wine growing district in Victoria today.

Recent years have seen encouraging signs of new plantings. At Avoca, 120 miles north-west of Melbourne and at the foot of the Pyrenees Mountains, 625 acres have been acquired for a new winery and distillery. They are being put under vine (mainly White Hermitage but with additions of other grape types) at the rate of 40 acres annually. At Drumborg, in the Shire of Portland in the State's south-west, 540 acres of volcanic-type soil in a frost-free area are being planted with Pinot and Riesling grapes.

Particulars of vine production for the five seasons, 1961–62 to 1965–66, are given in the following table :

VICTORIA—VINE-FRUIT PRODUCTION

Season	Number of Growers	Area		Production				
		Bearing	Not Bearing	Grapes Gathered	Wine Made	Dried Fruits		
						Raisins	Sultanas	Currants
		acres		'000 cwt	'000 gals	cwt		
1961–62 ..	2,526	42,540	2,565	5,902	3,605	122,730	1,174,494	54,290
1962–63 ..	2,547	42,734	2,928	4,271	2,433	94,777	786,410	50,728
1963–64 ..	2,583	43,485	3,016	6,274	3,705	122,352	1,200,415	78,676
1964–65 ..	2,601	44,203	3,793	6,435	3,656	131,179	1,191,888	89,535
1965–66 ..	2,561	44,788	3,829	5,660	3,152	141,206	1,047,149	62,545

Vegetables

The climate of Victoria is such that practically every kind of vegetable can be grown in some part of the State during the favourable season in each area. Consequently, there is a plentiful supply of fresh vegetables on the market for the whole year in normal years. These vegetables (excluding potatoes and onions) worth about $18m each year to Victoria are harvested from about 40,000 acres.

Over half the area under vegetables is within 50 miles of Melbourne. Other vegetable producing centres south of the Dividing Range are in the Western District (the centre of processed pea production) and in Gippsland (the centre of the stringless bean growing industry for processing and also for seed bean production). These areas are fairly free of frosts and have a well distributed rainfall ranging from 20 to 35 in. Vegetables are grown on a wide variety of soils (sand, sandy loam, clay loam, peat, and volcanic). Many vegetable growers use irrigation from town water supplies, storage catchments, streams. and dams to supplement rainfall.

North of the Dividing Range the summer is longer and hotter, but winter frosts are more frequent. Many areas along the Lower Murray are ideal for growing early spring crops and efficient transport enables produce to be shipped to both Melbourne and Sydney. In some instances intercropping in orchards and vineyards is practised. Tomato production for processing is now largely concentrated in the Goulburn Valley but other important production areas are situated along the Murray and Loddon Rivers and in the Maffra irrigation district in Gippsland. The greatest part of the Victorian crop comes from the Goulburn Valley.

Returns from vegetable growing can fluctuate greatly according to weather and market conditions and production methods have to be highly efficient. Market gardens near Melbourne may grow two and sometimes three crops in the one year. While a number of hand operations are still essential, mechanisation and the use of selective weedicides have greatly reduced labour costs. Peas, beans, and onions can be harvested mechanically and a number of mechanical aids are used for harvesting other crops. New varieties and improved storage and transport techniques have also increased production efficiency.

While most crops reach the consumer as fresh vegetables, an increasing amount of produce is being processed and a feature of the Victorian industry is the rapid increase in the production of peas and beans for freezing.

Details of the area, production, and gross value of vegetables are given in the table below for all the more important types, including potatoes and onions which are shown in greater detail under separate heading on pages 328–9 :

VICTORIA—VEGETABLES FOR HUMAN CONSUMPTION, 1965–66

Type	Area Sown	Production	Gross Value
	acres	tons	$'000
Potatoes	34,333	240,786	11,050
Onions	2,955	17,115	1,814
Carrots	1,845	26,730	2,608
Parsnips	613	7,572	888
Beetroot	273	2,839	281
Tomatoes	5,176	76,174	4,532
French Beans	3,341	5,684	1,114
Green Peas—			
Sold in Pod	6,194	6,544	1,123
Canning, etc. (Pod Equivalent)	22,799	23,987 *	2,257
Cabbages	1,948	24,819	811
Cauliflowers	2,584	32,057	1,792
Brussels Sprouts	701	2,944	574
Lettuce	2,171	8,188	1,434
Pumpkins	2,403	13,909	1,127
Other Vegetables	4,271	19,153	2,269
Total	91,607	508,501	33,673

* Shelled weight 10,794 tons.

Minor Crops

There are other crops cultivated in Victoria in addition to those enumerated on pages 315–7. The most important of these are nursery products, cut flowers, Japanese millet, sunflowers, agricultural seeds, vegetable seeds, and safflower.

Pastoral and Dairying

Progress of Stock Breeding

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 quickest 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 settlement.

According to early statistical records, there were 26,000 sheep, 100 cattle, and 57 horses in the Colony on 25 May 1836. On 1 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 1 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 to 1951 and the number of livestock on rural holdings for each of the five years 1962 to 1966. As from 1957 no allowance has been made for the small number of livestock not on rural holdings.

VICTORIA—LIVESTOCK
('000)

Year	Horses (Including Foals)	Cattle*		Sheep	Pigs
		Dairy	Beef		
1861 at 31 March ..	77	722		5,781	61
1871 „ „ ..	167	721		10,762	131
1881 „ „ ..	276	1,286		10,360	242
1891 „ „ ..	436	1,783		12,693	282
1901 „ „ ..	392	1,602		10,842	350
1911 at 1 March ..	472	1,548		12,883	333
1921 „ „ ..	488	1,575		12,171	175
1931 „ „ ..	380	1,430		16,478	281
1941 „ „ ..	318	1,922		20,412	398
1951 at 31 March ..	186	1,489	727	20,012	237
1962 „ „ ..	62	1,824	1,332	27,533	325
1963 „ „ ..	58	1,858	1,367	27,472	298
1964 „ „ ..	56	3,301		28,413	322
1965 „ „ ..	56	3,316		30,437	378
1966 „ „ ..	†	3,397		30,968	384

* Separate figures for beef and dairy cattle are not available for years prior to 1943 or for 1964 onwards.

† Not Collected.

A table showing the sizes of holdings and the numbers of holdings depasturing stock at March 1966, appears on page 310. Dot maps showing the distribution of livestock on rural holdings in Victoria at 31 March 1962, appear on pages 577 to 580 of the Victorian Year Book 1964.

Following an investigation into the adequacy of the wording and layout of the cattle sections of the Agricultural, Dairying, and Pastoral Statistics form, changes were introduced to the 1963–64 form.

Prior to 1964, farmers were asked to classify their herds as either " beef cattle " or " dairy cattle ". As these two terms tended to confuse breed and purpose, farmers were asked in the new design to classify their cattle, with the exception of bulls, according to the two main purposes of (i) milk production and (ii) meat production, irrespective of breed, and to report separately the number of cows and heifers kept for their own domestic milk supply ; bulls were to be reported according to their breed and age, i.e., dairy or beef and over or under one year of age. Consequently, detailed statistics of cattle for 1966, set out in the following table, are not comparable with those for years prior to 1964.

VICTORIA—DISTRIBUTION OF LIVESTOCK, MARCH, 1966 ('000)

Particulars	Statistical District								
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	Total
Cattle—									
Bulls for Service—									
Bulls, 1 Year and over—									
Dairy Breeds ..	6	1	9	1	1	8	3	11	39
Beef Breeds ..	5	2	10	1	1	4	5	5	32
Bull Calves—Under 1 Year—									
Dairy Breeds	2	*	3	*	*	3	1	4	14
Beef Breeds ..	2	1	3	1	*	1	1	2	11
Cows and Heifers for Milk and Cream—									
Cows in Milk ..	140	13	158	7	11	226	46	285	886
Cows Dry ..	45	7	115	5	3	31	40	59	305
Heifers—1 Year and over ..	51	6	70	3	4	75	25	86	320
Heifer Calves—Under 1 Year	46	6	70	4	5	78	24	91	325
House Cows and Heifers	4	2	6	4	3	5	3	3	30
Other Cattle and Calves for Meat Production—									
Cows and Heifers ..	105	40	214	19	11	63	119	123	694
Calves—Under 1 Year ..	66	25	117	15	11	55	73	86	448
Other	40	18	61	6	4	42	60	59	291
Total Cattle ..	512	122	837	67	55	592	400	813	3,397
Pigs	62	11	39	18	22	117	41	74	384
Sheep	2,832	2,506	11,325	4,437	1,788	4,065	2,059	1,956	30,968

* More than nil but less than half the final digit shown.

Changing Patterns in Animal Husbandry, 1963

Fodder Conservation

The intensification of fodder conservation has been a natural development in farm management following pasture improvement and increased capacity for the carrying of livestock.

Even the best pastures do not provide a full ration for grazing animals throughout the year because of seasonal variations in their growth. In addition, droughts and other circumstances, such as floods or fires, have serious effects on the amount of grazing available. In most cases, these feed shortages must be met by fodder conservation and hand feeding. Fodder conservation is, therefore, a highly important farm activity without which stable livestock production could not be maintained at high levels.

