PART 7.—PRODUCTION.

Land system of Victoria.

1244. The numerous changes which have taken place in the mode of disposing of Crown lands in Victoria up to the end of 1893 have been fully described in previous issues of this work.* The present system dates from the passing of the *Land Act* 1884 and the *Mallee Pastoral Leases Act* 1883, which, with subsequent amendments, were consolidated by the *Land Act* 1890, which in turn was amended by the Land Acts 1891 and 1898, and by the *Mallee Lands Act* 1896.

Land Act 1898.

1245. The Land Act of 1898, which virtually constitutes the last chapter in Victorian land legislation, whilst not abolishing the system introduced in 1884, makes important alterations, both in substance and detail, and introduces several new principles of importance. The Act came into operation on 1st July, 1899. The principle of perpetual leasing with a periodical re-appraisement of rental, first introduced into Victoria by the *Mallee Lands Act* 1896, is extended to other unalienated Crown lands; but the freehold may still be obtained, the class of tenure being in most cases optional on the part of the settler. The colony is divided into land districts for administrative purposes, and there are land offices in eighteen towns. One or more Classification Boards, each consisting of three members, are constituted, for the purpose of determining the classification of unselected Crown lands. The area of agricultural or grazing land that may be selected or taken up depends now upon the classification of the land, whereas formerly all agricultural land was in only one class. A new departure in Victorian land legislation is embodied in Part III. of the new Act, which enables the Crown to acquire† from private owners rich agricultural land for the purpose of subdivision into farms, on which, with the advantages of closer settlement, a valuable body of yeomanry will probably be established. The only material alteration in the classification of unalienated Crown lands is to distinguish three kinds of agricultural and grazing lands instead of one, as formerly, the following being that now fixed :—

1. Good agricultural or grazing land.
2. Agricultural and grazing lands.
3. Grazing lands.
4. Pastoral lands (large areas).
5. Swamp or reclaimed lands.
6. Lands which may be sold by auction (not including swamp or reclaimed lands).
7. Auriferous lands.
8. State forest reserves.
9. Timber reserves.
10. Water reserves.

Pastoral occupation

1246. Pastoral lands (fourth-class) outside the mallee district are leased in pastoral allotments varying in size from 1,280 to 40,000 acres for a term

* See issue for 1893, Vol. II., paragraphs 239 to 250; also issue for 1889–90, Vol. II., paragraphs 375 to 381.

† The Crown has already purchased an estate, near Casterton, in the Western District, for subdivision into smaller blocks for closer settlement, and is negotiating for the purchase of another estate, in the North-Eastern District.

expiring on 29th December, 1909, at the end of which the land, together with all improvements thereon (except as below-mentioned), reverts to the Crown, the right to the lease being granted to the first person who applies for the land on or before a certain day after it has been first publicly notified as available; but, if there should be more than one applicant, the lease must be offered by auction, and the highest bidder by way of premium will, on payment of the same, be entitled to the lease. The annual rent payable for pastoral allotments is computed according to the grazing capability of the land, at the rate of 1s. per head of sheep and 5s. per head of cattle. The principal conditions of the lease are that all vermin (rabbits, native dogs, &c.) shall be destroyed, and the land kept free of noxious weeds, &c.; that all buildings and improvements shall be kept in good condition and repair, and that no timber (other than that required for fencing or building) shall be destroyed without the consent of the Board of Land and Works; nor can the lessee transfer, assign, or sublet, without such consent. Upon the expiration of the lease, the lessee is to be paid by any incoming tenant the value of all fences, wells, reservoirs, tanks and dams, at a price not exceeding the sum expended thereon, but in no case to exceed 2s. 6d. per acre. The Crown may resume any portion for public purposes on giving two years' notice; or, for townships or mining purposes, on paying reasonable compensation for improvements. Pastoral leases under the Land Acts 1884, 1890, and 1891, which expired on 29th December, 1898, have been extended by the new Act until 29th December, 1899, before which date any lessee may apply for a new lease (without being subjected to public competition) expiring on 29th December, 1909, of which the annual rent will be fixed by appraisement. Any future lessee of pastoral lands may select a homestead out of his leasehold up to 200 acres of first-class, 320 acres of second-class, or 640 acres of third-class land on payment of £1, 15s., and 10s, for first, second, and third-class land respectively; and an existing lessee has the right to apply before the 29th December, 1899, to select a homestead out of his leasehold, after deducting any previous selection which is regarded as third-class land, up to 640 acres of third-class land, on payment of 10s. per acre, or an equivalent of second or first-class land; but any right, contained in any existing lease, to select a homestead of 320 acres of first-class land is not curtailed. No person is permitted to hold more than one pastoral lease.

Grazing areas.

1247. The agricultural and grazing lands (classes 1 to 3) may be leased to persons over the age of eighteen years in "grazing areas" not exceeding 200, 640, and 1,280 acres of first, second, or third-class lands respectively, for any term expiring not later than the 29th December, 1920, when the land, together with all improvements—to be allowed for at a valuation limited to 10s., 7s. 6d., and 5s. per acre for first, second, and third-class lands respectively—reverts to the Crown. More than one area may be taken up by one person, so long as the maximum just stated be not exceeded. The annual rent of a grazing area is 3d., 2d., or 1d. per acre for first, second, or third-class lands respectively, but any substantial and permanent improvements that may happen to be on the land at the commencement of the lease are to be charged for in addition at the rate of 4 per cent. per annum on the capital

value thereof. The conditions imposed on the lessee of a grazing area are similar to those set out in the preceding paragraph as appurtenant to a pastoral lease, with a further condition that the lessee must enclose the land with a good fence, which must be kept in repair; or, if fencing be impracticable, other improvements to the value of fencing may be made instead. Residence is not required of the holder of a grazing lease, unless he should select portion of his holding under the terms and conditions specified in the next paragraph. Grazing area leases under the *Land Act* 1884, which expired on 29th December, 1898, are extended for twelve months, within which period any lessee who proves that he has not held the area speculatively, and has fulfilled the conditions of the old lease, or has improved the area to an extent exceeding 5s. per acre, and has paid all back rent, or agreed to pay same by instalments extending over six years, may apply for a new lease of so much of his grazing area as will not—together with any land previously selected—exceed 200 acres of first-class, or 640 acres of second-class land (but in no case greater than the area covered by the expiring lease), which may be granted, without public competition, on the above terms; or, any existing lessee of a "grazing area" in respect of which no rent is due, who has reasonably fulfilled the conditions required, may be permitted to surrender and obtain a lease (free from public competition) of any part of his grazing area in favour of his wife or any eligible child, if either be qualified to become the lessee. More than one area may be held by one person provided the maximum is not exceeded.

Agricultural and grazing allotments.

1248. Persons not below the age of eighteen years desirous of selecting an agricultural or grazing allotment may do so either by first taking up a grazing area, and then—after the issue of his lease—selecting out of the area leased a block or "agricultural allotment" not exceeding 200 acres of first-class land, or 320 acres of second-class land, or a "grazing allotment" not exceeding 640 acres of third-class land; or, if the area he desires does not exceed that just stated, by obtaining an agricultural allotment licence direct without the previous issue of a grazing area lease; but, should he have selected under a previous Act or Acts, he is only entitled to increase his selection to such an extent as not to exceed the equivalent of the areas above specified. The purchase-money is fixed at 20s. per acre for first-class, 15s. for second, and 10s. for third-class land; and is payable by even annual instalments (without interest) extending—in the case of a "residential" selector—over a period of 20 or 40 years at his option (viz.:—1s. or 6d. per acre per annum, according to the term, for first, 9d. or 4½d. for second, and 6d. or 3d. for third-class land); but, in the case of a "non-residential" selector, over a period of 20 years only. The land is occupied during the first six years under probationary *licence*, and during the remainder of the term under *lease*. During the period of the licence the licensee must keep the land free from vermin, enclose it with a fence, and—in the case of a residential selection—make improvements to the value of the total purchase money; whereas—in the case of a non-residential selector—improvements must be effected on first-class land to the extent of twice the amount of the purchase money, one-sixth being required to be made each year; but on second and third class lands, whilst the value of improvements is the same as in the

case of a residential selection, it is necessary to effect one-third of such improvements during each of the first three years. After the expiration of the six years' licence the selector, if he obtain a certificate from the Board of Land and Works that he has complied with the conditions, can either purchase his holding within twelve months by paying up the balance of the purchase-money—the six annual instalments already paid being allowed as part payment; or may convert his licence into a lease extending over fourteen or 34 years, as the case may be, at the same annual rental, which is also credited to the selector as part payment of the fee-simple. On the expiry of such lease, and after due payment of the rent, the land becomes the freehold of the selector. Under a residence licence the licensee must enter into occupation within twelve months from issue of licence, and occupy for five years during the currency of licence (but, on notifying land officer, licensee may be absent for three months in the aggregate every year), but such occupation may be substituted by occupation of wife or a stated child over eighteen years of age. Holders of current agricultural allotment licences may apply to have their land classified, and concessions are made in regard to certain existing arrears of rent. Other important features are that every selector—subject to certain conditions and restrictions—is entitled to a Crown grant of portion of his allotment not exceeding 20 acres, if planted as a vineyard or an orchard, upon payment of the balance of the purchase money due in respect of such portion; that the licensee of an agricultural or grazing allotment may, after the expiration of two years, give a "licence lien" to any person from whom he receives any advance of money not exceeding one-half of the improvements effected; that lands selected by any one person must consist of one block or several blocks separated only by roads; that married women are permitted to select or take up land under any of the methods now in force, all legal disabilities attaching to married women selecting having been removed by the *Land Act* 1898; and that facilities are given to allow of a non-resident selector becoming a resident selector, and *vice versâ*. The other principal conditions are that the licensee may not transfer or sublet during the term of the licence; must keep the land free from vermin; that the Crown may resume any land under licence required for public purposes; and the land must be enclosed with a fence, which must be kept in repair. A licence may be antedated to cover a period of occupation under a grazing area.

Perpetual lease.

1249. Instead of selecting agricultural land by way of licence and lease, by which system the freehold is obtained, a settler has the option of leasing such land, under Perpetual Lease, on easier terms. The maximum area that may be acquired by one individual—by transfer or otherwise—is limited to 600, 960, or 1,960 acres of first, second, or third class lands respectively, and the rent is 3d. in the £1 on the unimproved or ground value, which is deemed to be £1, 15s., and 10s., for first, second, and third class lands respectively, until the 29th December, 1909, when the rent is to be re-appraised by the Board of Land and Works, and thereafter once every ten years. Within six months after any re-appraisement of rent, the lessee may, if dissatisfied, surrender his lease for an agricultural or grazing allotment licence, in which case improvements made and residence will be credited towards the licence. The

principal conditions of a perpetual lease are:—To destroy vermin within two years, and to keep land free from vermin and noxious weeds; to fence within six years, but, if fencing be unnecessary or impracticable, improvements to a like value to be substituted; to reside on land or within 5 miles for six months first year, and eight months during each of four following years (but, if settler cultivate one-fourth during first two years, and one-half by the end of the fourth year, residence is not enforced); to improve to the value of 10s., 7s. 6d., or 5s. per acre for first, second, or third class lands respectively; not to assign, transfer, mortgage, or sublet during first six years, and afterwards only with consent of Board of Land and Works; any portion of the land required for public purposes may be resumed on payment for immovable improvements and cost of removal of others.

Auriferous lands

1250. Auriferous lands not required for mining purposes, and not situated within a city, town, or borough, may be occupied under annual licence for purposes of residence or cultivation in areas not exceeding 20 acres, on payment of an occupation fee at the rate of 1s. per acre per annum, together with a fee of 2s. 6d. annually for the licence; but any licensee, when he deems he has paid rents equal to the value of the land, may have same appraised, and if such value has been paid the fee henceforth will be only 2s. 6d. for the licence. Grazing licences for auriferous land, renewable annually, may be obtained for purely pastoral purposes in blocks not exceeding 1,000 acres for a period expiring not later than 29th December, 1905. No auriferous lands can be alienated in fee simple except those which are found on inquiry to be "worked out," which may be licensed, in blocks not exceeding 5 acres each, for a period of seven years for residence, business purposes, or cultivation; after the expiration of which term, if conditions of licence have been complied with, and purchase money to the value of the land (less the amount paid as rent) be paid, a Crown grant may be issued.