In Victoria meadow hay is the main fodder conserved, being cheaply and readily available from surplus spring pasture growth in most seasons. In fact, this source of fodder is not fully exploited, since, while individual farms may cut 25 per cent or more of their farms for hay, on average less than 10 per cent of the State's improved pastures are cut each year. Nevertheless Victoria produces some 60 per cent of Australia's meadow hay, although it has only about 30 per cent of Australia's sown grasses and clovers. Cereal hay (mainly oaten) is also made in large quantities, especially in drier districts and in drier years, i.e., in circumstances where good pasture production may be irregular, or low due to poor spring rains.

Lucerne hay is generally produced as a quality fodder intended for cash sale, and considerable quantities are conserved, especially in irrigated areas. However, the excellent quality of much of the clover and grass hay made from improved pastures has lessened interest in this fodder. Oat grain, which is easily stored, transported, and rationed is an important livestock fodder favoured for sheep in both cereal growing and grazing districts. Silage occupies a relatively minor position in the fodder conservation of the State, although important to dairy farmers meeting whole milk supply contracts in dry farming areas. Silage is also used successfully for feeding beef cattle, and has special value as a drought reserve.

Most hay in Victoria is made with the mower, side-delivery rake, and pick-up baler. About one in eight farms has a baler. After mowing, the crop dries for a time in the swath, and is then raked for further drying in the windrow before it is baled. Some farmers are using systems of loose hay handling and self-feeding based on simple low cost equipment, especially in northern areas or where short-term storage of hay is involved for early feeding needs.

Sometimes baled hay intended for summer or early autumn feeding is left in the paddock for self-feeding by the stock. Provided the hay is well made and, preferably, stored in stooks, there is little wastage in such temporary storage, especially if feeding is controlled. Long-term storage requires adequate protection, such as is given by a well constructed shed.

In recent years, increasing interest has been taken in new machines and techniques aimed at faster drying of hay. This is a most significant development, since it makes possible further increases in hay production as well as the production of higher quality hay because better use is made of the limited drying time available when the crop is at its best. The types of machines used include tedders, which loosen and aerate the hay lying in swath or windrow ; conditioners, which crush or crimp fresh hay between rollers and enable internal moisture to move faster through the fractured cuticle of the plants ; and rotary slashers and flail mowers, in which cutting by high speed impact replaces conventional mowing and the drying rate may increase as a result of the bruising and cuticle damage that the crop experiences.

Silage

Most silage is still made in open stacks using a mower and buckrake. This is simple, but wastage is high. The flail-type forage harvester is popular because of simple cutting action and relative cheapness. It consists of swinging blades which rotate at high speed on a horizontal shaft. The crop is thrown or blown into an accompanying trailer or truck for transport for storage. Flail cutting has opened the way to more effective silage making because the process may be better controlled. Improved storage and feeding techniques are leading to more effective use of silage, generally, than is possible with high wastage open stack methods.

Further References, 1963, 1964, 1966, 1967

Dairying Industry

There has been a recent trend in this industry to larger herds and increasing use of machinery for greater production. Matching these developments is the need for pasture improvement and conservation of feed through silage making. Advisory services, the formation of discussion groups, and other educational media have made dairy farmers more conscious of their need to increase efficiency of farm management and continuing research, financed by the industry should have far reaching benefits. Refrigeration of milk on the farm and collection from bulk vats by road tanker is an extending practice. The Milk Board has greatly expanded distribution of pasteurised bottled milk and there is a growing local and export market for Victorian manufactured cheese.

Victoria is the principal milk producing State and in 1965–66, the Victorian output (751 mill. gals) represented 49 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 31 March—	Number of Cow-keepers	Number of Dairy Cows	Estimated Total Production of Milk for All Purposes (Year Ended 30 June)	Gross Value of Dairy Produce*
		'000	'000 gals	$'000
1962	43,113	1,264	642,055	143,176
1963	41,866	1,294	670,788	157,136
1964†	28,181	1,184	694,775	172,560
1965	27,704	1,187	745,896	194,988
1966	‡	1,192	750,915	190,388

* Includes subsidy.

† Details of cow-keepers and dairy cows from 1964 onwards are not comparable with those for earlier years. Prior to 1964 these statistics were based on numbers of cows (in milk or dry) and springing heifers and included cows kept for the farmer's own domestic milk supply. Commencing with 1964, details of cows kept for the farmer's own domestic milk supply have been excluded. See page 341.

‡ Not Collected.

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 30 June—	Butter*	Cheese*	Condensed Milk	Powdered Full-cream Milk	Casein
1962	215,328	53,633	88,178	23,745	27,362
1963	228,167	57,468	104,518	20,635	32,907
1964	232,394	56,446	132,225	22,328	34,967
1965*	247,924	60,975	146,167	25,291	36,685
1966	251,268	58,158	122,650	24,506	48,531

* Commencing with the year ended 30 June 1965, small quantities of butter and cheese made on farms are excluded from the above table. For the year ended 30 June 1964, there were 895,000 lb of butter and 49,000 lb of cheese made on farms.

The following table shows the number of dairy herds in Victoria, grouped, according to the number of cows, for each of the five years 1961 to 1965 :

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

At 31 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
1961.. ..	4,213	2,149	1,545	2,738	5,915	8,723	1,549	26,832
1962.. ..	4,092	2,064	1,454	2,712	5,667	9,271	1,838	27,098
1963.. ..	3,660	1,904	1,405	2,537	5,486	9,569	2,015	26,576
1964* ..	2,459	1,596	1,183	2,507	5,660	9,339	1,646	24,390
1965.. ..	2,281	1,462	1,025	2,202	5,342	9,462	1,759	23,533

* Details from 1964 onwards are not comparable with those for earlier years. See footnote to the first table on page 344.

Eradication of Tuberculosis, 1962; Dairying Industry, 1967; Sharefarming in the Dairying Industry, 1967

Pig Industry

Until recently, the pig industry of Victoria used waste and surplus human foods. Most pig herds were small (less than 50 head) and were on dairy farms to salvage the separated milk where cream was sold for making butter. Generally they produced not more than 25 per cent of the total net income of the farm. Larger pig herds were kept to eat the buttermilk and whey by-products from the milk product factories, or other food wastes from processing factories, markets, and eating establishments. On most farms, cereal grains were fed to pigs as supplements to the major salvage part of the diet.

Now, the milk industry is using more milk for human consumption in several forms and many dairy farmers, who previously sold cream and fed separated milk to pigs, are now selling whole milk and have ceased pig raising. This has resulted in a reduction in the number of pig herds. However, as the demand for pig meat continues to grow, those farmers who continue to raise pigs are increasing the size of their herds and some new producers are entering the industry.

This trend has resulted in fewer but larger pig herds, producing more pigs than previously and has been achieved by using cereal grains as the major part of the pigs' diet as against the earlier practice of using them only as a supplement to the salvaged foods.

Most pig raising units now provide the major part of the income from the farms concerned. More capital and skilled management are involved in the individual units.

The number of pigs in Victoria at 31 March 1966, was 383,509. About 77 per cent of these are held in the Central, Western, Northern, and Gippsland districts. The following table shows classifications (in statistical districts) of pigs, together with the numbers of pig-keepers :

VICTORIA—PIGS AND PIG-KEEPERS, 31 MARCH 1966

Statistical District	Boars	Breeding Sows	All Other	Total Pigs	Pig-keepers
Central	1,075	9,066	51,828	61,969	1,190
North-Central ..	269	1,683	9,218	11,170	446
Western	845	5,652	32,127	38,624	1,175
Wimmera	430	2,682	14,925	18,037	953
Mallee	504	3,267	18,000	21,771	878
Northern	1,926	17,905	96,943	116,774	1,839
North-Eastern ..	938	6,270	33,574	40,782	1,076
Gippsland	1,436	10,893	62,053	74,382	1,552
Total	7,423	57,418	318,668	383,509	9,109

The following table shows the latest statistics available of 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 1966

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	241	58	54	18	47	46	37	20	521	3,611	4,132
5–9	177	78	41	31	42	33	28	8	438	1,853	2,291
10–14.. ..	103	58	34	22	28	30	26	10	311	1,133	1,444
15–19.. ..	79	39	41	17	22	27	17	8	250	804	1,054
20–29.. ..	139	92	74	41	52	53	30	19	500	1,269	1,769
30–49.. ..	167	149	144	109	144	141	82	25	961	2,195	3,156
50–69.. ..	106	137	114	95	184	254	128	39	1,057	2,477	3,534
70–99.. ..	83	102	128	123	252	364	356	105	1,513	4,063	5,576
100–149 ..	44	45	50	53	124	243	396	179	1,134	3,724	4,858
150 and over ..	12	14	12	13	37	72	178	164	502	1,542	2,044
Total ..	1,151	772	692	522	932	1,263	1,278	577	7,187	22,671	29,858

Sheep Industry

Breeds of Sheep

Victoria and Tasmania are the only two Australian States in which the Merino does not comprise over 50 per cent of the sheep population. In 1965, Victoria's sheep population consisted of 46 per cent Merinos ; 15 per cent Corriedales ; 4 per cent Polwarths ; 29 per cent Comebacks and Crossbreds ; and 6 per cent British breeds (mainly pure Dorset Horn, Romney Marsh, Border Leicester, and Southdown).

The Corriedale and the Polwarth were both developed in Victoria to meet a special need in the southern high rainfall area for a dual purpose breed which combined the production of good style comeback or crossbred wools with good meat conformation.