Swamp lands.

1251. Swamp lands are to be first drained, and may then be leased in areas not exceeding 160 acres for a term of 21 years; or under perpetual lease, at a rent of 4 per cent. on the value of the land as fixed by the Board of Land and Works, until 29th December, 1909, and thereafter according to the value as ascertained by a decennial re-assessment by a Land Classification Board; or under conditional purchase lease, as to terms of which see paragraph 1259 *post*; or may be sold by public auction.

Sales by auction.

1252. Certain Crown lands may be sold by auction at an upset price of £1 per acre, or at such higher sum as the Governor in Council may direct. The survey fee and a deposit of $12\frac{1}{2}$ per cent. must be paid at the time of sale, and the balance in 40 half-yearly payments, with 4 per cent. interest added.

Mallee lands.

1253. Prior to the consolidation of the former Land Acts under the *Land Act* 1890, the occupation of the unalienated land situated in the north-western portion of the colony, comprising about one-fifth of its extent, or some $11\frac{1}{4}$ million acres (exclusive of Mildura), wholly or partially covered with the various species of stunted trees of which the "Mallee scrub" is composed, was specially provided for by *The Mallee Pastoral Leases Act* 1883, the provisions of which were repealed, and re-embodied in the Consolidated Act referred to, forming Part II. of that Act. These provisions have since been considerably modified by

the *Mallee Lands Act* 1896 and the *Land Act* 1898, Part II. The country just described is divided into two main divisions—the larger division being known as the "Mallee country"; and the other, situated along the southern and eastern borders of the Mallee country, being called the "Mallee border." The land of the "Mallee border" is mostly of a light-chocolate and sandy-loam character, and, in its natural state, is covered with mallee scrub interspersed with plains lightly timbered with box, oak, and pines. The scrub can be cleared at a moderate expenditure, and the land is well adapted for wheat-growing. Mallee lands are, for purposes of occupation, classified into "Blocks," "Allotments," and "Agricultural allotments." The two former are occupied under pastoral lease; whilst the latter may be either selected under licence and lease—with the right to the freehold—or occupied under perpetual lease, in which case the maximum area is greater and the annual payments much smaller. Provision is made for the prevention of fires in the Mallee district. No person is allowed to hold as beneficial owner more than 1,920 acres of the Mallee lands.

Pastoral leases of—(*a*) "Mallee blocks."

1254. The "Mallee country" is divided into blocks of various sizes, and a lease may be granted under certain conditions. The principal conditions are that the lessee destroy all vermin (native dogs, rabbits, &c.) upon the whole block within the first three years, and keep the same clear of vermin during the tenure of the lease, and maintain in good condition and repair all improvements made upon the land. A lease for a Mallee block may be granted for any term of years not longer than twenty from the commencement of the Act of 1883, at the end of which (viz., on the 1st December, 1903) the land, with all improvements, reverts to the Crown. The annual rent charged for the whole block is to be not less than 2s. 6d. per square mile. Any Mallee block may, if the Governor in Council think fit, be divided into allotments and occupied as Mallee allotments as described in the next paragraph, provided that applications have been received for all the allotments into which the block may be divided. No lessee of a Mallee block can acquire any portion thereof in fee simple.

(*b*) "Mallee allotments."

1255. The "Mallee border" is subdivided into "Mallee allotments," varying in size, but not in any case exceeding 20,000 acres. These are available for lease on the same terms and conditions as in the case of a Mallee block, and the annual rent ranges from 10s. per square mile to 1d. per acre.

Mallee agricultural allotments.

1256. The Governor in Council has also power to declare any unoccupied Crown land in the Mallee country or Mallee border available for occupation as agricultural allotments either under licence (residential or non-residential) or perpetual lease. A Mallee Classification Board is appointed, and Mallee lands are to be divided into two classes, viz., first-class land, the unimproved value of which is £1 per acre or upwards; and second class, the unimproved value of which is under £1 per acre. Any person of the age of eighteen years (including a married woman) is eligible to select to the extent of 640 acres of first-class or 1,000 acres of second-class land. The rent payable under agricultural allotment licence is 1s. or 6d. for first-class and 6d. or 3d. per acre per annum for second-class lands (as the lessee may elect) in the case of a "residential" licence—and 1s. for first and 6d. for

second class in the case of a "non-residential" licence; but, if the smaller rent be chosen, the term of lease will be 34 instead of 14 years; and at the end of six years, if conditions with regard to residence, cultivation, improvements, and all other usual conditions have been complied with, a lease for the remainder of the term (14 or 34 years), will be granted at the same rental, and a Crown grant will issue when such payments amount to £1 or 10s. per acre for first or second class lands respectively, or, if desired, on the expiry of the licence a Crown grant will be issued on payment of 14s. or 17s. per acre for first-class, or 7s. or 8s. 6d. per acre for second-class lands, as the case may be. The provisions of the Land Acts applying to agricultural allotments generally* shall apply to those in the Mallee. In regard to improvements the provisions in respect of third-class lands outside the Mallee applying to second-class lands in the Mallee. Where any Mallee land has been resumed by the Crown, and is afterwards licensed or leased, the price paid by the Crown for the resumption must be paid by the applicant either in cash within one month from the date of allotment, or by half-yearly instalments of such sums —extending over the whole or any part of the licence or over so many years of the perpetual lease not exceeding six—as the Board of Land and Works may determine, with interest at the rate of 4 per cent. per annum added. Fencing, water, or other improvements on the allotments granted must be paid for in like manner. Lessees must either reside on or within 5 miles of their land, or else cultivate up to one-half of the area of their allotment before the end of the fourth year. Licensees are empowered to give licence liens on their improvements. The principal conditions of Mallee agricultural allotments are:—That the licensee shall not assign, sublet, or subdivide without the consent of the Board of Land and Works; shall keep the land free from vermin; must enclose with a fence which must be kept in repair, or improvements to a like value; shall not, without a special permit, cut, damage, or remove any live pine, box, or redgum, unless for building, fencing, or other improvements; and shall plant certain specified trees within the first five years. The Crown may resume during licence any part of land for public purposes or mining, on repayment of moneys paid to the Crown or expended on the land. A licence or lease may be surrendered for a perpetual lease, credit being allowed for any improvements made, and any arrears of rent may be made payable by instalments.

Mallee perpetual leases.

1256A. The maximum area obtainable under perpetual lease is 1,920 acres; the rent is 2d. per acre until end of 1893, and thereafter $1\frac{1}{4}$ per cent. of unimproved value, which is fixed by the Board of Land and Works every ten years. The period of residence necessary is six months first year, and eight months each of the following four years. Other conditions are as follow:—To fence within six years; not to transfer, mortgage, &c., during first six years; to destroy vermin within two years; portion required for railways, roads, reserves, &c., to be resumed on payment of cost of removal of improvements; not to cut any live pine, box, or redgum without Minister's consent; and certain prescribed trees to be planted. A perpetual lease may be surrendered for licence and lease within six months after any re-appraisement of rent.

* See paragraph 1248 *ante*.

Modes of selection.

1257. The following table shows, in a condensed form, the main outlines of the terms and conditions for the occupation and selection of unalienated Crown lands (not including the Mallee District) which have been fully dealt with in the foregoing paragraphs :—

MODES AND PRINCIPAL CONDITIONS OF LEASING AND SELECTION OF CROWN LANDS IN VICTORIA, 1899.

Heads of Info mation.	Pastoral Leases.	Grazing Area Leases.			Licences and Leases of—						Perpetual Leases of Agricultural and Grazing Allotments.		
					Agricultural Allotments.				Grazing Allotments.				
					Class I.		Class II.		Class III.				
		Class I.	Class II.	Class III.	Residential.	Non-residential.	Residential.	Non-residential.	Residential.	Non-residential.	Class I.	Class II.	Class III.
Maximum area allowed, acres	40,000	200*	640*	1,280*	200		320		640		600	960	1,920
Price per acre	..	..	..	..	20s.		15s.		10s.				
Term of licence—years	..	..	..	..	6		6		6				
,, lease ,, ..	Expires 29th Dec., 1909	Expires not later than 29th Dec., 1920.			14	34	14	34	14	34	14		
Minimum term of purchase —years	..	..	..	..	6	or 6	6	6 or 6	6	6 or 6	6		
Maximum term of purchase —years	..	..	..		20	40	20	20 40	20	20 40	20		
Annual payment or rental per acre	1s. per sheep, and 5s per head of cattle	3d.	2d.	1d.†	1s.	6d	1s.	9d. 4½d.	9d.	6d. 3d.	6d.	$1\frac{1}{4}$ per cent. of unimproved value ‖ re-appraised every 10 years.	
Additional for value of improvements	..	4 per cent.											
Value of improvements required per acre	..	Fencing			20s.	40s.‡	15s.	15s.§	10s.	10s.§	10s.	7s. 6d	5s.
Time allowed for same—years	..	..	..	..	6	6‡	6	3§	6	3§	6	6	6
Period of residence necessary	..	..	..	..	5	..	5	..	5	..	6 months first year, 8 months each of next 4 years. ¶		
Who may lease or select ..	Any person	Any person aged 18 years or over			Any person aged 18 years or upwards						Any person.		

* More than one area may be held by one person provided the maximum be not exceeded ——† Or, if land is of inferior quality, at such rental as may be fixed by the Land Classification Board.——‡ Of this amount 6s 8d. must be expended each year.——§ One-third in each of the first three years of the licence.—— ‖ Unimproved value to be deemed to be 10s., 7s. 6d , and 5s , for first, second, or third-class lands respectively.——¶ Or within 5 miles of the land. Residence not necessary if one-fourth area cultivated during first two years, and half by end of fourth year.

1258. The following table gives similar particulars in regard to Mallee lands :— Mallee lands—modes of selection.

OCCUPATION AND SELECTION OF MALLEE LANDS, 1899.

Heads of Information.	For Pastoral Purposes.		Mallee Agricultural Allotments.				Perpetual Lease.
			Class I.*		Class II.*		
	Mallee Blocks.	Mallee Allotments (near border of Mallee).	Residential.	Non-residential.	Residential.	Non-residential.	
Area allowed—acres	As subdivided	Maximum 20,000	640		1,000		1,920
Price per acre..	..	..	£1		10s.		
Term of licence—years	..	..	6		6		
Term of lease—years	..	..	14 or 34	14	14 or 34	14	Perpetual
Minimum term of purchase	..	..	6	6	6	6	
Maximum term of purchase	..	..	20 or 40	20	20 or 40	20	
Annual payment or rental per acre	Minimum 2s. 6d sq. mile	..	1s. or 6d.	1s	6d. or 3d.	6d.	2d. to end of 1903; after 1903, 1¼ per cent. unimproved value
Value of improvements required—per acre	..	..	£1	£2†	10s.	10s.‡	Fencing only
Time allowed for improvements—years	..	..	6	6†	6	3‡	
Period of residence necessary	..	..	5	..	5	..	6 months 1st year, 8 months each of next 4 years§
Who may occupy or select	Any person	Any person	Any person aged 18 or upwards				Any person 18 years of age or upwards

1259. An entirely new feature in Victorian land legislation is introduced in Part III. of the *Land Act* 1898, which authorizes the purchase by the Crown of good agricultural private lands for the purpose of closer settlement. After favorable report and valuation being obtained, the Minister may enter into a provisional contract for the purchase of land, copies of which contract and report are to be laid before Parliament; and, if the Legislative Assembly, by resolution, declare it expedient to acquire such land, a Bill for the purchase thereof will be introduced. The price to be paid by settlers of the land so acquired will be so fixed as to cover cost of purchase, survey, and subdivision, value of land absorbed by roads and reserves, and cost of clearing, draining, fencing, and other improvements which the Board of Land and Works may effect prior to disposal as farm allotments. Any person aged 21 (not holder of rural land valued at £1,000, or who would not thereby

Private lands. Purchase for closer settlement.