The pure British breeds are mostly run in small stud flocks which produce rams for use in cross breeding for prime lamb or crossbred wool production. Some common crosses used in fine crossbred and comeback wool production are Merino by Corriedale, Merino by Polwarth, and Corriedale by Polwarth. The common crosses used to produce strong Crossbreds for wool and prime lamb production are Border Leicester by Merino, Romney Marsh by Corriedale, and Romney Marsh by Merino. The most important breeds for siring prime lambs are the Dorset Horn (and the Poll Dorset), the Southdown, and the Border Leicester.

Information on the number of sheep of each breed is collected triennially.

The following table shows the breeds of sheep in Victoria (by statistical districts) at 31 March 1965 :

VICTORIA—BREEDS OF SHEEP (INCLUDING RAMS), 31 MARCH 1965

('000)

Statistical District	Merino	Corriedale	Polwarth	Dorset Horn	Romney Marsh	Border Leicester	Southdown	Merino Comeback	Crossbred	Other	Total
Central	718	490	210	54	44	52	22	222	953	16	2,781
North-Central ..	1,249	322	32	42	9	45	14	167	551	13	2,444
Western ..	4,761	2,449	817	62	427	49	30	935	1,108	54	10,691
Wimmera ..	3,585	410	21	28	28	42	1	112	363	15	4,605
Mallee	921	113	7	44	3	58	1	160	580	7	1,894
Northern ..	1,493	375	41	120	9	94	20	262	1,813	26	4,253
North-Eastern ..	642	256	82	40	32	26	6	158	727	17	1,986
Gippsland ..	779	169	14	34	41	28	13	144	549	13	1,784
Total ..	14,148	4,582	1,224	424	592	395	109	2,160	6,643	160	30,437

Information on the number of rams of each breed is collected annually. The following table shows the breeds of rams in Victoria (by statistical districts) at 31 March 1966 :

VICTORIA—BREEDS OF RAMS, 31 MARCH 1966

Statistical District	Merino	Corriedale	Polwarth	Dorset Horn	Border Leicester	Southdown	Other	Total
Central	4,089	4,617	1,748	10,148	1,409	5,260	4,146	31,417
North-Central	7,730	3,515	542	6,171	3,135	2,505	1,718	25,316
Western	51,046	29,384	10,094	9,350	2,862	4,450	17,502	124,688
Wimmera	25,764	6,141	194	4,468	4,545	103	3,356	44,571
Mallee	3,709	1,212	66	8,291	6,764	58	1,970	22,070
Northern	9,610	3,625	420	24,673	11,222	2,262	4,046	55,858
North-Eastern ..	4,372	2,435	767	9,264	3,668	1,812	3,480	25,798
Gippsland	4,726	1,941	158	4,226	2,461	3,389	4,457	21,358
Total ..	111,046	52,870	13,989	76,591	36,066	19,839	40,675	351,076

The numbers of sheep in Victoria in selected years since 1861 are shown in the table on page 340. The distribution of all livestock is shown in the table on page 341.

The increase in sheep numbers in recent years has been due to pasture improvement and intensification of stocking rates on established improved pastures.

However, factors such as seasonal conditions, prices of wool, mutton, lamb, and to a lesser degree, wheat, affect the number of sheep in the State in any given year. In an adverse season flocks may be reduced by 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 are 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 marked to ewes mated, and thus the natural increase from season to season may vary considerably. The following table shows the number of ewes mated or intended to be mated, the number actually mated, and lambs marked, in each of the five seasons 1962 to 1966 :

VICTORIA—LAMBING

Season	Ewes Intended for Mating	Ewes Actually Mated	Lambs Marked	Proportion of Lambs Marked to Ewes Mated
	'000			%
1962	11,409	11,008	9,217	84
1963	11,436	11,369	9,795	86
1964	11,633	11,611	9,853	85
1965	12,560	12,501	10,556	84
1966	12,674	12,605	10,626	84

Sheep and Lambs in Statistical Districts

The following tables set out the number of rams, ewes, wethers, and lambs depastured in each statistical district of the State at 31 March 1966, and the numbers of ewes mated classified according to whether the progeny is intended for wool, or for fat lamb production :

VICTORIA—SHEEP AND LAMBS IN EACH STATISTICAL DISTRICT AT 31 MARCH 1966
('000)

Particulars	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Rams ..	31	25	125	45	22	56	26	21	351
Breeding Ewes*	1,265	995	4,763	1,759	1,015	2,177	1,036	919	13.929
Other Ewes ..	69	50	393	137	19	66	34	42	810
Wethers ..	870	970	3,402	1,604	262	814	564	500	8,986
Lambs ..	598	466	2,642	894	470	952	399	473	6,893
Total Sheep and Lambs ..	2,832	2,506	11,325	4,437	1,788	4,065	2,059	1,956	30,968

* Includes breeding ewes not mated (1,254,241 at 31 March 1966).

VICTORIA—LAMBING, 1965 SEASON

Particulars	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Ewes Mated '000 ..	1,142	900	3,997	1,541	1,002	2,156	969	793	12,501
Lambs Marked '000 ..	1,021	759	3,331	1,246	847	1,868	799	685	10,556
Percentage ..	89	84	83	81	84	87	82	86	84

VICTORIA—LAMBING FORECAST, 1966 SEASON
(As Advised by Farmers at 31 March 1966)
('000)

Breed of Rams Used	Ewes Mated or Intended to be Mated (For Lambing during 1966 Season)								
	Statistical District								Total
	Central	North-Central	Western	Wimmera	Mallee	Northern	North-Eastern	Gippsland	
Merino ..	157	271	1,453	843	148	301	169	190	3,532
Corriedale or Polwarth ..	225	128	1,403	200	56	137	126	87	2,362
Shortwool Breeds ..	687	362	642	220	454	1165	494	372	4,396
Longwool Breeds ..	104	156	693	264	319	460	186	202	2,384
Total ..	1,174	916	4,191	1,528	977	2,062	975	851	12,674

Production of Wool

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

VICTORIA—SHEEP AND LAMBS SHORN, SEASON 1965–66

Statistical District	Shorn		Wool Clipped (Including Crutchings)		Average	
	Sheep	Lambs	Sheep's	Lambs'	Per Sheep	Per Lamb
	'000		'000 lb		lb	
Central ..	2,599	673	25,330	1,967	9·75	2·92
North-Central ..	2,520	544	24,017	1,420	9·53	2·61
Western ..	10,796	2,969	103,572	8,108	9·59	2·73
Wimmera ..	4,555	1,066	45,872	2,783	10·07	2·61
Mallee ..	1,546	539	16,063	1,564	10·39	2·90
Northern ..	3,910	1,188	36,971	3,288	9·45	2·77
North-Eastern ..	2,022	500	17,568	1,216	8·69	2·43
Gippsland ..	1,720	524	16,171	1,431	9·40	2·73
Total ..	29,668	8,003	285,564	21,779	9·63	2·72

VICTORIA—SHEEP SHORN AND WOOL CLIPPED

Season	Shorn		Wool Clipped (Including Crutchings)		Average	
	Sheep	Lambs	Sheep's	Lambs'	Per Sheep	Per Lamb
	'000		'000 lb		lb	
1961–62 ..	25,664	6,847	261,012	19,994	10·17	2·92
1962–63 ..	25,376	6,235	243,238	17,561	9·59	2·82
1963–64 ..	26,009	6,836	262,472	18,863	10·09	2·76
1964–65 ..	28,315	7,024	285,407	20,871	10·08	2·97
1965–66 ..	29,668	8,003	285,564	21,779	9·63	2·72

VICTORIA—WOOL PRODUCTION AND VALUE

Season	Clip	Stripped from and Exported on Skins, etc. (Greasy)	Total Quantity (Greasy)	Gross Value	Average Price per lb
	'000 lb			$'000	cents
1961–62 ..	281,006	49,632	330,639	148,438	44.89
1962–63 ..	260,799	55,906	316,705	158,013	49.89
1963–64 ..	281,335	52,953	334,288	208,700	62.43
1964–65 ..	306,278	55,252	361,530	176,041	48.69
1965–66 ..	307,343	59,601	366,943	193,797	52.81

Wool Growing Districts 1962, 1967

Wool Marketing System

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.

A sales programme, which ensures that there is a representative selection of wool to meet the varied demand at each centre of auction in Victoria, is prepared for the complete season. 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 interests 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.

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.

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.

Further Reference, 1963 ; History of Pastoral Industry, 1963

Meat Industry

The farm lands of Victoria have proved most suitable for meat production and about 30 per cent of Australia's red meat is produced in Victoria.

The American market has brought big changes to the beef industry, since the United States is mostly interested in lean meat. The demand created to supply this market has lifted the prices of bulls, dairy cows, and what are known to the trade as store cattle. The prices for these cattle have increased considerably and are now close to the prices per 100 lb dressed weight (chilled carcass) of the traditionally prime cattle, used extensively in supplying the local trade.

The local market for lamb has always been good but the demand for export lambs has been irregular, largely because of overfatness. Grading is largely a matter of fatness and the leaner, meatier types used

locally are the most profitable to produce in areas where the season favours marketing from February to September. Marketing of lambs from the drier parts of the State has to be done during October, November, and December when, because of the large offerings, lamb prices are at export parity.

Boneless mutton exports to the United States have provided a large market for old sheep which at one time brought low prices for canning and small goods. A proportion of old sheep is still allowed to die on properties but the waste has been greatly reduced in recent years and is reflected in greater mutton production.

There have been more pigs in Victoria than at present but, with faster growth and more rapid turnover, pig meat production has remained high. Most pig meats are consumed locally and a small increase in production is reflected in a big drop in prices and vice versa. Since prices improved following the almost complete cessation of exports during the Second World War, pig meat production has tended to follow three year cycles. For about eighteen months, pig prices are low and many farmers go out of production. Then there is a shortage of pig meats and prices rise, attracting new farmers into pig meat production. When these new farmers have pigs to sell, the shortage is overcome and prices fall. The successful pig farmer has a cheap supply of good food and produces steadily all the time.

The American influence upon Victoria's standards of living has had a telling impact on table poultry production. Fewer people are keeping poultry for their own domestic requirements, and consequently, more poultry meat is purchased. This has resulted in a big increase of broilers, capons, and other table fowl, including ducks and turkeys.

Broiler Industry

The raising of chickens for meat on a large scale has emerged in Victoria since the mid-1950s. Chickens are most efficient in converting poultry feeds, grains, and protein supplements, to meat, and are also multiplied cheaply and rapidly through scientific breeding and modern artificial incubation methods.

It now takes approximately 2·7 lb of poultry feed to produce 1 lb of poultry meat, and a 3–3¼ lb chicken is grown in nine to ten weeks. There is every prospect of attaining current British and American production figures of 2–2·5 : 1 feed conversion and a 3–3¼ lb chicken in seven to eight weeks. This efficient conversion and rapid growth has been achieved by extensive breeding programmes; the use of "high energy" poultry feeds, highly supplemented with vitamins and minerals; growth promoters and disease control drugs; and by the development of enclosed, factory-like broiler houses, with controlled temperature, humidity, ventilation and light, conducive to fast growth.

The organisation of the broiler industry on a continuous, production-line, factory-like operation, has been a major factor in the great reduction in price to consumers. Breeders, hatcheries, contract growers, poultry processors and distributors, have all co-ordinated to ensure efficient and continuous production. Seasonal effects are no longer a consideration and prices do not fluctuate. As a result, poultry meat, once a luxury, is now cheap and a normal part of the diet.

The main production centres are located on the Mornington Peninsula and in areas south-east and east of Melbourne, near the processing works and the main centres of consumption. Most of Victoria's production is consumed locally ; very little is exported and some interstate broilers are imported.

Broiler houses are fully enclosed, each house grows a " crop " of about 10,000 broilers, about four times a year. Chickens are stocked at a rate of 0·75–1 sq ft of floor space per bird. A one-man or one-family farm raises approximately 80,000 to 100,000 birds a year. Growers are usually contracted to supply large broiler organisations which hatch and supply the specially bred meat chickens and receive broilers back for processing and distribution.

Egg Industry

The trend in the Victorian egg industry is towards large specialised farms—egg producers, hatcheries, and pullet growers—utilising modern poultry housing, equipment and labour saving machinery.

The greater proportion of the State's estimated 4 mill. adult female fowls are now contained within the commercial egg industry. There are, however, large numbers of small household flocks in suburban and country areas.

The main areas of commercial production are centred on the outskirts of the Melbourne Metropolitan Area and in the Bendigo district, with large centres around Ballarat and Geelong, and substantial populations in the Wimmera, Goulburn Valley, and North-East.

One man or one-family farms usually manage 2,000 to 3,000 layers. There are, however, many larger farms employing labour with up to 10,000 layers, and a smaller number of much larger farms.

Housing is largely planned on the intensive principle, with deep litter pens or single and multiple bird cage units and most of the new housing is on the laying cage system. A small proportion of layers is kept in fully-enclosed, windowless houses under a fully-controlled environment. Artificial lighting is used on almost all commercial egg farms to stimulate egg production.

Feeding is based on the grains (wheat, oats, and barley) and the by-products (bran and pollard). Meatmeal is the major protein supplement. Wide ranges of commercial, ready-mixed poultry rations are also available.

Laying stock consists mainly of a specially produced crossbred between the White Leghorn and Australorp breeds. The average State egg production is estimated at approximately 190 eggs per bird per year. Commercial stock of the local breeding farms and hatcheries is tested for profitability at the Department of Agriculture's Random Sample Laying Test at Burnley.

Chicks are hatched continuously throughout the year with an emphasis on the June–November period. Hatcheries are large and use modern incubators from 5,000 to 90,000 egg capacity. Most commercial egg-type chicks are sexed at a day old by machine or hand methods and the cockerels discarded.

The main power source used in the brooding of chicks is electricity, but gas brooders and hot water brooders fired by oil burners are also used.

The marketing of eggs is controlled by the Victorian Egg and Egg Pulp Marketing Board. Flocks with over 20 adult female fowls come within the Board's jurisdiction, and owners of flocks with over 40 adult female fowls are required to market their eggs through the Board. Victoria produces a surplus of eggs which is exported through the Australian Egg Board.

Advisory and research services to the egg industry are provided by the Department of Agriculture, commercial firms concerned with sale of feed, drugs and equipment, and the University of Melbourne.

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 1961–62 to 1965–66 :

VICTORIA—STOCK SLAUGHTERED

Particulars	Stock Slaughtered in Establishments and on Farms and Stations				
	Year Ended 30 June—				
	1962	1963	1964	1965	1966 *
	'000				
Sheep	7,389	7,444	7,306	7,136	8,160
Lambs	5,099	5,408	5,342	5,433	5,205
Bulls and Bullocks	263	310	292	295	270
Cows	356	463	509	577	558
Young Cattle	216	255	312	365	359
Calves—Bobby	508	574	668	675	622
Other					44
Pigs	588	530	533	601	705
Number of Slaughter-houses	282	284	282	270	262

* Average dressed weights per carcass during 1965–66 were : Sheep 44·17 lb ; Lambs 34·62 lb ; Bulls and Bullocks 596·12 lb ; Cows 419·62 lb ; Young Cattle 308·88 lb ; Bobby Calves 43·86 lb ; Other Calves 81·69 lb ; Pigs 105·72 lb.

Frozen Meat Exported

The importance of the beef, mutton and lamb export trade is indicated by the export figures for the years 1961–62 to 1965–66, as shown in the table below. During 1965–66, the United States, the United Kingdom, Canada, Japan, Greece, and Italy absorbed the largest quantities of frozen meats exported from Victoria. In that year, the United States took 67 per cent (in value) of beef and veal exports followed by the United Kingdom, 18 per cent. The United States purchased 43 per cent of mutton exports followed by Japan (22 per cent) and Canada (17 per cent). Canada (30 per cent), the United Kingdom (28 per cent) and the United States (25 per cent) were the main purchasers of frozen lamb.

FROZEN MEATS EXPORTED FROM VICTORIAN PORTS

Year Ended 30 June—	Mutton		Lamb		Beef and Veal	
	'000 lb	$'000	'000 lb	$'000	'000 lb	$'000
1962	76,284	11,276	18,022	2,384	81,085	21,290
1963	95,057	16,502	27,674	5,114	117,314	31,822
1964	104,409	16,591	20,877	3,658	122,323	33,637
1965	107,178	18,969	30,290	6,029	147,618	41,431
1966	108,353	22,661	17,954	4,430	132,791	41,026

Honey Industry

Victoria's hardwood forests each year provide an important contribution to the wealth of the State by virtue of timber production for various purposes. However, one little known facet of forest productivity is the annual harvest of honey and beeswax collected by bees from many species of eucalypts in all parts of the State. Today, Victoria ranks second among the States in apicultural activities. Eucalyptus species provide the bulk of the honey crop—up to 95 per cent of the total—with the balance made up of ground flora species such as clover and Patterson's Curse.

In recent years some concern has been felt in the industry at the increasing pressure for alienation of some types of Crown land for agricultural purposes. Much of this land has in the past been reliable beekeeping country because of its natural tree and shrub flora. These lands are generally cleared after alienation and so are lost for honey production. Parts of the Mallee, Western District, and North-east are areas most affected.

There are some 1,250 apiarists in Victoria with five or more hives. These apiarists produce an average of 8 mill. lb of honey per annum. Hive yields are relatively good and range from 90 to 150 lb per annum. The larger commercial outfits would average 200 lb per annum.

The industry is, of necessity, migratory, whole apiaries with attendant plant being moved by road transport from one part of the State to another following the flowering of various species of honey flora in the forests and on the farm lands. 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 in the past, thousands of colonies have been hired out to fruit and seed growers to ensure profitable sets of seed and fruit. However, in recent years the advent of the newer types of insecticides and their increasing popularity, especially with fruit growers, has caused concern amongst apiarists, many of whom are no longer prepared to lease hives of bees for pollination because of serious bee losses following spray application of certain types of insecticides. It is anticipated that, with the increasing use of some of these chemicals, pollination of agricultural crops may become a serious problem in Victoria and elsewhere. The application of insecticides with the spreading of superphosphate on pastures, especially in irrigation areas, is also causing concern.

Marketing has always been a great problem to the industry. Violent fluctuations in the annual honey crop are always, in the absence of any organised marketing scheme, attended by similar fluctuations in prices. Considerable carry-overs occasionally aggravate this. However, late in 1962, Federal Parliament passed enabling legislation for the establishment of the Commonwealth Honey Marketing Board. The functions of the Board are to regulate export of, and export prices for, honey. The activities of the Board are financed by means of a levy on domestic consumption of honey and a publicity and research programme is being undertaken.