* First-class land is land of which the unimproved value is fixed by the Classification Board at £1 per acre or upwards; and second-class land under £1 per acre.
† Of this amount 6s. 8d. must be expended each year.
‡ One-third in each of the first three years of the licence.
§ Residents to be on or within 5 miles of the land.

become holder of land exceeding such value) may be granted one farm allotment under conditional purchase lease. The purchase money, with interest at 4½ per cent., must be paid by 63, or a lesser number of, half-yearly instalments, two of which must be deposited on application. A conditional purchase lease may be for a term not exceeding 31½ years; will contain, so far as consistent, the usual conditions of perpetual leases, and also the following:—(*a*) Improvements to the value of 10s. per acre; or, if Board so determine, to value of 10 per cent. of purchase money, before end of third year; and to the same extent, in addition, before the end of sixth year: (*b*) Personal residence or by wife or child over eighteen years of age for eight months during each of first six years: (*c*) Not to transfer, assign, mortgage, or sublet within first six years; and any other conditions prescribed by regulation. The fee-simple may be acquired after the first six years, if conditions complied with, on payment of balance of principal. Forfeiture for non-payment of an instalment may be prevented by payment thereof, with a penalty of 5 per cent., within three months, or of 10 per cent. within six months.

Village settlements.

1260. Chiefly with a view to providing an outlet for the unemployed labour of the colony, an Act * was passed on the 31st August, 1893, providing for the establishment of three descriptions of rural settlements, viz.:—Village Communities, Homestead Associations, and Labour Colonies. For the Village Communities certain lands were set apart and divided into allotments of from 1 acre to 20 acres in extent, to occupy which for periods of three years permits are granted to approved applicants. An applicant must not be under the age of eighteen, nor the owner in fee simple of 2 acres or upwards, nor the lessee of a pastoral allotment or grazing area, nor a licensee under sections 42 or 49 of the *Land Act* 1890, nor a lessee of a Homestead Association allotment. During the period over which the permit extends the occupant pays a rental of 3d. per acre per annum, or, if he occupy Mallee land, 1d. per acre per annum, and on the expiration of that period he is granted a lease for twenty years, during the currency of which he is required to pay half-yearly, in advance, a sum equal to the fortieth part of the price set upon the allotment, which is generally £1 per acre, except in special cases when the price is considerably higher; he has also to repay, in equal yearly instalments extending over the currency of his lease, any moneys which have been advanced to him, and to pay the cost of surveying his allotment in ten half-yearly instalments extending over the first five years thereof. The lessee is bound to bring one-tenth of his land under cultivation within two years of the date of his lease, and one-fifth within four years of such date; and is, moreover, to put on the land permanent improvements to the value of £1 per acre within six years of such date. All conditions having been complied with, the lessee is entitled to receive a grant in fee of the land he occupies.

Homestead associations.

1261. The Homestead Associations are combinations of not less than six persons who desire to settle near each other. Any person

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* The *Settlement on Lands Act* 1893 (57 Vict. No. 1311).

over the age of eighteen, not being a married woman, nor the holder of 10 acres of land or upwards in fee simple, and not disqualified by other restrictions specified in regard to Village Communities, may become a settler in a Homestead Association. For their accommodation blocks of Crown land, each containing not more than 2,000 acres, are divided into sections not exceeding 50 acres in extent, excepting a portion, not exceeding 100 acres, which is set apart for a township, of which a division, not exceeding 40 acres, is permanently reserved for the recreation, convenience, or amusement of the members of the association. The remainder of the township portion is divided into as many allotments of 1 acre or less as may be necessary to provide one allotment for each occupant of a section. The conditions as to residence, cultivation, improvement, rent, and repayment of cost of survey and advances, are much the same as those already described in connexion with the Village Communities. After all these have been complied with, a grant in fee of his section and township allotment is given to each occupant.*

Advances to rural settlers.

1262. An advance, not exceeding £15† in all, is made by the Government in one or more sums to any settler in a Village Community or member of a Homestead Association who may be in need of monetary assistance to enable him to build upon or otherwise improve his holding; the total of such advances made in any one year is not to exceed £20,000.

Progress of village settlements.

1263. Up to 30th June, 1894, the area made available for Village Communities and Homestead Associations and Societies was 156,020 acres in 85 different localities. A large portion of this area has, however, been found unsuitable for Village Settlement purposes, and has been withdrawn from the operation of the Act. Of the suitable areas, 48,688 acres were allotted to 2,259 approved applicants, or an average of 21 acres each. At the time of inspection (May and June, 1898) there were 2,042 settlers actually residing on the settlements; of whom 1,614 were married and 428 were single; and, including wives and families, the total souls numbered 9,089. The total value of improvements effected was £150,592. The amount advanced to the settlers as monetary assistance is equivalent to less than half the amount voted, or to about 44 per cent. of the total value of improvements.‡

Labour colonies.

1264. Labour Colonies are established for the purpose of affording assistance to the able-bodied unemployed who are absolutely without means, and are of the nature of relief works. They are placed on blocks of Crown land, and were intended to be supported partly by the Government and partly by voluntary contributions, the Government granting £2 to every £1 contributed privately, the management being under the joint control of a committee appointed partly by the Government and partly by the contributors. Soon after the Act came into force private contributions fell off, and the Government were constrained to take over the sole control. The management was then

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* The formation of Homestead Asssociations is not now encouraged by the Department, as experience has shown they are not the success anticipated.

† This has been found inadequate, and it is proposed to obtain legal sanction to increase the amount to £50.

‡ See Report under the *Settlement on Lands Act* 1893, for the year 1898-9.

placed in the hands of a gentleman who had been instrumental in introducing the system into Victoria, and who continues the management in a purely honorary capacity. The Act provides for the admission of persons of good character and repute into the Labour Colony, and for the establishment of any trade or industry in connexion therewith in order to make the institution self-supporting, all profits being set apart for a fund to continue the system.

Leongatha labour colony.

1265. The only Labour Colony in active operation is that of Leongatha, situated in the Gippsland district, about 80 miles from Melbourne, consisting of 800 acres of excellent but heavily-timbered land. On joining this colony, each man has to work a week on probation, and then on a small wage, fixed by the manager according to his ideas of the man's worth. The men are comfortably housed in bush huts, and fed, as far as possible, on the produce of the Labour Colony. After deducting the cost of clothes and other necessaries supplied him from the store, the balance of the man's wages is placed to his credit and paid him in cash when he leaves the colony, or the money is paid, as earned, to his family in town. A labour bureau has been established, and employers are at once supplied, without fee, with pick and shovel men, splitters, bush hands, farm labourers, ploughmen, rough carpenters, cooks, bakers, or skilled tradesmen. It must be borne in mind that the Labour Colonies are not intended to afford permanent homes to the men, but to supply their immediate wants and to fit them for a rural life. The industries pursued at Leongatha are clearing, draining, fencing, and cultivating the land, sawing timber, splitting posts and rails, dairying, fattening stock, growing fruit, vegetables, &c., together with experimental crops to ascertain what are most suitable for the climate peculiar to South Gippsland.

Progress in labour colonies.

1266. From the inception of the system on the 24th June, 1893, to the 30th June, 1898, 2,900 men have been sent to the colony. For 994 of these remunerative employment has been found, 1,215 left either for work secured by themselves or with sufficient funds to enable them to search for work, whilst 146 men remained in the colony.

Systems of land selections in Australasian colonies.

1267. The laws and regulations under which land for agricultural purposes passes from the Crown into the hands of private individuals differ in the various Australasian colonies.* In almost all, however, provision is made for any person of eighteen years of age or over,† including married women,‡ desirous of settling on the land, to select a certain limited area, and to pay the purchase money by instalments, the compliance with certain conditions of residence and improvement being also required before the selector becomes entitled to a Crown grant.§

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* A complete account of the land system of each colony, as it existed in 1884, was published in an Appendix to the *Victorian Year-Book*, 1884-5.

† In New South Wales persons of sixteen years of age, and in New Zealand persons of seventeen, may select.

‡ In Tasmania, Western Australia, and New Zealand married women, and in New South Wales and Queensland married women judicially separated and living apart from their husbands, may select land. In New Zealand, however, they are restricted to half the extent allowed to their husbands. In Queensland married women and minors may select unconditional selections.

§ In all the colonies, as soon as the purchase money is paid in full, the residence clause is no longer enforced; although in Tasmania £1 per acre must be spent on improvements before purchase money in full can be paid; and in New Zealand even a cash purchaser must spend a sum in improvements before he can get his title.

The principal features of this portion of each system, corrected to the beginning of 1899, are detailed under nine heads in the following table:—

CONDITIONS OF LAND SELECTION IN AUSTRALASIAN COLONIES, 1899.

Conditions of Selections.	Victoria.	New South Wales.	Queensland.		South Australia.	Western Australia.	Tasmania.	New Zealand * (optional system).		
			Homesteads.	Other Selections.				Cash Lands.	Occupation Lease with Right of Purchase.	Lease in Perpetuity 999 Years.
1. Maximum area allowed—Acres	200, 320, and 640	640 and 2,560	640	1,280	‡	1,000	320	640 and 2,000		
2. Price per acre ..	£1, 15s., and 10s.	£1	2s. 6d.	10s. upwards	5s. upwards	10s.	£1 and 10s.	40s. to 5s		
3. Time over which purchase may extend —Years	20 and 40	33 or 69	10	21	42	20	14	..	25	No right of purchase
4. Minimum time in which fee-simple may be acquired—Years	6	10	5	5	6	5	any time	..	10	..
5. Annual payment per acre	1s.	1s. 9d. or 6d.	6d.	†	‡	6d.	2s.	..	5 per cent.	4 per cent.
6. Value of necessary improvements per acre	40s. to 10s.	10s. max. £640	10s.	Fencing	Fencing	10s. and Fencing	£1 and 5s.	20s. & 10s.	23s. and 6s. 6d.	23s. and 6s. 6d.
7. Time allowed for making improvements—Years	6 and 3	5	5	5	5	10	8 and 5	7	6	6
8. Period of residence necessary§—Years	5	10	5	†	..	5	18 and 5	..	6 to 7	10

NOTE.—See also further information in preceding and following paragraphs.

1268. In New South Wales a territorial division of the colony is made into zones, viz.:—The Eastern, the Central, and the Western. Crown Lands may be sold under six and leased under thirteen different systems; the most important of which are Homestead Selections, Conditional Purchase, and Settlement lease. The lands chosen for homestead selection are good blocks of agricultural land, each large enough for a family. The tenure is freehold, subject to perpetual residence and perpetual rent. The rent is, until issue of grant (at end of first five years) $1\frac{1}{4}$ per cent. of the capital value of the land; and after such issue $2\frac{1}{2}$ per cent. The capital value is re-appraised at the end of the first ten years, and every ten years subsequently. A sum of £20 must be expended on the erection of a dwelling house within eighteen months after confirmation of the application, this being the only improvement required by the Crown. Vacant Crown lands in the eastern and central divisions, and some special areas in the western division, are open to a residential conditional purchase. The maximum area

Land system of New South Wales.

Homestead selections.

Conditional purchase.

* When two or three sets of figures are given in any column, they relate to first and second or first, second, and third class lands respectively.
† See paragraph 1269 *post*.
‡ See account of South Australian land system, following paragraph 1270 *post*.
§ See foonote (§) previous page.

allowed in the eastern division is 640, and in the central 2,560, acres, the minimum being 40 acres in both divisions. In addition to the selection, a leasehold of an additional area, limited to three times that of the selection (the area of the selection and lease together not to exceed 1,280 acres in the eastern, or 2,560 acres in the central, division), may be granted to the selector at an appraised annual rental, with the right of conditional purchase at any time during the currency of the lease. The price per acre of ordinary land is £1 per acre, which does not include interest, for which 4 per cent. per annum is charged and collected out of the annual instalments paid. The first payment is 2s. per acre in advance, with an interval of three years before the next instalment of 1s. is payable. On non-residential land purchases the deposit is 4s. per acre, and the instalments 2s. per acre. The obligations of a conditional purchase include continuous residence for ten years, and fencing or improvements in lieu of fencing. Persons of sixteen years of age, and married women judicially separated and living apart from their husbands, may select.

Settlement leases.

Lands subdivided into farms are set apart for Settlement Leases. Where the land is suitable for agriculture the maximum area is 1,280 acres; but where agriculture must be combined with grazing, and the settler has to depend mainly on the latter the maximum is 10,240 acres. The term is 28 years, and the rental is $1\frac{1}{4}$ per cent. of the capital value. The land must be fenced within the first five years, and residence is compulsory throughout the whole term. The lessee may apply during the last year of his lease for an area not exceeding 1,280 acres, on which his house is situated, as a homestead grant.

Land system of Queensland

1269. In Queensland the selection, sale, and leasing of Crown Lands are now controlled by the *Land Act* 1897. A Commissioner's Court is now established for the consideration of applications to select; and a Land Court is established to which an appeal lies from the Commissioner's Court. The colony is, as far as necessary, divided into Land Districts, in each of which there is a Land Office and

Agents

Government Land Agent, from whom plans and information can be obtained. Before land can be acquired under any tenure it must be proclaimed in the *Government Gazette*. There are four methods by which Crown lands so proclaimed may now be acquired, viz., by Agricultural, Grazing, Scrub, and Unconditional Selections; the two former of which may be either farms or homesteads. The maximum

Agricultural selections.

area which may be acquired as an Agricultural Farm by one person is 1,280 acres; but for a homestead the area varies with the quality of the land. If the price of the land as a farm would be £1 or more per acre, 160 acres; if between 15s. and £1, 320 acres; and if less than 15s., 640 acres could be selected as a homestead; and if the same person select both a farm and a homestead, the joint area must not exceed 1,280 acres. The purchase price ranges from 10s. upwards for a farm, as may be declared by proclamation, and 2s. 6d., 5s., or 10s. for a homestead, according to the class of land. The term for a farm is twenty years, during which time the land must be continually occupied by the purchaser, his manager, or agent; whereas the term for a homestead is ten years, and continual personal occupation is

necessary. The annual rent of a farm is one-fortieth of the purchase price, whilst that for a homestead is 3d. per acre; and these payments are credited as part of such price. The selector must enclose the land with a proper fence, or make improvements to the value of such a fence, within five years (which may be extended to seven years, on application to the Land Court) from the issue of the licence to occupy. On completion of the improvements the selector is entitled to a lease, and, if a farm, may then mortgage it; or, with the permission of the Minister, may subdivide or transfer it; or, with the approval of the Court, may underlet it; but a homestead cannot be so dealt with. After the improvements have been effected, any lessee of a farm who has held the same for five years, or any such lessee, after ten years of the term has elapsed, irrespective of the time he has held it, and who has fulfilled the condition of occupation referred to above, may pay the part of the purchasing price then remaining unpaid, and obtain a grant in fee simple. The selector of a homestead may at any time after five years from the commencement of the term, on proving that all conditions have been fulfilled, and that a sum of 10s., 5s., or 2s. 6d. an acre, according to the quality of the land, has been spent on improvements, pay up the remaining rents so as to make his total payments 2s. 6d. per acre, and obtain the fee-simple. Two or more selectors of agricultural homesteads may associate for mutual assistance, and, on proving *bona fides*, may receive a special licence enabling not less than one-half of their number to perform the conditions of occupation and improvement. Certain lands are also proclaimed to be open for selection as grazing farms and homesteads (there being, as will be seen, very little difference between the two). The maximum area (whether the selection be a farm or a homestead) is 20,000 acres, and the term may be 14, 21, or 28 years, as proclaimed. The annual rent for the first seven years ranges from ½d. per acre upwards, as proclaimed, and the amount for each subsequent seven years will be determined by the Land Court; but cannot be decreased nor increased by more than one-half of the rent for the preceding seven years. A grazing farm must be continually occupied by the selector, or by his manager or agent; but residence by the selector personally is required for a grazing homestead. The land must be enclosed with a proper fence within three years of the licence to occupy (which may be extended to five years, on application to the Land Court). Selectors of contiguous lands, not exceeding in the aggregate 20,000 acres in area, may be permitted by the Land Court to fence only the outside boundaries of the whole area. The selectors of a group of two or more grazing farms or homesteads, the area of none of which exceeds 2,560 acres, may associate; and, on proving *bona fides*, may be permitted to perform the condition of occupation by the personal residence of not less than half of their number on one or more of the selections. When a grazing farm is enclosed as required, the selector is entitled to a lease, and may then mortgage, subdivide, transfer, or sublet it; but a homestead cannot be mortgaged, assigned, or transferred before the expiration of five years from the commencement of the term, or the death of the original lessee, whichever first happens.

Grazing selections.

Uncondi-tional and Scrub selec-tions.

Unconditional Selections may also be acquired, with no conditions attached but payment of the purchase money. The maximum area is 1,280 acres; the price ranges from 13s. 4d. per acre upwards, and is payable by twenty annual instalments. A negotiable lease for twenty years is issued on approval of application; and a deed of grant may be obtained at any time on payment of balance of purchasing price. Lands overgrown by scrub may be selected as Scrub selections up to 10,000 acres in area, with a term of 30 years; and are classed according to the proportion covered by scrub, no rent being charged for periods of from five to twenty years, according to the classification; but during which period the scrub must be cleared in equal proportions each year, and the land enclosed with a proper fence. The subsequent rent ranges from ½d. to 1d. per acre. A negotiable lease is issued on approval of application.

Other modes of alienation and leasing.

Lands repurchased by the Crown under the Agricultural Lands Purchase Acts of 1894 and 1897 are available for Conditional and Unconditional selection, the term being twenty years. The rent for the first year is 10 per cent. of the purchasing price, and (no payment being required the second year) £7 19s. per cent. from the third until the twentieth year, when the purchase price and interest at 5 per cent. will have been paid. A rebate of interest is made if the purchase money is paid off before the end of the term. Occupation by the selector or his registered agent is necessary. Town, suburban, and country lands may be sold by public auction, in certain prescribed areas, and at a prescribed minimum upset price; terms, one-fifth cash, and balance in one month, or time proclaimed, not exceeding three years. Occupation licences may be granted in respect of lands not otherwise held, at a rent to be specified or bid by the licensee; the tenancy is from year to year, renewable by payment of another year's rent, and is determinable at the end of any year by six months' notice by the Crown, subject to which the licensee may occupy such land until it be selected.

Land system of South Australia.

1270. In South Australia credit selection was abolished by the *Crown Lands Act* 1888, and in lieu thereof "leases with right to purchase" are now issued for periods of 21 years at certain gazetted rentals, with right of renewal for a further period of 21 years at freshly assessed rentals. The right to purchase may be exercised at any time after the first six years, at a price fixed by the Land Board of not less than 5s. per acre. The following account of the system is by Mr. Thos. Duffield, Secretary for Crown Lands, South Australia:—

On the passing of the Crown Lands Act of 1888, and Acts amending same, Crown lands can be taken up on leases with right of purchase, or perpetual leases. Small blocks not exceeding £100 in value, for working men, are also taken up on leases with right of purchase, or on perpetual leases. The province has been divided into four land districts, and a Land Board appointed for each, by which the lands are classified and allotted, and the rents and prices fixed, subject to the approval of the Commissioner of Crown Lands. Lands are gazetted open to lease at rents and prices fixed, and applications for same, accompanied by a deposit of 20 per cent. of the first year's rent, are made to the Commissioner, who refers them to the Land Boards for the districts in which the lands applied for are situated. Upon the successful applicants receiving their leases for signature, they are to forward the balance of the first year's rent and the lease fees to the Land Office. Leases with a right of purchase are allotted for a term of 21 years, with a right of renewal for

a further term of 21 years, and with a right of purchase exercisable at any time after the first six years of the term, at the price fixed by the Land Board, the minimum price being 5s. per acre. The annual rent for the first term of 21 years is as gazetted, and the annual rent for the renewed term will be fixed by the Land Board at least twelve months before the expiration of the first term. Perpetual leases will be issued in perpetuity at same rental throughout. The land held under both descriptions of lease will be subject to land tax. Each board, in fixing the purchase money and annual rental, or annual rental only (as the case may be), for any original lease of any land on which there are any improvements, shall take such improvements into account. In fixing the purchase money and the rent for a renewed lease with a right of purchase, the board shall fix the rent irrespective of the value of the improvements which the lessee shall have made. The lands allotted are to be fenced within five years from the date of the lease. In making the allotments preference is given to applicants who will undertake to reside on the land.

Village settlements in South Australia.

1271. In the Crown Lands Amendment Acts 1893 and 1895, provision was made for the establishment of village settlements in South Australia. The following are the main features of the measures :—

Not less than twenty persons over eighteen years of age may form an association. Maximum area to be granted to each villager, 160 acres. Rent of land fixed by Land Board for the district, but no rent charged for the first year. At least one-half of the villagers to reside within six months from date of lease, which is in perpetuity ; 2s. 6d. per acre per annum to be spent on land for first ten years. No lease to villagers capable of being assigned, mortgaged, or encumbered in any manner howsoever. Government make advances to villagers up to £100 each to the extent of one-half of the improvements made consisting of buildings, fences, dams, tanks, wells, or reservoirs, clearing, drainage, or irrigation works. All advances to be repaid by ten equal annual instalments with interest at the rate of 5 per cent. per annum on the moneys for the time being remaining unpaid. The first instalment being payable five years from date of advance. Each village association makes its own rules for internal management, subject to approval of Commissioner of Crown Lands. On 28th February, 1899, there were eight villages containing 131 villagers, and £7,300 had been advanced on improvements.

1272. Special efforts have been made in South Australia to extend what is known as the Homestead Blocks System. Land has been purchased by the Government near centres of population at a cost of £27,865, and let to working men in blocks not exceeding £100 improved value. Loans amounting to £28,335 (but not exceeding £50 in any one case) have been granted to the "blockers" to assist them to build houses and out-houses, and many thousands of vines and fruit trees have been distributed gratis. Any "blocker" may have his lease indorsed "the land herein comprised is held as a homestead block," and the effect of such indorsement is that the land cannot thereafter be "seized or taken in execution for debt under process of any court (except for the payment of rates and taxes) or vest in the trustee of his estate in case of insolvency." At the present time there are 3,196 lessees throughout the colony, holding 46,427 acres. Residence by the lessee personally or by his family is necessary in all cases.

Land system of Western Australia.

1273. In Western Australia, land selection is mainly dealt with by the new Land Act of 1898. The figures given in the table following paragraph 1267 *ante* apply to the conditional purchase of first-class land, under which system most of the land is taken up, and as to which the further following particulars may be added to those in the column of the table :—The minimum area is 100 acres, and the five years'

residence required may be six months' residence in each of the first five years. One-tenth of the land must be fenced within two years, and the whole within five years, whilst within ten years an amount equal to the full purchase money must, in addition to the fencing, be spent on prescribed improvements. The condition of residence may be dispensed with if double the expenditure be incurred in lieu thereof. Besides the above mode of selection there are several other ways of obtaining the fee-simple of land, viz.:—(1) By direct payment, 100 acres being the minimum and 5,000 acres the maximum area, except inside agricultural areas, when the maximum is 1,000 acres ; the price per acre is 10s., payable in four quarterly instalments ; the conditions are, that within three years the land must be fenced, and 5s. per acre spent upon it in prescribed improvements within seven years. (2) Land for orchards, vineyards, and gardens : the maximum area is 50 and the minimum 5 acres ; the price per acre being 20s., payable in three years by half-yearly instalments ; land to be fenced and one-tenth planted as an orchard, vineyard, or vegetable garden within three years. (3) Conditional purchase of second and third class grazing lands ; maximum area of former 3,000 acres, and of latter 5,000 acres ; minimum area, 1,000 in both classes ; price per acre 6s. 3d. and 3s. 9d. respectively, extending over 30 years ; improvements to the amount of the full purchase money to be effected within fifteen years and the boundaries to be fenced within five years. (4) Conditional purchase of poison lands. Maximum area 10,000, minimum 300 acres ; price per acre 1s., payable in 30 years, the land to be fenced within five years ; the title-deed may be obtained after fencing if the whole of the purchase money be paid, and the poison eradicated so that for two years the land has been rendered safe enough for the pasture of stock thereon. (5) Free homestead farms of 160 acres are granted to persons who do not hold more than 100 acres, and who are males over eighteen years of age, or who, being females, are the sole heads of families ; residence is required for at least six months in each of the first five years ; the title may be obtained when the land is fenced, and one-fourth cleared and cropped, which must all be done within the first seven years. Three-fourths to one-half of the value of proposed improvements may be advanced to such settlers by the State. Besides the alienation of lands in fee-simple, leases of pastoral lands are granted in blocks varying in area from 3,000 acres and upwards, at a rental of £1 to 2s. 6d. per 1,000 acres ; a reduction of one-half is made in the rent if the land be stocked as prescribed. A lease may also be obtained for ten years of small blocks of half-an-acre if within a gold-field, or 5 acres elsewhere of lands set apart for working men's blocks ; the minimum price being £1 per acre, one-tenth payable per annum.