State interest in the industry is authorised by the *Bees Act* 1958 and extends to disease control, advisory services, and research into the problems of the industry. An Apicultural Research Unit is in operation at the Scoresby Horticultural Research Station.

Particulars relating to apiculture for the five years 1962–1966 are given in the following table :

VICTORIA—BEE-HIVES, HONEY, AND BEESWAX

Season Ended 31 May—	Beekeepers*	Hives	Production		Gross Value	
			Honey	Beeswax	Honey	Beeswax
	No.		'000 lb		$'000	
1962 ..	1,276	103,216	10,314	135	1,182	68
1963 ..	1,280	100,787	4,818	64	582	33
1964 ..	1,247	93,424	9,460	110	1,498	57
1965 ..	1,276	99,345	9,181	105	1,377	52
1966 ..	1,243	101,387	9,608	115	1,403	55

* Apiarists with 20 hives and over numbered 830 in 1962, 821 in 1963, 747 in 1964, 771 in 1965, and 783 in 1966. Since 1958 the statistics have been collected from apiarists with five or more registered hives.

Primary Industries Other than Farming

Forestry

Forest Estate

Of the 56,245,760 acres in Victoria, the forest estate consists of 5,603,832 acres of reserved forest and over this area the Forests Commission has full control. Only a proportion of this reserved forest produces commercial timber, as large areas come within the category of protection forests and are of value in safeguarding the State's water catchments. In addition, the Forests Commission has partial control over some 9 mill. acres of unoccupied Crown land which must, therefore, be included in the forest estate. These Crown lands include areas of Mallee scrub and alpine grass lands as well as good timbered country.

The Forests Commission of Victoria was established by the *Forests Act* 1918 and consists of a chairman and two commissioners. Subject to the Forests Act, the Commission has the exclusive control and management of all matters of forest policy, the granting of leases, licences, permits and authorities, and the collection of rents, fees, royalties, and other revenue. It is the duty of the Commission to carry out plans and works for the establishment, maintenance, improvement, and renewal of natural forests and plantations of indigenous and exotic trees. It is also responsible for the prevention and suppression of fires, the training of forest officers, conduct of research work, provision of facilities for public recreation, and the protection of native flora and fauna in State forests.

Forest Timber

The following table summarises the total output of all species for the years 1962 to 1966 :

VICTORIA—FOREST TIMBER
('000 Cu Ft)

Item	Year Ended 30 June—				
	1962	1963	1964	1965	1966
Logs for sawing, peeling, slicing, or pulping—					
Hardwoods	60,789	66,910	67,371	68,159	69,499
Softwoods—					
Indigenous Forest Pines ..	205	*	13	2	..
Plantation Grown Pines ..	8,139	9,615	10,853	12,398	14,377
Total Logs ..	69,133	76,525	78,237	80,559	83,876
Hewn and Other Timber (Not Included above) Estimated Volume—					
Firewood †..	37,539	33,557	35,335	33,331	33,278
Other §	4,676	4,152	4,684	4,805	5,475

* Output was only 524 cu ft.

† Excludes mill waste used as firewood.

§ Includes telephone and electric supply transmission poles, bridge and wharf piles and beams, fencing timbers, railway sleepers, and mining timbers from Crown lands. Similar information for private lands is not available.

Although the total consumption of industrial wood in 1965–66 shows little change since the previous years, the distribution between industries has altered somewhat. Sawmillers operating in the native hardwood forests cut fewer logs but maintained their output of sawn timber, apparently by drawing on stockpiled logs. The section of the trade relying on plantation grown exotic softwood logs further expanded its operations, but not sufficiently to balance the reduced intake of hardwoods. Veneer manufacturers also increased their consumption of plantation grown softwoods, and there was a considerable increase in the use of softwood for pulping. Both private and Crown plantations contributed to the increased supply of softwood timber.

The increase in use of " Other " timbers was almost entirely due to the greater demand for transmission poles. Sleeper production increased slightly but the production of beams and bridge timbers declined.

Softwood Plantations

Experimental plantings of softwoods began in Victoria in 1880, and the first commercial plantations were established in 1910. In 1925, there were 4,555 acres of State plantations and the planting programme then increased quite rapidly until by 1935 the area had increased to 38,360 acres. The main areas were at Bright, Ovens, and Stanley in the north-east, the Otways, and at Ballarat and Creswick. More recent extensions of State plantations have been in the south-west, north-east, and in the south Gippsland hills on abandoned settlement areas. The total area of State plantations at 30 December 1965, was 65,002 acres. In 1961, an expanded planting programme commenced and the annual planting objective of 6,000 acres of softwood per year was reached in the 1965 planting season, and is to reach 15,000 acres per season by 1971 and to continue at that rate until the end of the century.

Pinus radiata has proved itself adaptable to all sites available, makes rapid growth, is hardy and relatively immune from insect and fungous attack, and produces a good quality utility timber. The area planted to *Pinus radiata* comprises 55,080 acres. Many of the areas originally planted with other conifers are now being converted to this species.

The older stands are principally 15 to 40 years old. Relatively small areas have been clear felled and either replanted or naturally regenerated, the bulk of the timber utilised to date being from thinnings in the form of logs for peeling and sawing, and pulpwood for paper manufacture.

Privately owned softwood plantations were estimated to comprise 95,605 acres at 30 June 1966, and the areas are steadily increasing. Large industrial companies are planting *Pinus radiata* to provide sustained yields of softwood for sawmilling and wood-fibre industries. Private individuals plant small areas as long-term investments and many State schools maintain small endowment plantations.

The *Land (Plantation Areas) Act* 1959 is designed to encourage private establishment of softwood plantations by providing that Crown lands suitable for commercial plantations and unsuitable for agriculture may, with certain safeguards, be leased for timber-growing purposes and subsequently sold to the lessee.

The output from State plantations is summarised below :

VICTORIA—OUTPUT FROM STATE PLANTATIONS OF SOFTWOOD LOGS AND PULPWOOD

('000 Cu ft)

Year Ended 30 June—	Sawlogs and Peeling Logs	Pulpwood
1962	2,659	1.527
1963	2,949	1,540
1964	3,274	1.385
1965	4.030	2,037
1966	4,901	2,408

During 1964–65, an amendment to the *Forests Act* 1958 was passed enabling loans of up to $50 per acre to be advanced to landowners for planting softwood species on land approved by the Commission as being capable of producing an economic crop. The basic intention is to encourage farmers to establish farm woodlots by providing funds interest free for the first twelve years to cover expenses.

Forestry Fire Protection, 1965 ; Forestry Telecommunications, 1967

Forest Fires

The causes of fires attended by Forests Commission personnel and the areas of State forests burnt in the period 1961–62 to 1965–66 were as follows :

VICTORIA—CAUSES OF FOREST FIRES

Cause	Number of Fires				
	1961–62	1962–63	1963–64	1964–65	1965–66
Grazing Interests	2	7	1	..	1
Landowners, Householders, etc. ..	200	149	117	91	115
Deliberate Lighting	59	44	45	38	57
Sportsmen, Campers, Tourists ..	82	61	49	41	63
Licensees and Forest Workers ..	34	22	12	14	20
Smokers	44	33	87	43	50
Lightning	133	53	143	153	83
Tractors, Cars, Trucks, Locomotives and Stationary Engines ..	30	26	37	28	16
Children	39	18	37	25	21
Sawmills	7	3	18	11	8
Miscellaneous Known Causes ..	94	22	85	41	32
Unknown Origin	60	43	39	72	63
Total	784	481	670	557	529

VICTORIA—AREAS OF STATE FOREST BURNT
(Acres)

Year Ended 30 June—	Commercial Area	Non-Commercial Area	Total
1962	59,348	108,024	167,372
1963	36,289	43,592	79,881
1964	16,620	274,820	291,440
1965	386,815	420,761	807,576
1966	20,313	50,733	71,046

Forestry Laboratory Research and Field Research, 1965; Economic Aspects of Forests, 1967

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 Freshwater Fisheries Research Station and Native Fish Hatchery are located at Snobs Creek, near Eildon. A wildlife research centre is being developed at Lara, near Geelong. Fisheries and Wildlife officers (enforcement staff) are stationed at eighteen district centres throughout the State, and eight more district stations are proposed.

Serendip Wildlife Research Station

The basic role of the Serendip Wildlife Research Station within the wildlife management plan for Victoria is the restoration and management of wildlife on farmland. This former farm property, which is situated 40 miles west of Melbourne, has been classified for development into three units according to the capability of the land and its eventual use.

Wildlife Area

The central lake and buffer strip areas together amounting to about 217 acres have been developed to provide breeding and feeding conditions for many types of wildlife. Several species of wild ducks have commenced breeding as a result of improving conditions. Special efforts are being made to encourage high density breeding populations of some species of wild ducks, so that basic data on breeding, production, and general ecology can be gathered and

management possibilities subsequently determined. Representatives of several waterfowl species are confined at the lake and although pinioned and restricted by low fences they can move freely under natural conditions in areas of several acres. These birds can be studied under the conditions relevant to the maintenance of wild populations.

The Station also serves as the major duck trapping and banding centre for Victoria, and to date more than 50,000 wild ducks have been examined in connection with a study designed to check shooting pressure and the effectiveness of the game regulations.