Land system of Tasmania.

1274. In Tasmania, $33\frac{1}{3}$ per cent. is added to the price of "first-class" lands named in the table (£1 per acre) as interest for the period of fourteen years. The purchaser is compelled to make improvements on such lands to the value of 2s. 6d.per acre per year for a term of eight years, and grant deed cannot issue until such improvements are made. A purchaser of "first-class" lands on credit may pay off balance at any time, provided he has made improvements to the extent of 20s. for each acre selected. "Second-class" lands may be purchased at

auction at not less than 10s. per acre, with 25 per cent. added for credit extending over ten years. The purchaser on credit must expend 5s. per acre in substantial improvements before grant can issue. A term of five years is allowed in which to effect improvements at the rate of 1s. per acre per annum. In agricultural areas within mining districts in Tasmania selection is allowed in lots ranging from 10 to 100 acres, the price being £1 per acre, with one-third in addition added for credit for a term of fourteen years. Residence and improvement are compulsory, and fee-simple cannot be obtained until the expiration of five years. These lots are sold reserving to the Crown the right of mining on certain conditions and payment of compensation for damage sustained after being assessed. In 1890 a Land Act was passed consolidating the twelve Acts previously in operation.

Village settlements in Tasmania.

1275. There are no village settlements in Tasmania, although provision is made in the Land Act Amendment of 1893 for the selection by a "Purchasing Body" of an area not exceeding 1,000 acres in one lot for the purpose of controlling settlement thereon. In 1893 a short amendment of the Land Act was passed, and further amended in 1894, permitting selection of an area not exceeding 50 acres nor less than 15 acres, the first payment to be made in the fourth year after selection and continued during the following fourteen years. Residence for the whole term of eighteen years is compulsory or substantial improvements other than buildings to the value of £1 per acre to be effected before title can pass from the Crown. The sale price of the land is £1 per acre, with one-third added for credit.

Land system of New Zealand.

1276. In New Zealand blocks of land are declared open for selection either before or after survey on the "optional system," which means that the selector can take up a section not exceeding 640 acres of first-class land, or 2,000 acres of second-class land, on cash payment, occupation licence at a rent of 5 per cent., or on lease in perpetuity at a rental of 4 per cent. on the upset cash price. The cash price per acre varies with the quality of the land from 5s. to 40s. per acre. An occupation licence carries with it a right of purchase after ten and within twenty-five years, subject to the conditions of occupation having been complied with. Nearly all Crown lands are now dealt with under this optional system. Residence is compulsory, except under the cash system. Pastoral runs are let by auction for periods, depending on locality, of from three years to twenty-one years. Carrying capacity is limited to 20,000 sheep, and the rent varies from 4d. to 2s. 6d. per acre, or about 10d. per sheep per annum. Small grazing runs are open for application in areas up to 5,000 acres for first-class and 20,000 acres for second-class runs at about $2\frac{1}{2}$ per cent. rent on cash prices (usually about 10s. to 20s. per acre), for terms of twenty-one years, with right of renewal for another twenty-one years at a valuation.

Village settlements in New Zealand.

1277. Village homestead settlements in New Zealand embrace lands which are disposed of for lease in perpetuity. The area of such settlements are limited to 100 acres. This system has been in operation over a period of thirteen years; and on the 31st March, 1898, there were 165 settlements, accommodating 1,567 settlers with their families, on

35,454 acres and having improvements on the land valued at £115,834. The sum lent by the Government amounted to £25,932, of which sum £2,462 has been repaid. Interest at the rate of 5 per cent. is charged until the amount is repaid. There are also special settlements by associations of persons, the area of each settlement not exceeding 11,000 acres, the individual holdings being 200 acres, which lands are let on lease in perpetuity at 4 per cent. on the capital value. Under the *Land for Settlements Act* 1894 the Government has power to acquire private land for the purposes of closer settlement. Such lands can only be dealt with as follow :—If town, suburban, or rural land, by leases in perpetuity; if pastoral land, as small grazing runs for terms of twenty-one years, with right of renewal. Special regulations are in force for improved farm settlements. Those who form settlements under this system are selected from the applicants by the Commissioner of Crown Lands, preference being given to married men. The areas of the farms vary from 10 to 200 acres according to locality; no selector can select more than one farm. The land is leased for 999 years at a rental of 4 per cent. on the capital value, to which is added 5 per cent. on the amount advanced by the Government for clearing, grassing, &c. The rates allowed for felling must not exceed £1 15s. per acre. Advances will be made, if required, to cover cost of sowing with grass, and also advance of not more than £10 towards building a house.

Crown lands alienated, 1898.

1278. In Victoria, the land finally alienated from the Crown in fee simple during 1898 amounted to 305,697 acres, as against 290,998 acres in 1897; 284,951 acres in 1896; 352,730 acres in 1895; 373,176 acres in 1894; and 321,089 acres in 1893. Of the total area alienated in 1898, 154 acres were granted without purchase, as against 1,518 acres in 1897; 10,469 acres in 1896; 12,102 acres in 1895; and 362 acres in 1894. The extent of land sold by public auction amounted in 1898 to 3,405 acres, as against 4,095 acres in 1897; 2,650 acres in 1896; 3,348 acres in 1895; and 6,848 acres in 1894. The total area of land sold by public auction during the period under review amounted to 20,346 acres, whilst during the five previous years 1889–93, 50,399 acres were so sold.

Crown lands alienated to end of 1898.

1279. The total extent of Crown lands sold and finally parted with in Victoria up to the end of 1898 was 18,421,676 acres, and the extent granted without purchase was 78,677 acres. The whole area alienated in fee simple was thus 18,500,353 acres, of which 6,673,024 acres, or 36 per cent., were sold by auction, and nearly the whole of the remainder was originally acquired by selection under the system of deferred payments.

Crown lands selected.

1280. The total area selected in the colony up to the end of the year 1898, exclusive of the extent which had been forfeited or abandoned, and had reverted to the Crown, amounted to 16,284,343 acres. For 11,609,075 acres of this area the purchase has been completed, whilst the remainder, amounting to 4,675,268 acres, represents the whole area still in process of alienation under the deferred payment system at the end of 1898. At the end of 1898 the amount due to the State for lands in process of alienation was £1,010,979, of which, however, only £778,085 was in arrear.

Selectors' unpaid purchase money.

Crown lands unalienated.

1281. The total area of the colony is 56,245,760 acres ; and if from this be deducted the sum of the land granted, sold, and selected, amounting—less the extent forfeited—to 23,175,621 acres, it will follow that the residue, representing the Crown lands neither alienated nor in process of alienation, amounted at the end of 1898 to 33,070,139 acres.

Public estate, 1898.

1282. The whole of this residue, however, is not available for settlement, for it embraces lands occupied by roads, the unsold portions of the sites of towns, and beds of rivers and lakes, the State forests ; water, timber, education, and other reserves. Deducting these lands—amounting in the aggregate to 8,263,549 acres, and 13,339,852 acres occupied under lease or licence for various terms of years—from the extent unalienated and unselected, already stated to have been 33,070,139 acres, it will be found that the available area is narrowed down to 11,466,738 acres, of which about 2,066,910 acres are in the Mallee country. This will be at once seen by the following table, which shows the position of the public estate at the end of 1898 :—

PUBLIC ESTATE OF VICTORIA ON 31ST DECEMBER, 1898.

Condition of Land.	Approximate Number of Acres.
Private Land.	
Land alienated in fee simple	18,500,353*
Land in process of alienation under deferred payments ...	4,675,268*
Crown Lands.	
Roads in connexion with the above	1,530,437
Water reserves †	280,225
Reserves for agricultural colleges and experimental farms	155,483
Timber reserves and State forests †	2,217,163
State education endowment reserves †	1,592,400
Reserves in Mallee country	397,881
Other reserves †	305,555
Unsold land in towns, beds of rivers, &c., &c.	1,784,405
Lands in occupation under—	
Pastoral leases	1,088,164
Mallee pastoral leases	8,550,018
Perpetual leases in mallee country	116,573
Grazing area leases	3,114,743
Grazing licences for auriferous lands	417,133
Village settlements	48,688
Swamp leases	4,533
Available for occupation at end of 1898—	
In Mallee country	2,066,910
In other parts	9,399,828‡
Total area of Victoria	56,245,760

* Including Mildura (250,000 acres), of which 62,222 acres have already been alienated, and 187,778 acres are conditionally alienated.

† By an Act passed on the 6th November, 1893 (57 Vict., No. 1347), the area of reserves was reduced by 345,890 acres, which was to be used for agricultural village and homestead settlement, viz., water reserves by 15,100, education reserves by 315,000, State forests by 11,700, and other reserves by 4,090 acres.

‡ Of this area 3,819,205 acres are temporarily held under grazing licences, renewable annually; only 36,313 acres of it may be sold by auction.

Crown lands available for settlement.

1283. It will be observed that at the end of 1898, 23,175,621 acres or about 41·2 per cent. of the whole area of the colony, were already alienated or in process of alienation; 8,263,549 acres, or 14·7 per cent., were occupied by roads, reserves, &c.; 13,339,852 acres, or 23·7 per cent., were occupied under lease* for pastoral purposes; and 11,454,470 acres, or 20·4 per cent., were available for immediate occupation.

Classification of available land.

1284. Following the classification provided for under the *Land Act* 1890, the estimated available area of Crown lands at the end of 1898 may be divided as follows:—

CLASSIFICATION OF LAND AVAILABLE FOR SETTLEMENT AT END OF 1898.

	Acres.
Pastoral lands in mallee country	2,066,910
„ other parts of colony	1,872,958
Agricultural and grazing lands	6,308,181
Auriferous lands	1,086,941
Swamp lands	83,167
Area excised from reserves under Act 1347 ...	12,268
May be sold by auction	36,313
Total	11,466,738

Amount realized on Crown land alienated in 1898.

1285. The amount realized for Crown lands finally alienated in 1898 was £318,474, or at the rate of £1 0s. 10d.† per acre. Of this sum, only part was received during the year, nearly all the remainder having been paid in former years as rents and licence fees. The proportion sold by auction realized £14,680, or an average of £4 6s. 3d. per acre; and the proportion sold otherwise than at auction realized £303,794, or an average of £1 0s. 1d. per acre.

Deferred payments on land sold by auction.

1286. The principle of deferred payments in connexion with sales of Crown lands by auction was introduced for the first time in *The Land Act* 1884,‡ it being necessary to pay one-fourth of the price bid at the time of sale, the remaining three-fourths being, if desired by the purchaser, spread over three years, payable quarterly, in instalments of equal amounts, bearing interest at the rate of 6 per cent. per annum. At the end of 1898 the balance outstanding was £29,831, out of a total of £940,274 purchase money during the last fourteen years; the principal received being £864,759 as well as £40,478 for interest.

Amount realized, 1836 to 1898.

1287. From the period of the first settlement of the colony to the end of 1898, the amount realized by the sale of Crown lands was £27,223,460, or at the rate of £1 9s. 7d. per acre. It must, however, be remembered that payment of a considerable portion of this amount

* Including a small proportion under licence for periods of five years.

† In view of the fact that payment for the greater portion extended over a term of years without interest, the actual average price was much less than this. See next paragraph.

‡ 48 Vict. No. 812, section 71.

extended over a series of years without interest, allowance for which, at the current rate, would, it is evident, materially reduce the amount the State actually obtained for the land. It may be calculated that, with interest at 5 per cent., if the payment of the £1 per acre by equal annual instalments be extended over ten years without interest, the amount of purchase money is really equivalent to only 15s. 6d. per acre, and if it be extended over twenty years, it is reduced to 12s. 6d. per acre.

Capital and unimproved value of private land in Victoria.

1288. The private land in the colony consists practically of the areas shown in the first two lines of table following paragraph 1282 *ante*, amounting to 23,175,621 acres, of which, however, the purchase from the Crown of 4,675,268 acres was incomplete. The capital value of this land has been estimated, on the basis of municipal values, at close on 182½ millions sterling, and its unimproved value at over 108 millions. Lands held under lease from the Crown and rated by municipalities are included in the valuation. The following are the values for the urban and rural districts of the colony, the basis of the calculation being also shown :—

CAPITAL VALUE OF LAND, WITH AND WITHOUT IMPROVEMENTS, BASED ON ANNUAL RATEABLE VALUE, 1898.

District.	Annual Rateable Value.	Number of Years' Purchase (Assumed).	Capital Value of Land—	
			With Improvements.	Unimproved.*
	£		£	£
Urban† ...	5,104,115	16	81,665,840	40,832,920
Rural ...	5,048,385	20	100,967,700‡	67,311,800‡
Total ..	10,152,500	18	182,633,540	108,144,720

Selection of public lands, 1898.

1289. During the year 1898, 635 applications were granted for the selecton of 61,329 acres under the deferred payment system, the number of selectors having decreased yearly since 1894, and the the area selected being greater than in 1896 and 1897, but less than in any other year since 1888. Of the 61,329 acres selected in 1898 all except 18 acres were selected for agricultural purposes, in allotments limited to 320 acres, the remainder (18 acres) being for purposes of residence or cultivation on or near gold-fields. The purchase money for these selections, chiefly payable by instalments extending over a period of twenty years, amounted to £63,334. The following is a summary

* One-half total value in the case of urban, and two-thirds in the case of rural, which are the proportions found to prevail in New Zealand.

† Including cities, towns, and boroughs ; also shires, wholly or for the most part, within the Metropolitan District.

‡ Of which about £1,000,000 represents the amount due to the Government for selections of which the purchase was not completed.

of the number of selectors, area selected, and the amount of purchase money payable under each authority :—

SELECTORS AND AREA SELECTED, 1894 TO 1898.

Year.	Number of Selectors.	Area Selected.	Purchase money payable (Nominal).
			£
1894	1,180	119,699	124,520
1895	937	80,310	82,421
1896	842	44,695	45,983
1897	676	54,960	55,773
1898	635	61,329	63,334

Number of selectors, 1870 to 1898.

1290. The number of selectors approximates closely to the number of approved applications. The following are the numbers in each of the fifteen years ended with 1898, the period from 1870 to 1883, and in the whole period from 1870 to 1898, those applying according to the different purposes allowed by the Land Act in force at the time of application being distinguished :—

APPROVED APPLICATIONS (SELECTORS), 1870 TO 1898.

Period.	Number of Selectors of Land.				Total.
	For Purposes of Cultivation.		For Residence and Cultivation near Gold-fields.	For Residence.	
	With Residence.	Without Residence.			
1870 to 1883 * ...	79,207	293	13,938	231	93,669
1884	3,918	71	1,002	11	5,002
1885	3,930	68	714	83	4,795†
1886	943	25	173	49	1,190†
1887	147	...	39	15	201
1888	317	...	...	10	327
1889	418	41	...	2	461
1890	518	33	...	...	551
1891	539	37	...	...	576
1892	538	30	...	...	568
1893	820‡	27	31§	...	878
1894	997	105	78	...	1,180
1895	861	34	42	...	937
1896	804	34	4	...	842
1897	655	20	1	...	676
1898	605	26	4	...	635
Total ...	95,217	844	16,026	401	112,488

* For particulars respecting each year, see *Victorian Year-Book*, 1892, Vol. II,, paragraph 417.
† The great majority of the applications approved in the years 1885 and 1886 were lodged in 1884 under the provisions of *The Land Act* 1869.
‡ Including fifteen in Mallee district.
§ See footnote (†) *supra*. Including also one for wattle cultivation

1291. It has been already stated that the area in process of alienation at the end of 1898 was 4,675,268 acres. Assuming an average of 141* acres to each selector, it would follow that the number of selectors who had not completed their purchases at that date was about 33,158. Number of selectors at end of 1898.

1292. The extent of Crown lands absolutely or conditionally alienated during each of the last ten years, and in the whole period that has elapsed since the passing of *The Land Act* 1869 is shown in the following table, which distinguishes the extent sold by auction and that granted without purchase from that conditionally alienated or selected:— Progress of settlement on public lands, 1870 to 1898.

CROWN LANDS ABSOLUTELY AND CONDITIONALLY ALIENATED, 1870 TO 1898.

Period.	Area Granted, Sold, and Selected.			Total.
	Granted without Purchase.	Sold by Auction.†	Conditionally Alienated.‡ (Selected.)	
	Acres.	Acres.	Acres.	Acres.
1870 to 1883§	7,967	1,000,651	13,336,619	14,345,237
1884	74	35,446	734,092	769,612
1885	3,099	26,900	723,523	753,522
1886	1,120	19,281	188,196	208,597
1887	487	19,565	23,092	43,144
1888	522	22,413	53,738	76,673
1889	531	15,639	71,251	87,421
1890	195	12,883	99,307	112,385
1891	338	8,665	99,231	108,234
1892	129	11,988	88,723	100,840
1893	28	7,302	123,906	131,236
1894	38,779‖	7,667	119,699	166,145
1895	12,102¶	4,208	80,310	96,620
1896	10,469	3,346	44,695	58,510
1897	1,518	4,470	54,960	60,948
1898	154	3,405	61,329	64,888
Total	77,512	1,203,829	15,902,671	17,184,012

1293. Dividing the total number of acres selected by the total number of selectors, as shown in the last two tables, it is found that throughout the whole period of twenty-nine years the average number of acres taken up by each selector has been 141. Average size of selections.

1294. Of the land which has been selected in former years 30,426 acres during 1898, held under 223 licences or leases, were abandoned or forfeited to the Crown in consequence of non-fulfilment of conditions. Selected land forfeited, 1898.

* See paragraph 1293 *post*.

† Including 2,389 acres in 1888, 1,959 acres in 1889, 682 acres in 1890, 1,311 acres in 1891, 1,368 acres in 1892, 757 acres in 1893, 819 acres in 1894, 860 acres in 1895, 696 acres in 1896, 375 acres in 1897, and 585 acres in 1898 sold by private contract.

‡ A large proportion of the land referred to in this column may revert, and, as a matter of fact, a considerable quantity has reverted, to the Crown in consequence of non-fulfilment of conditions, &c., and may subsequently be included in re-adjustments of selections, relicensed, sold by auction, or retained by the Crown. See paragraph 1280 *ante*. "Gold-fields" selections are included in this column.

§ For particulars respecting each year, see *Victorian Year-Book*, 1892, Volume II., paragraph 418.

‖ Including 38,417 acres granted to Messrs. Chaffey Bros. under special Acts.

¶ Including 11,584 acres at Mildura granted to Messrs. Chaffey Bros. in 1895.

In 13 cases the licences or leases were declared expired, in 10 cases at the holders' request, in 155 for non-payment of rent, in 9 cases through the land having been sold, in 34 for non-compliance with conditions, &c., and in 2 cases the land was abandoned. The Treasury profited by revocations and forfeitures to the extent of £3,889.

Licence liens.

1295. Licensees of agricultural allotments (or selectors) under *The Land Act* 1869 and subsequent Acts are empowered to register licence liens for advances of money up to half the value of improvements effected. The number of such licence liens registered, the extent of land on which such liens were granted, and the amount secured were as follow in the last thirteen years :—

LICENCE LIENS, 1886 TO 1898.

Year.	Liens Registered.		
	Number.	Area on which Liens were Granted.	Amount Secured.
		Acres.	£
1886	326	79,099	38,924
1887	305	68,968	34,634
1888	405	95,294	48,098
1889	267	58,705	30,039
1890	216	46,467	25,244
1891	118	23,513	13,836
1892	75	12,998	8,548
1893	63	12,652	8,853
1894	53	9,765	5,457
1895	30	5,570	3,258
1896	12	1,494	1,181
1897	33	4,571	3,367
1898	25	2,816	2,543

1296. Until agricultural lands are selected they are generally leased as grazing areas, out of which the lessee has the right to make a selection.* The number of applications, number approved, extent approved, and the annual rental for the years 1894 to 1898 are set out in the following table :—

GRAZING AREA LEASES, 1894 TO 1898.

Year.	Number of Applications.	Number Approved.	Extent for which Approval Granted.	Annual Rental.
			Acres.	£
1894 ...	1,018	638	189,874	1,761
1695 ...	575	374	91,227	832
1896 ...	553	251	67,275	664
1897 ...	638	262	73,499	766
1898 ...	566	222	81,288	751

* See paragraph 1248 *ante*.

1297. Under the present land system,* as modified by the *Land Act* 1898, it is intended that the purely pastoral lands of the colony, the whole of which are marked off as "pastoral allotments," should be occupied under lease for periods not exceeding fourteen years from the 29th December, 1899. But it is provided in the *Land Act* 1890, in case all the allotments should not be applied for, that temporary grazing licences, renewable annually, may be granted for the occupation of such lands and of unoccupied agricultural lands, so long as they may not be required for leasing under the principal sections of the Acts 1884, 1890, and 1898. Moreover, agricultural lands, which are not occupied for agricultural purposes, are leased in grazing areas as already stated; auriferous lands, in blocks not exceeding 1,000 acres, may be licensed for grazing purposes for periods not exceeding seven years, and special provision is made for the occupation of the Mallee country; and by the *Mallee Lands Act* 1896, perpetual leases of Mallee lands are now granted. The following table shows the area of the Crown lands under the *Land Act* 1890 held under lease or licence for pastoral or grazing purposes, including Mallee pastoral leases and swamp lands, and of Perpetual Mallee leases at the end of 1898; also the number of leases and licences, and the annual rental payable.

Pastoral occupation, 1898.

PASTORAL OCCUPATION OF CROWN LANDS, 1898.

(Under *Land Act* 1890 and *Mallee Lands Act* 1896.)

Description of Tenure.	Number of Licences or Leases.	Extent of Crown Lands.	Annual Rental.
		Acres.	£
Pastoral leases (sec. 21)	73	1,088,164	3,210
Grazing area leases (sec. 32)	7,826	3,114,743	29,101
Grazing licences (secs. 3, 119, and 123)	3,621	3,480,439	13,605
,, ,, (auriferous lands, secs. 65 and 67)†	5,424	417,133	9,081
Mallee pastoral leases (Part II.) ...	3,469	8,550,018	16,000
Swamp lands, sec. 85 *Lands Act* 1890...	119	4,533	2,281
Perpetual leases, *Mallee Lands Act* 1896	221	116,573	971
Total	20,753	16,771,603	74,249

1298. By these figures it may be ascertained that the average extent of land embraced in a pastoral lease was 14,906 acres, in a grazing area lease 398 acres, in a grazing licence (secs. 3, 119, and 123) 961 acres, and in a Mallee pastoral lease 2,465 acres. The areas are exclusive of any purchased land attached thereto.

Average area of runs and grazing lands.

1299. According to the table the average rent per acre of land held under pastoral leases was about $2\frac{4}{5}$ farthings (·708d.); of land held

Rent of runs and grazing lands.

* The present system of land settlement is now mainly controlled by the new *Land Act* 1898, as read in conjunction with the *Land Act* 1890; see paragraph 1245 *ante*.

† Including licences for residences or cultivation limited to 20 acres each. At the end of 1898 the number of these was 4,321, but the area was only 78,367 acres.

under grazing area lease 2¼ pence (2·24d.) ; of land held under grazing licence nearly one penny (·938d.); and of Mallee pastoral lands nearly one halfpenny (·449d.). The rental of pastoral and grazing lands as a whole showed a decrease as compared with the previous year of £4,194.

Mallee pastoral leases.

1300. The Mallee country (exclusive of the irrigation colony of Mildura—250,000 acres) contains an estimated area of about 11,322,000 acres, of which about 155,200 acres is occupied by roads. The country is divided into blocks and allotments for pastoral purposes, of which the number of leases, the approximate area held, and the annual rental, are shown in the following table, whilst by the *Mallee Lands Act* 1896 and the *Lands Act* 1898 perpetual leases and agricultural and grazing allotment licences are provided for, similar particulars of which also appear in the table below :—

MALLEE PASTORAL LEASES, LICENCES, AND PERPETUAL LEASES ON 31ST DECEMBER, 1898.