Farmland Area

On the 350 acres which surround the wildlife area, modern farming practices are being examined in relation to representative species of the wildlife which it is hoped to restore. Farmland in Victoria is not an hospitable place for wildlife. The major proportion of the State is directly used for agriculture and only a relatively small number of species, mainly birds, has adapted itself to the intense management required by farming methods. This has been by far the biggest cause of wildlife destruction over the past 100 years and the process is likely to continue. Accordingly the Serendip Station is being developed as a demonstration area to show how it is both possible and economic to grow game and other wildlife on farm property, without loss of production from normal agricultural activities. The practical means of achieving this—the plants to cultivate, trees to plant, food patches, shelter belts, wildlife borders, control of vermin, and costs—are being worked out at Serendip.

It is proposed to obtain sufficient numbers of rare species, such as the Cape Barren goose, the magpie goose, the brolga, and the bustard so that stocks can be built up to self-reproducing populations. It will then be possible to transfer the surplus to suitable Game Refuges.

Research Area

The central area of 55 acres contains the service buildings, waterfowl pens, animal pens, and animal house. The latter contains the incubators, brooders and other equipment necessary for keeping animals under controlled conditions. The special waterfowl pens are used for holding numbers of birds for feather growth studies, ageing and sex criteria, and other biological data. Future projects include the erection of a laboratory, infirmary, and a large aviary. It is also proposed to establish natural food culture ponds and a pool for experimental food crops.

Scallop Fishery

Although the extent of the scallop beds in Port Phillip Bay was determined by the Fisheries and Wildlife Department in 1957, the fishery did not become established until September, 1963. An attempt was made to fish these scallops commercially in 1960, but lack of dredging experience caused the operation to be discontinued after a few days. However, during 1963, the increasing demand from France for frozen scallops could not be satisfied by the existing Tasmanian fishery, and as a result, some fishermen from that State commenced fishing for scallops in Port Phillip Bay. The Bay proved to be a prolific source of scallops and a flourishing commercial fishery and processing industry were rapidly established in Melbourne.

The resultant landings from the Port Phillip beds increased Australian production and this had a significant effect on world trade in frozen scallops. In 1962–63, the Australian production which originated from fisheries in Tasmania and, to a lesser extent Queensland, amounted to 6,498,000 lb live weight. During 1963–64, when the Victorian fishery had been active for only ten months, Australian production had increased to 15,373,000 lb live weight. Subsequently the production from Port Phillip alone during 1964–65 was in excess of 19 mill lb live weight, and at its peak in August, 1965 the monthly catch amounted to 3·0 mill. lb live weight. Production during 1965–66 for Australia was in excess of 29 mill. lb live weight.

Australia is now the third largest producer of scallops, with a production exceeded only by the U.S.A. and Canada. Other scallop producing countries in order of importance are Japan, France, the United Kingdom, and a number of Southern European countries. Over half of the Australian scallop catch is exported as frozen scallops, the remainder being mainly absorbed by the Melbourne and Sydney markets. During 1965–66, 1,713,632 lb of scallop flesh worth $810,703 were exported from Victoria. France was the main buyer, followed by Belgium, the United Kingdom, and lately the U.S.A.

The sudden increase in production created serious marketing difficulties and, late in 1964, this led to a drop in price to the fishermen whilst a restriction on landings was imposed by the processors. In consequence many fishermen left the industry. However, the local and overseas demand revived in January, 1965, and the industry has experienced a period of further expansion.

Further Reference, 1967; Wildlife, 1962; Introduced Fish, 1963; Commercial Fisheries, European Carp, 1964; Freshwater Research, 1965; Marine Fisheries, 1966; State Wildlife Reserves System, 1966

Fisheries Statistics

The statistics of production shown in the following tables are in terms of recorded landed weight. Some species are landed in a headed, headed and gutted, or otherwise reduced condition; others are landed whole. 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 1961–62 to 1965–66 :

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

Year Ended 30 June—	Number of Men	Boats Employed		Value of Nets and Other Plant	Recorded Production*			
		Number	Value		Fish		Crayfish	
					Quantity	Value	Quantity	Value
			$'000	$'000	'000 lb	$'000	'000 lb	$'000
1962	1,045	794	2,692	554	13,065	3,150	1,676	810
1963	1,004	784	2,748	634	12,611	2,938	1,531	766
1964	1,541	917	3,825	763	14,134	3,532	1,317	691
1965	1,518	897	4,174	798	13,530	2,030	1,291	903
1966	1,566	910	4,432	821	14,875	2,231	1,681	1,177

* See footnote, table below.

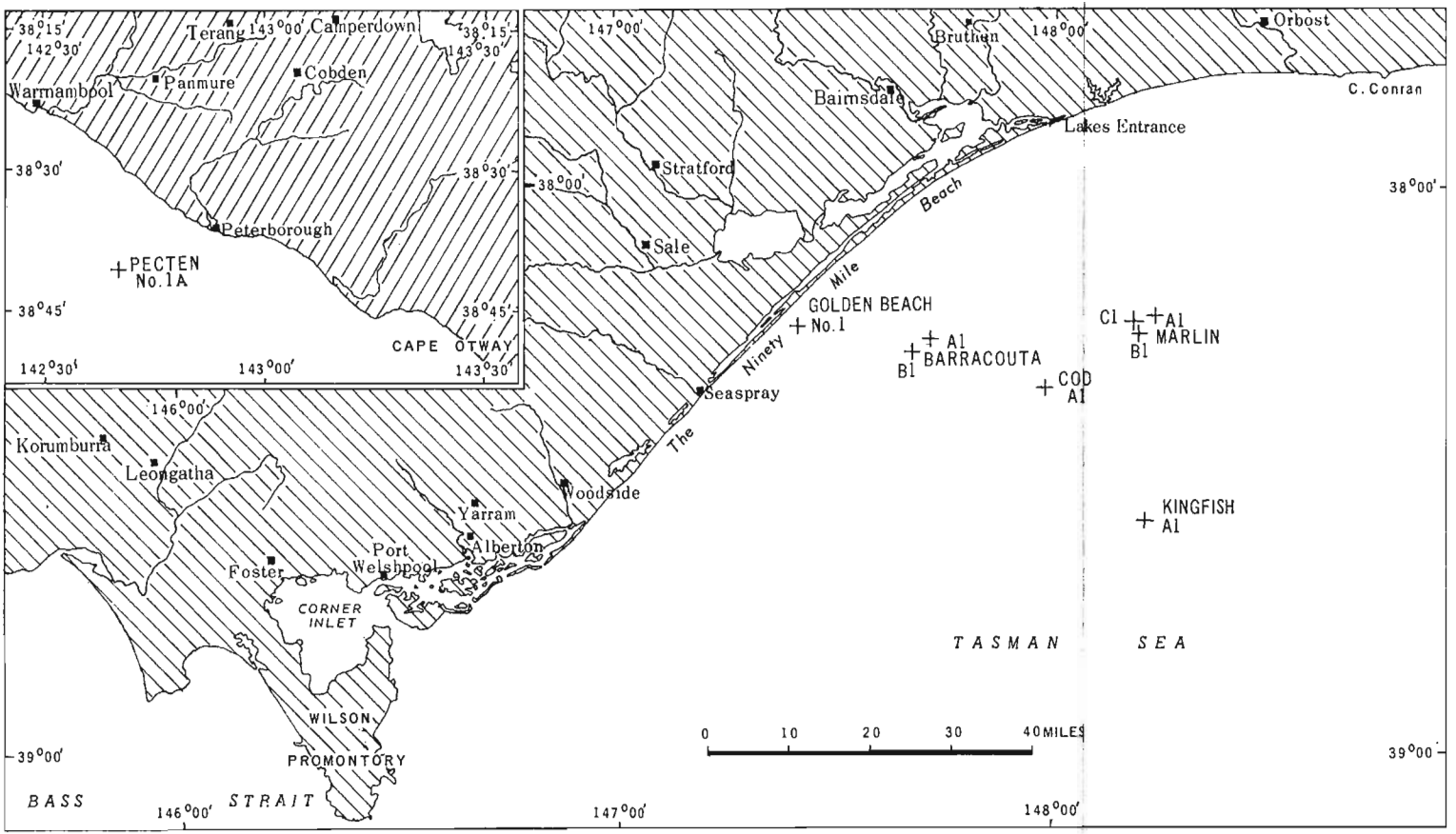
The following table shows the production of the principal types of fish in Victoria for the years 1961–62 to 1965–66 :

VICTORIA—FISH : PRODUCTION OF PRINCIPAL TYPES ('000 lb Landed Weight)

Type of Fish	Year Ended 30 June—				
	1962	1963	1964	1965	1966
Marine Fish—					
Australian Salmon ..	636	1,023	1,649	1,223	1,805
Snoek	3,308	2,588	2,034	2,891	3,684
Bream	329	195	218	204	235
Flathead	2,318	1,832	2,213	1,527	1,482
Garfish	479	503	476	281	276
Morwong	318	277	505	426	427
Mullet	964	978	960	919	679
Pilchard	349	308	639	485	502
Shark*	2,181	2,731	2,987	3,193	3,312
Snapper	279	303	335	414	343
Whiting	402	300	255	267	213
Other†	1,258	1,369	1,630	1,416	1,581
Total Marine Fish..	12,821	12,407	13,901	13,246	14,539
Freshwater Fish ..	244	204	233	284	336
Total Fish ..	13,065	12,611	14,134	13,530	14,875

* Up to and including the year ended 30 June 1964, catch by Victorian fishermen in Tasmanian waters is included. For the year ended 30 June 1965, production has been based on the quantity of fish landed at Victorian ports.