Description of Leaseholds.	Number of Leases.	Area.	Annual Rental.*
		Acres.	£
Mallee blocks	61	5,396,895	16,000
„ allotments	3,408	3,153,123	
„ licences	85	35,411	1,772
„ perpetual leases	221	116,573	971
Total	3,775	8,702,002	18,743

Mallee areas still unoccupied, 1898.

1301. At the end of 1898 the following areas were still available for occupation in the Mallee country :—Fifteen Mallee blocks, having a total area of 1,409,280 acres ; 67 Mallee allotments, with an area of 395,315 acres; and 445 agricultural allotments, with an area of 262,315 acres.

Average rental of Mallee country.

1302. According to the figures in the table, the average rental per 100 acres payable for pastoral leases in the Mallee country is 3s. 9d., whilst that for perpetual leases is 2d. per acre, and the annual payment for licences is 1s.

Land revenue.

1303. The revenue from the sale and occupation of Crown lands may be divided into (1) receipts from the alienation in fee simple, including the price realized from sales and from rents which count towards the purchase money ; (2) receipts on account of temporary

* Approximate only.

occupation, which include payment for pastoral leases and grazing licences, rents for business, factory, and hotel sites, &c., and rents which do not count towards the purchase money; (3) penalties, interest and fees for grants, leases, licences, &c. The gross receipts in 1898 show a decrease of nearly £81,000 as compared with those in 1894, nearly £100,000 as compared with 1895; £36,343 as compared with 1896; and about £30,150 as compared with 1897, chiefly under the head of alienation. The following are the actual receipts for the five years :—

LAND REVENUE, 1894 TO 1898.

Heads of Land Revenue.	Amount Received.				
	1894.	1895.	1896.	1897.	1898.
	£	£	£	£	£
Alienation in fee simple and progressive ...	337,849	358,847	304,051	302,940	270,276
Temporary occupation	88,592	87,708	82,452	76,371	77,936
Penalties, fees, &c. ...	18,958	16,526	14,314	15,311	16,262
Total	445,399	463,081	400,817	394,622	364,474

Agricultural statistics.

1304. The agricultural statistics of Victoria are collected by the municipal bodies, which, under the *Local Government Act* 1890 (54 Vict. No. 1112), are required each year to furnish to the Government Statist, on or before the 1st March, such agricultural and other statistics relating to their districts on such forms and in such manner as the Governor in Council may direct. All persons are required to give correct information to the best of their knowledge and belief; and, should they fail to do so, they render themselves liable to a penalty not exceeding £10. Collectors divulging or making extracts from the information they receive, except under the special direction or authority of the Government Statist, also render themselves liable to a penalty of £10.

Bonuses for collecting statistics.

1305. In assigning the duty of collecting statistics to the local bodies, the law did not provide that they should receive any payment therefor; and thus, although under the provision of the Act whereby the Governor in Council had power to prescribe the manner as well as the form of the statistics, elaborate instructions for the guidance of the persons employed had each year been supplied them, the Government had practically but little control over the work, and hence many of the returns were not sent in until long after the appointed time, and some were furnished in anything but a satisfactory condition. This

being the case, it was decided by the Government—for the first time in 1883–4—to offer bonuses ranging, according to the nature of the country, from £6 to £3 per 100 schedules collected, to such municipalities as should furnish authentic and complete returns punctually at the appointed time; the amount to be reduced one-half if the returns were delayed for five days, three-quarters if they were delayed for ten days, and forfeited altogether if ten days should be exceeded. These bonuses were given for the nine years ended with 1891–2 with excellent effect, as the measures taken resulted in the statistics being sent in at such a date that it became possible to publish nearly complete returns fully two months earlier than in previous years. They were discontinued during the next six years, owing to retrenchment, with the result that the delay and difficulties formerly experienced were again encountered; but in 1898–9 the Government decided to again revert to the bonus system, but on a reduced scale ranging from £6 to £2 per 100 schedules collected, the average paid per 100 schedules collected being £3 0s. 3d. as against £4 6s. 9d. in 1891–2. The result during the six years ended with 1897–8, when no bonuses were given, was that the preliminary return of the principal crops was not published, on the average, until the 26th April, and the complete returns until the 17th August, whilst on one occasion the former was not available until the 3rd June, and the latter until the 9th October; whereas in 1898–9 the former was published on the 6th April and the latter on the 12th July.*

Alterations effected in Agricultural Schedule.

1306. With a view of obtaining more accurate data and additional information respecting the more important branches of agriculture, as well as to facilitate the work of collection, several alterations and additions were made in the Agricultural Schedule for 1895–6 and subsequent years. These resulted in the quantity of grain harvested being returned by "bags" instead of "bushels" as formerly; in wheaten and oaten hay being separately distinguished; in the omission of the item "Value of improvements on farms," which was of doubtful value, besides being a source of much trouble and delay; in particulars being furnished respecting the number of dairy cows, the milk yield, the acreage (subsequently altered to "number of trees") under each kind of fruit; and the quantity of old wheat on farms on 31st December. The substitution of "bags" for "bushels" not only relieves the collector of much calculation, often of a rough-and-ready character, in converting bags—the farmer's unit of measure—into bushels, but allows of a more accurate estimate being made at the head office of the quantity of each kind of grain, as the exact average equivalent is now carefully computed each season from returns, kindly furnished by the principal merchants, millers, &c., of the gross weight of a large number of bags of each kind of grain. By means of the return of old stocks of wheat on farms—the "invisible supply"—supplemented by returns from railway stations, grain stores, and mills—the "visible supply"—complete information has been made available of the total quantity of old stocks of wheat held in the colony at end of 1895 and each subsequent year, which

* In 1899-00 still better results were obtained, for the preliminary return was published on 27th March, and the final return on the 8th June.

ought to afford an effective check on the harvest returns, and in conjunction with this latter to serve as a guide for gauging the requirements of the colony and the surplus available for export.

New method of obtaining early estimate of area under wheat.

1307. A new method for the partial collection of Agricultural Statistics was introduced in December, 1896, when an attempt was made for the first time by this office to obtain an early return of the area under wheat, together with an estimate of the crop, by means of cards posted direct to farmers in the wheat-growing districts. No action was taken to compel farmers to supply the information, but it was believed that, as the publication of such information would be greatly for the benefit of farmers in enabling them to more readily fix a fair price for their crop, few would fail to respond to the request. The result was disappointing, as less than three-fourths (72 per cent.) of the farmers returned the cards, and from the data supplied by them it became necessary to frame an estimate for the whole colony, which was at first attempted with some diffidence. Various methods of estimation suggested themselves, but the one finally adopted in regard to area, was based on the assumption that whatever change in area occurred in the current season as compared with the previous one on farms for which the information was returned ; a corresponding change also took place on those for which no cards were received. On the occasion referred to the area actually returned by the cards for 1896–7 amounted to 1,199,797 acres, and the crop to 1,188,487 bags, from which an estimate for the whole colony was arrived at of 1,644,616 acres and 1,628,800 bags, which was published in the principal Melbourne newspapers on the 26th January, 1897. The complete returns collected in the usual manner and published about four months later, showed the correct area to be 1,580,613 acres, and the produce 1,712,809 bags. The early estimate of the areas was thus about 4 per cent. above, but that of the produce about 5 per cent. below, what was shown by the final returns. This method of obtaining an early estimate of the crop—before the crop had been actually harvested in many cases—having been strongly objected to, was not tried again, and it evidently had a prejudicial effect on the ordinary collection of Agricultural Statistics—possibly owing to an assumption on the part of municipalities that as an estimate had already been published, there was no need for expedition in the publication of a second return, as the final results could not be published until the 9th of October. It was decided, however, to continue the card system for obtaining an early return of the area under wheat about September each year, with a view of its being used by the Press as a basis for estimating the prospective yield before, and the actual yield after, the harvest, until the publication of the Agricultural Statistics. It is to be regretted, however, that the farmers are becoming more lax in returning the cards ; the percentage returned having fallen off from three-fourths in 1897–8 to about two-thirds in 1898–9.* The results of the tabulation of the area under wheat by means of cards, and a comparison of the area estimated from the cards with that shown by the ordinary Agricultural Statistics

* In 1899–00 the proportion fell still lower, viz., to 63 per cent.

collected by the municipal authorities, are shown in the following table :—

AREA UNDER WHEAT BY POST-CARD SYSTEM COMPARED WITH FINAL RETURNS.

Season.	Cards Despatched.	Cards Returned.		Area under Wheat.	
		Number.	Per Cent.	Estimated by Cards in September.	According to Final Returns Agricultural Statistics.
				Acres.	Acres.
1896–7	17,396	12,586	72	1,644,616	1,580,613
1897–8	18,434	13,942	76	1,784,093	1,774,677*
1898–9	19,683	13,168	67	2,238,293	2,361,255*

NOTE.—For the season 1899–1900, 24,448 cards were sent to wheat-growers, of which 63 per cent. were returned, the estimated area under wheat for grain and hay being 2,443,820 acres, and that actually returned in the ordinary manner 2,363,470 acres.

Wheat card used.

1308. The following is a copy of the card despatched for the season 1900–1 :—

Sh. *Co.* *Psh.* /

AREA UNDER WHEAT, 1900.

Acres Sown _____

(Include Wheat sown for Hay.)

Wheat on Farm on the night of the 31st August,

1900_____ Bags.

(Do not include Stocks stored elsewhere.)

Signature _____

Address _____

NOTE.—You are particularly requested to carefully fill up this card, and return it in the enclosed envelope **immediately** after 31st August, 1900. If no wheat is sown this year, please state so. Individual cards will be treated as **strictly confidential,** and will **not** be used in any way **for purposes of taxation.**

Agricultural statistics, 1898-9.

1309. The agricultural statistics to which reference will now be made are those for the year ended 1st March, 1899.† Tables embodying

* It is believed and is assumed that the area cut for hay is included in 1897–8, but it was known to be included in 1898–9.

† For later information, and also for a summary of the agricultural statistics of each year, since the first settlement of the colony, see the second folding sheet to this work.

the final results of these statistics will be found in the *Government Gazette* of the 12th July last,* and these, with additional tables, form portion of the *Statistical Register of Victoria.* Notwithstanding the reduction in the municipal subsidy, the work devolving on the municipalities was well performed, and the returns in most instances were furnished in fairly good time, although owing to delay on the part of a few shires in important agricultural districts the publication of the whole was somewhat delayed.

Number of cultivators.

1310. The following table shows the total number of farm holdings visited in shires, cities, towns, and boroughs each season, from 1892–3 to 1898–9 :—

Year.	Number of Cultivated Holdings.	In Shires.	In Cities, Towns, and Boroughs.
1892–3	35,223	34,233	990
1893–4	34,549	33,631	918
1894–5	34,249	33,280	969
1895–6	33,684	32,731	953
1896–7	34,354	33,384	970
1897–8	34,990†	33,948	1,042
1898–9	39,877†	38,652	1,225

Land under tillage.

1311. The extent of land returned as under cultivation amounted to 3,877,922 acres in 1898–9, as against 3,260,312 acres in 1897–8. The increase shown by the figures was therefore 617,610 acres. The following statement shows the rapid growth of agriculture in the colony in decades commencing with 1840. The areas are given exclusive, as well as inclusive, of permanent artificial grass, as a uniform method of collecting the information under that head did not prevail in all the years :—

AREAS UNDER TILLAGE, 1840 TO 1899.

Year.	Inclusive of Permanent Artificial Grass.	Exclusive of Permanent Artificial Grass.
	acres.	acres.
1840	3,210	3,210
1850–1	52,340	52,179
1860–1	419,380	407,740
1870–1	909,015	762,026
1880–1	1,997,943	1,742,949
1890–1	2,652,768	2,417,527
1894–5	2,980,299	2,779,243
1895–6	2,884,514	2,704,263
1896–7	3,097,998	2,925,416
1897–8	3,260,312	3,144,574
1898–9	3,877,922	3,727,765

* In 1899 tables containing a statement of the extent of land under crop, and yield of wheat, were published in the Melbourne daily journals of the 21st March; and of oats, barley, and hay, on 6th April, and in 1900 on 17th and 27th March respectively.

On about 20,700 of these wheat was grown, against 15,400 in 1897-8.

Area cultivated per head of population.