† Includes quantities of shark livers for oil extraction for the years ended 30 June 1961 to 30 June 1964.



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VICTORIA—Natural Gas and Oil Exploration, May 1967.

Mining

The most notable recent development in Victoria's mineral industry is the continued expansion of the non-metallic minerals and the decline of the metallic minerals, especially gold. Significant progress has been made in open cut mining, especially in the extraction of brown coal and construction materials. Exploratory off-shore drilling on the Gippsland Shelf in Bass Strait has revealed the presence of considerable quantities of natural gas. The major mineral resources of the State are described on pages 366–7 of the Victorian Year Book 1967.

Natural Gas in Victoria

Historical Background

The first attempts to find petroleum in Victoria were made between 1921 and 1923 when several wells were drilled without success. In 1924, the first indications of oil and natural gas were obtained in a well drilled near Lakes Entrance ; but despite efforts in the Lakes Entrance area and elsewhere in the onshore portion of the Gippsland Basin, further drilling has so far failed to disclose commercial occurrences of oil or gas on land. Up to April 1967, a total of 179 wells, 127 of them in Gippsland, had been drilled in the search for oil and gas in Victoria. Six of these were located in waters off the coast of Gippsland.

Discoveries

The first offshore well (Barracouta A1) was spudded in December 1964, and in February 1965, encountered gas at a depth of 3,458 ft. The second well (Barracouta B1) drilled on the same geological structure, confirmed the presence of a large gas field which was later named the Barracouta Field. Reserves in this field have been estimated at 1·5 to 2·0 trillion (U.S.) cu ft of gas and from 35 to 50 million barrels of liquid hydrocarbons (condensate). The reserves in the Barracouta Field occur in sands near the top of the Latrobe Valley Formation (Eocene), the top of the reservoir being at a depth of 3,458 ft. Marls and Shales of the Lakes Entrance Formation (Lower Oligocene) form the cap rock of the reservoir.

The Cod A1 well, which was drilled on a different structure, was dry.

The Marlin structure has had Marlin A1, B1, and C1 wells drilled in it and reserves of gas considerably greater than in Barracouta Field have been shown to occur in a reservoir which culminates at 4,500 ft depth. Light crude oil has also been shown to be present but insufficient information is yet available to calculate reserves. This reservoir is also at the top of the Latrobe Valley Formation. In the Marlin A1 well gas was also recorded and tested in the interval between 7,049 and 7,640 ft in Upper Cretaceous sands. Further wells will be drilled to this formation when permanent platforms are established.

Three wells were being drilled offshore in May 1967, two in the Gippsland Basin (Kingfish A1 and Golden Beach No. 1) and one in the Otway Basin (Pecten 1A).

Investigations and Reports

When it became evident, in 1965, that substantial petroleum reserves were likely to occur off the Victorian coast, the Victorian Government sent two senior officers from the Mines Department to Canada and the United States to investigate petroleum legislation and administration in those countries. Following that visit, the Government retained a Canadian consultant to make a report on the newly discovered petroleum resources. This report, entitled " Report on the Orderly Development of Petroleum in Victoria, Australia ", was made to the Premier of Victoria in March 1966.

Legislative Aspects

Petroleum exploration and production in Victoria have, until recently, been governed by the *Petroleum Act* 1958, the application of which was extended offshore by the *Underseas Mineral Resources Act* 1963.

There has been some doubt and differences of opinion about constitutional rights as between the States and the Commonwealth in the matter of jurisdiction related to petroleum exploration and production in the offshore areas. In order to avoid costly constitutional litigation over this question, it was resolved at meetings of State and Commonwealth Ministers to introduce a system of " mirror " legislation in which States and Commonwealth will legislate in practically identical terms. The Minister for Mines in each State will be appointed as the Designated Authority in relation to the offshore area adjacent to that State by both State and Commonwealth Governments. He will grant instruments of title which will constitute titles under both the State and Commonwealth Acts. The legislation will incorporate a " common code " for operations in all offshore areas. An agreement between the States and the Commonwealth will provide for consultations between Governments in connection with administration, and will also provide for the sharing of royalties.

An important aspect of the new legislation will be the " graticule " system of titles whereby all new permits and licences will consist of block areas, the size of each block being 5 minutes of arc of latitude by 5 minutes of arc of longitude, giving an area per block of approximately 25 square miles. Exploration permits will contain a maximum of 400 blocks and will be subject to relinquishment provisions whereby half the original area has to be given up after six years and in each successive five years the area has to be halved again. This will generate a turnover of areas and will enable more operators to participate.

Upon a discovery of petroleum being made in a permit area a " location " of nine blocks, three by three, will be declared. The permit holder will have the right to take a licence over five blocks at the standard royalty rate on production of 10 per cent which is to be shared 6 per cent and 4 per cent, respectively, between State and Commonwealth. In addition the permit holder may elect to take a licence over the other four blocks of the location by paying a negotiated over-ride royalty between 1 per cent and 2½ per cent on production from

all nine blocks, all of which will go to the State. Work obligations will ensure that areas are not allowed to stagnate and that production must follow the taking out of a licence.

In order to implement the provisions of the proposed new legislation in the production titles being granted to the Hematite and Esso companies in the Gippsland Shelf discoveries, special legislation was passed through the Victorian Parliament. The *Petroleum (Barracouta and Marlin Fields Agreement) Act* 1967 enabled production licences to be granted much more in accord with the new legislation proposals than would have been possible under the *Petroleum Act* 1958. Other recent legislation that will have an important bearing on petroleum administration and development includes the *Pipelines Act* 1967 which will govern the authorisation and construction of onshore pipelines and the *Pipelines (Submerged Lands) Act* 1967 which will govern offshore pipelines. This latter legislation will be overtaken by the new "common code" legislation in which one Division is devoted to this purpose.

Earlier legislation of importance includes the *Fuel and Power Act* 1965 which set up the Ministry of Fuel and Power in order to co-ordinate the utilisation of all fuel resources in the State, and the *Victorian Pipelines Commission Act* 1966 which established the Pipelines Commission and charged it with the responsibility of providing the main trunk pipelines for natural gas distribution throughout the State and to State borders for interstate sale.

Industrial Development

As a result of the negotiations between the Hematite-Esso group and the Gas and Fuel Corporation the existing gas utility organisations will distribute the natural gas within the areas to which they now supply coal gas. It is expected that the availability of high heat value natural gas to the public and to industry will result in increased consumption and reduced prices.

Under the terms of the Pipelines Commission Act and the Pipelines Act it will be possible for the Commission to supply bulk gas from high pressure trunklines direct to major industries outside the supply areas at present served by the gas utility companies. Where necessary, companies could be authorised to construct short branch lines from the main trunks for this purpose.

The extensive work involved in the bringing into production of the petroleum resources in the new licence areas will involve the construction of two giant platforms located 16 and 28 miles off the coast between Lakes Entrance and Wilsons Promontory, of undersea and onshore pipelines, and of a gas absorption plant at Sale for the extraction of natural gas liquids. Contracts have been let for a large part of this work amounting to about $40m. A large part of the offshore construction will be prefabricated at installations now being built at Barries Beach near Welshpool. This area will have a large engineering construction yard and new port facilities and will be needed also for future maintenance requirements.

Further References, 1965, 1966; Mining in Victoria, 1964; Underground Water, 1964

Mineral Production

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 years ended December 1965 and 1966, is shown in the following table :

VICTORIA—MINERAL PRODUCTION

Minerals	1965		1966	
	Quantity	Value	Quantity	Value
	fine oz	$'000	fine oz	$'000
Precious Metals—				
Gold	19,246	687*	21,005	688*
Silver	27	‡	29	‡
Other Minerals—	tons		tons	
Bauxite	2,555	11	..	..
Tin Concentrates	11	24	26	55
Coal, Black	42,247	515	35,519	497
Coal, Brown	20,658,856	18,436	21,782,977	20,064
Copper Concentrate	13	4†	36	4
Fire Clay	32,816	62	30,978	69
Gypsum	168,589	287	111,293	244
Kaolin and Other White Clays	565,141	872	330,932	531
Limestone	1,458,545	1,411	1,807,298	2,191
Diatomite	692	26	969	36

* Includes gold subsidy, $144,489 for 1965, and $73,750 for 1966.

† Includes copper bounty $21 for 1965. Nil for 1966.

‡ Value of silver production in Victoria in 1965 and 1966 was $28 and $13 respectively.

The following table shows the average annual production and value of black and brown coal for each of the five year periods from 1926 to 1960 and the production and value for each of the years 1961 to 1966 :

VICTORIA—COAL PRODUCTION AND VALUE*

Period	Black Coal		Brown Coal	
	Production	Value	Production	Value
	tons	$'000	tons	$'000
1926–1930	668,177	1,786	1,515,592	386
1931–1935	472,030	888	2,445,215	512
1936–1940	324,903	568	3,608,751	712
1941–1945	286,277	818	5,010,555	1,052
1946–1950	156,290	722	6,648,430	2,404
1951–1955	143,535	1,590	8,728,116	7,186
1956–1960	100,893	1,050	12,193,625	11,302
1961	66,363	718	16,279,168	15,444
1962	56,721	632	17,137,438	15,682
1963	50,481	588	18,456,445	16,158
1964	47,058	544	19,034,792	17,304
1965	42,247	515	20,658,856	18,436
1966	35,519	497	21,782,977	20,064

* Value of output at the mine.

Quarrying

Stone, Sand, and Gravel

Victoria is plentifully supplied with excellent sources of basalt suitable for building purposes in the form of dimension stone, road-making stone, railway ballast, and aggregate material. Basalts of the Newer Volcanic series cover hundreds of square miles in the southern and western parts of the State, and associated with these expansive basalt areas are a number of scoria cones which provide a potential source of road surfacing material. The range and quality of material is so great that quarries are generally located close to their markets.

In addition to crushed and broken stone, dimension stones are quarried in various parts of Victoria. Quarries at Harcourt produce light grey granite in almost any dimension and other grey granites occur at Beechworth and elsewhere in Victoria. Excellent red granite is quarried at Gabo Island but is comparatively expensive to produce. Marbles of high quality are quarried extensively at Buchan and are available in other parts of the State. Sandstone and slates are also quarried for structural purposes but the Grampians' sandstone is the stone most widely used. It is strong and durable and has been extensively quarried at Stawell.

Sands and gravels are readily available near the Metropolitan Area and other large centres of population. Scoria is used extensively in the Camperdown district. Glass making sands are obtained from the Mornington Peninsula and at Lang Lang. Reef quartz is known to occur at Allendale and industrial sands most of which are wind blown are found close to Melbourne in the Brighton–Frankston area.

Further Reference, 1966

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, and from mines producing construction materials as by-products of their main activity :

VICTORIA—CONSTRUCTION MATERIALS

Year Ended 31 December—	Number of Returns	Production					Local Value of Production
		Sand	River Gravel and Gravel Boulders	Dimension Stone	Crushed and Broken Stone	Other Quarry Products	
		'000 cu yd		tons	'000 cu yd		$'000
1962	254	2,054	425	9,181	7,622	744	17,784
1963	275	2,134	401	10,147	7,866	936	17,270
1964	223	2,442	526	10,268	8,685	932	19,886
1965	221	2,956	664	14,347	9,827	728	22,736
1966	209	3,148	492	9,546	11,198	754	24,206

In addition to the production set out in the preceding table, a considerable quantity of material is won by contractors operating shallow pits for or on behalf of local government authorities, and by exploiting stone outcrops, mine tailings, etc. This itinerant activity was first covered by a statistical collection for 1961. However, the statistics are available only from 1962. Reported production data for the years 1963 to 1966 are :

VICTORIA—CONSTRUCTION MATERIALS : ITINERANT ACTIVITIES

Type of Material	Year Ended 31 December—			
	1963	1964	1965	1966
	'000 cu yd			
Sand	311	240	194	266
Gravel and Gravel Boulders ..	2,533	2,582	1,759	1,994
Crushed and Broken Stone ..	1,453	1,469	2,123	1,537
Other Quarry Products	914	1,241	1,040	818
	$'000			
Local Value	1,659	1,648	1,710	1,698

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 306. Except in the case of mining and quarrying, statistics for the non-rural industries refer to the year ended 30 June. Statistics for mining and quarrying relate to the year ended 31 December of the first year shown.

Gross Value

Gross value is defined as the value placed on recorded production at the wholesale price realised 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, etc., is included in manufacturing production.

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

Industry	1961–62	1962–63	1963–64	1964–65	1965–66
Agriculture	230,224	253,468	272,807	295,013	262,852
Pastoral	287,760	318,914	382,211	373,501	413,558
Dairying*	143,176	157,136	172,560	194,988	190,141
Poultry and Bees ..	47,454	46,688	52,945	47,777	51,975
Trapping	6,048	5,868	6,373	5,830	5,785
Forestry	27,632	27,437	30,592	33,629	34,146
Fisheries	4,032	3,764	4,835	3,731	4,403
Mining	39,166	40,016	40,838	44,892	48,924
Total Primary Industries	785,494	853,291	963,161	999,360	1,011,784

* Includes Subsidy—1961–62, $13,088,000 ; 1962–63, $13,572,000 ; 1963–64, $13,690,000 ; 1964–65, $14,491,000; 1965–66, $14,569,000.

Local Value

The gross value of production, less costs of marketing (freight, cartage, brokerage, commission, insurance, and containers), represents the gross production valued at the place of production, that is, local value, details of which are shown in the following table :

VICTORIA—LOCAL VALUE OF PRIMARY PRODUCTION ($'000)

Produce	1961–62	1962–63	1963–64	1964–65	1965–66
Agriculture—					
Barley	3,978	4,720	3,438	3,808	2,938
Maize	178	226	216	203	99
Oats	8,918	14,314	11,034	12,345	12,555
Wheat	73,342	85,118	93,039	91,950	75,456
Onions	1,300	1,078	919	1,140	1,507
Potatoes	10,756	3,986	13,432	22,705	7,763
Other Vegetables ..	16,208	15,106	15,876	17,350	19,425
Hay and Straw ..	27,468	39,850	34,703	41,580	39,350
Fruit—					
Orchards ..	20,846	17,560	22,016	22,047	27,654
Vineyards ..	15,920	12,678	21,875	19,806	17,670
Other Crops ..	18,562	21,112	23,389	21,515	21,295
Total ..	197,476	215,748	239,938	254,449	225,713
Pastoral—					
Wool	126,950	137,980	187,157	150,987	168,613
Sheep, Slaughtered ..	40,964	44,764	46,523	51,297	57,113
Cattle, Slaughtered ..	86,034	102,434	112,071	130,201	145,403
Total ..	253,948	285,178	345,751	332,484	371,130

VICTORIA—LOCAL VALUE OF PRIMARY PRODUCTION—*continued*
($'000)

Produce	1961–62	1962–63	1963–64	1964–65	1965–66
Dairying—					
Whole Milk Used for—					
Butter	61,422	71,368	77,246	87,345	87,544
Cheese	9,802	11,210	12,851	14,537	11,201
Condensing, Concentrating, etc. ..	12,200	12,284	14,065	16,379	16,365
Human Consumption and Other Purposes ..	28,476	28,894	32,786	34,348	35,410
Subsidy Paid on Whole Milk for Butter and Cheese	13,088	13,572	13,690	14,642	14,569
Pigs, Slaughtered ..	11,546	13,410	15,217	20,165	17,513
Total ..	136,534	150,738	165,857	187,416	182,601
Poultry and Bees—					
Eggs	28,276	28,946	34,659	30,183	33,914
Poultry	12,370	11,794	12,009	11,196	11,546
Honey and Beeswax	830	480	1,151	867	989
Total ..	41,476	41,220	47,819	42,245	46,449
Trapping, etc.—					
Rabbits and Hares ..	4,570	4,332	4,444	4,599	4,826
Rabbit and Hare Skins, etc. ..	1,050	1,168	1,470	870	595
Total ..	5,620	5,500	5,914	5,469	5,421
Forestry—					
Sawmills	18,136	18,884	19,543	22,391	22,494
Hewn Timber ..	2,522	2,202	2,490	2,587	2,928
Firewood	5,444	4,943	6,682	6,949	6,842
Bark for Tanning ..	92	108	134	90	108
Other	66	64	72	58	62
Total ..	26,260	26,200	28,920	32,076	32,434
Fisheries—					
Fish	2,714	2,528	3,049	1 702	1,871
Crayfish	706	670	606	797	1,040
Oysters	2	2	2	2	*
Scallops	..	..	481	656	789
Other	60	50	64	57	96
Total ..	3,482	3,250	4,202	3,212	3,797

* More than nil, but less than half the final digit shown.

VICTORIA—LOCAL VALUE OF PRIMARY PRODUCTION—*continued*
($'000)

Produce	1961–62	1962–63	1963–64	1964–65	1965–66
Mining—					
Gold	940	946	854	737	687
Coal—					
Black	718	632	589	544	515
Brown	15,444	15,682	16,158	17,304	18,436
Other Metals and Minerals ..	3,630	3,990	4,308	4,772	4,839
Quarrying	18,434	18,766	18,929	21,534	24,446
Total ..	39,166	40,016	40,838	44,892	48,924
Total Primary Industries	703,962	767,851	879,238	902,243	916,470

Net Value of Production

Net value of production is computed by subtracting from local value the cost of materials used in the process of production. These materials include stock feed, seed, manures, power, petrol, kerosene, other oils, dips, sprays, and other costs. No deductions have been made for depreciation or certain maintenance costs. The net value of production is the only satisfactory measure to use when comparing or combining the value of primary industries with those of other industries. Details for primary industries and manufacturing are shown in the table below :

VICTORIA—NET VALUE OF PRODUCTION
($'000)

Division of Industry	1961–62	1962–63	1963–64	1964–65	1965–66
Rural—					
Agriculture ..	176,490	193,972	218,136	232,775	202,674
Pastoral	231,056	265,126	323,696	309,668	346,230
Dairying	87,044	110,134	121,385	136,097	135,601
Poultry	24,878	24,812	30,104	24,407	28,192
Bee-farming ..	830	480	1,151	867	989
Total Rural ..	520,298	594,524	694,473	703,814	713,686
Non-rural	67,464	67,372	72,686	77,809	81,609
Total Primary ..	587,762	661,897	767,159	781,623	795,296
Manufacturing ..	1,440,644	1,601,742	1,750,478	1,949,665	2,027,685
Total All Industries ..	2,028,406	2,263,639	2,517,637	2,731,288	2,822,981