1312. The average area returned as in cultivation to each person in the colony was $3\frac{1}{6}$ acres in 1898–9, as against a little over $2\frac{1}{3}$ acres five years previously, and a shade over $2\frac{1}{7}$ acres ten years previously. The exact proportions in 1888–9, and each year since 1892–3, are as follow :—

AVERAGE AREA CULTIVATED TO EACH PERSON IN THE COLONY.*

(Exclusive of permanent artificial grass.)

	Acres.		Acres.
1888–9	2·15	1896–7	2·49
1893–4	2·38	1897–8	2·67
1894–5	2·36	1898–9	3·17
1895–6	2·29		

Increase of cultivation in different counties in eighteen years.

1313. In the eighteen years ended with 1898–9 the land under cultivation in Victoria increased by nearly 2,000,000 acres, or by 94 per cent., but the increase was confined to 24 counties situated for the most part in the northern or north-western parts of the colony, a decrease having taken place in thirteen of the southern counties, embracing generally the oldest and longest settled agricultural districts. The following are the counties in which cultivation increased or decreased respectively, arranged in order according to the increase or decrease shown in each :—

INCREASE OR DECREASE OF CULTIVATION IN VARIOUS COUNTIES, 1880–1 TO 1898–9.

Counties.	Number of Acres in Cultivation.		
	1880–1.	1898–9.	Difference in 18 Years.
Showing an Increase.			
Borung	272,955	657,074	384,119
Karkarooc	252	371,044	370,792
Tatchera	38,857	318,704	279,847
Moira	194,780	470,165	275,385
Lowan	53,872	278,773	224,901
Kara Kara	141,921	216,326	74,405
Rodney	144,382	206,220	61,838
Gladstone	104,321	165,628	61,307
Buln Buln	56,444	110,225	53,781
Bendigo	153,046	183,496	30,450
Bogong	48,758	78,378	29,620
Grant	71,128	96,004	24,876
Gunbower	105,344	114,864	9,520
Polwarth	10,447	18,289	7,842
Bourke	96,110	103,777	7,667
Evelyn	13,700	19,107	5,407
Ripon	38,481	42,853	4,372
Delatite	40,156	44,344	4,188
Benambra	4,316	7,565	3,249
Heytesbury	9,016	9,393	377
Others (4)	5,598	23,734	18,136
Total	1,603,884	3,535,963	1,932,079

* Inclusive of permanent artificial grass, the proportions were as follow :—2·38, 2·57, 2·53, 2·44, 2·63, 2·77, and 3·30.

INCREASE OR DECREASE OF CULTIVATION IN VARIOUS COUNTIES, 1880–1 TO 1898–9—*continued.*

Counties.	Number of Acres in cultivation.		
	1880-1.	1898-9.	Difference in 18 Years.
Showing a Decrease.			
Normanby	19,918	19,771	147
Tanjil	26,938	26,169	769
Dalhousie	52,677	51,516	1,161
Dundas	15,579	14,337	1,242
Talbot	111,554	109,785	1,769
Anglesey	11,330	9,211	2,119
Hampden	9,792	7,006	2,786
Follett	10,555	5,684	4,871
Villiers	49,242	41,350	7,892
Mornington	35,900	27,712	8,188
Grenville	47,127	26,173	20,954
Others (2)	3,447	3,245	202
Total	394,059	341,959	52,100
Grand Total	1,997,943	3,877,922	1,879,979

1314. In Australasia the area under cultivation has increased from 3,100,000 acres in 1870 to 12,590,000 acres in 1898, there having been an increase of 3,770,000 during the decade 1871–80, 2,450,000 during the decade 1881–90, and of 3,270,000 during the eight years ended with 1898. In most of the individual colonies a large increase is observable from period to period, more especially in the cases of Victoria, New South Wales, Queensland, and New Zealand; but the increase has been comparatively small in South Australia since 1880, and in Tasmania since 1890. Notwithstanding its small area, Victoria has now a much larger extent under cultivation than any other colony. Formerly South Australia was foremost in this respect, but it was overtaken by Victoria in 1890. Victoria has brought under cultivation nearly 7 per cent. of its total area, or a far larger proportion than any of the other colonies, which, with the exception of Tasmania and New Zealand, cultivate considerably less than 2 per cent.; thus, Victoria has 69 acres cultivated out of every 1,000; Tasmania, 31; New Zealand, 30; New South Wales, 13; South Australia, 5; Queensland, 1; and Western Australia only one-third of an acre; whilst Australia as a whole has only $5\frac{1}{3}$ and Australasia $6\frac{1}{2}$ acres cultivated in every 1,000. Some idea of the future of these colonies in regard to agriculture may be formed when it is considered that the proportion in Great Britain is 62 per cent., and in the United States 10 per cent.—the latter being twenty times as high as in Australia. The following

Area under cultivation in Australasian Colonies.

are the areas under cultivation in each colony in 1898 and in every tenth year, commencing with 1870:—

AREA UNDER CULTIVATION IN AUSTRALASIAN COLONIES AT VARIOUS PERIODS.

Colony.	Acres under Cultivation. (000's omitted.)			
	1870.	1880.	1890.	1898.
Victoria	909,	1,998,	2,653,	3,878,
New South Wales	427,	706,	1,499,	2,555,
Queensland	52,	121,	240,	422,
South Australia	959,	2,574,	2,649,	2,967,
Western Australia	55,	64,	122,	216,
Total	2,402,	5,463,	7,163,	10,038,
Tasmania	330,	373,	517,	532,
New Zealand	364,	1,030,	1,636,	2,015,
Grand Total	3,096,	6,866,	9,316,	12,585,

Area cultivated per head in Australasian Colonies.

1315. The following table shows the area per head cultivated in each Australasian Colony during the last six seasons, the colonies being placed in order according to the average extent per head that each colony cultivates:—

CULTIVATION PER HEAD IN AUSTRALASIAN COLONIES, 1893–4 TO 1898–9.*

Colony.	Acres under Tillage per Head of Population.						
	1893-4.	1894-5.	1895-6.	1896-7.	1897-8.	1898-9.	Mean.
1. South Australia	8·07	7.48	7.38	7·17	7·17	8·18	7·57
2. Tasmania	3·57	3·65	2·85	2·74	2·91	3·00	3·12
3. Victoria	2·57	2·53	2·44	2·63	2·77	3·30	2·71
4. New Zealand	2·17	2·02	2·21	2·32	2·31	2·71	2·29
5. New South Wales	1·23	1·33	1·29	1·57	1·66	1·90	1·50
6. Western Australia	1·91	1·78	1·51	1·00	1·09	1·29	1·43
7. Queensland	·58	·64	·65	·74	·83	·85	·71

Results in different colonies compared.

1316. It will be observed that South Australia cultivates much more, and Queensland much less, per head than any of the other colonies; also that over a series of years there is not much difference in the proportions per head in Tasmania, Victoria, and New Zealand, which (in the order named) stand next below South Australia in this respect.

* For the population and number of acres under tillage in each Australasian Colony during the twenty-five years ended with 1898-9, see Summary of Australasian Statistics (third folding sheet), Appendix C, *ante*.

1317. The principal crops grown in Victoria are wheat, oats, barley, potatoes, hay, and green forage. In 1898–9 the area under wheat was larger by 496,713 acres than in 1897–8, by 573,550 acres than in 1896–7, and by 684,804 acres than in 1893–4, when the extent so cultivated was larger than in any previous year. An increase as compared with the previous year is also noticeable under barley and green forage; but a decrease occurred under oats, potatoes, and hay. The area under oats was at its maximum in 1896–7, when it reached 419,460 acres, the next highest acreage being 294,183 acres in 1897–8, and then 266,000 acres which occurred both in 1894–5 and 1898–9. Although the area under barley increased in the latest season, as compared with the previous year, by 10,654 acres, the cultivation of this cereal has fallen off by over 50 per cent. since 1894–5. The area under potatoes has not varied much in the last 30 years, although, with the exception of 1892–3 and 1893–4, it was lower in the last than in any other year since 1884–5. Notwithstanding that the area under hay fell off in the last twelve months, it was still much larger than in any year prior to 1897–8. The extent returned as under green forage fluctuates considerably; during the last twelve years it reached its highest point (250,000 acres) in 1892–3, and its lowest point (138,000 acres) in 1897–8, which fluctuations may be due to the fact that in the last twelve years the collectors have been instructed not to visit holdings on which there was no other cultivated land than that laid down under permanent artificial grass, which is included under the head of green forage. The following table shows the extent of land under each of these crops in the last five seasons:— Land under principal crops.

LAND UNDER PRINCIPAL CROPS, 1895 TO 1899.*

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Green Forage.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1895 ...	1,373,668	266,444	97,360	56,383	492,578	217,847
1896 ...	1,412,736	255,503	78,438	43,895	464,482	206,190
1897 ...	1,580,613	419,460	62,373	43,532	416,667	195,625
1898 ...	1,657,450	294,183	37,205	44,197	580,000	138,425
1899 ...	2,154,163	266,159	47,859	41,252	565,345	169,962

1318. The wheat crop in 1898–9 showed an increase of 9,000,000 bushels as compared with the previous year, and there was also a marked increase in the other principal crops, more especially barley and potatoes. The wheat crop in 1898–9—19,581,304 bushels—was by far the largest ever raised in the colony; the next largest being in 1883–4, when 15,570,245 bushels were raised, or over 4,000,000 bushels less than in the season under notice. The gross yield of oats was larger than that in any previous years except 1889–90, 1894–5, and 1896–7, in the last of which years over 6,800,000 bushels were raised; the gross yield of barley, although much larger than in the three previous years Produce of principal crops.

* In 1899-1900 the areas were:—Wheat, 2,162,836 oats, 271,076; barley, 79,561; potatoes, 55,248; and hay, 448,398 acres.

was exceeded in five still earlier years; the gross yield of potatoes was exceeded in seven previous years, and that of hay was exceeded in only one previous year, viz., 1892–3, by 16,750 tons. The following is a statement of the gross produce of each of these crops from 1894–5 to 1898–9 :—

GROSS PRODUCE OF PRINCIPAL CROPS, 1894–5 TO 1898–9.*

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1894 ...	15,255,200	4,951,371	1,033,861	144,708	503,355
1895 ...	11,445,878	5,633,286	1,596,463	196,706	621,547
1896 ...	5,659,174	2,880,045	715,592	117,238	390,861
1897 ...	7,091,029	6,816,951	815,605	146,555	449,056
1898 ...	10,580,217	4,809,479	758,454	67,296	659,635
1899 ...	19,581,304	5,523,419	1,112,567	161,142	723,299

Area under, and produce of, wheat.

1319. The following table shows the area under, and gross produce of, wheat during the year ending 1st March, 1899, also the average produce of wheat per acre in each county cultivating over 10,000 acres of wheat during the years 1894–5 to 1898–9, arranged according to the gross production in 1898–9 :—

WHEAT IN EACH COUNTY.—AREA AND PRODUCE OF CROP, 1898–9, AND AVERAGE PRODUCE 1894–5 TO 1898–9.

Counties.	Year 1898-9.		Average Production per Acre.				
	Area under Wheat.	Gross Produce.	1894–5.	1895–6.	1896-7.	1897-8.	1898-9.
	Acres.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Borung ...	397,859	4,040,014	8·0	4·8	2·8	4·0	10·2
Moira ...	323,532	3,158,871	8·3	5·8	8·6	11·1	9·8
Rodney ...	132,273	1,839,504	10·5	4·5	7·2	13·8	13·9
Lowan ...	182,799	1,621,363	5·9	5·0	2·4	4·3	8·9
Tatchera ...	282,247	1,267,799	9·8	2·2	3·3	4·2	4·5
Kara Kara...	110,327	1,246,306	8·7	4·4	4·8	7·8	11·3
Karkarooc...	341,081	1,161,342	8·1	2·4	2·7	1·0	3·4
Bendigo ...	85,749	1,105,235	11·9	3·9	6·3	12·1	12·9
Gladstone ...	89,721	1,099,132	9·1	3·4	4·4	8·1	12·3
Bogong ...	36,932	607,965	5·1	8·2	11·0	10·0	16·5
Delatite ...	21,449	437,636	8·7	10·4	16·5	15·2	20·4
Gunbower ...	65,220	379,046	10·3†	2·2	6·2	9·7	5·8
Talbot ...	17,077	360,214	14·6†	15·2†	17·3	19·5	21·1
Dalhousie ...	13,614	270,094	16·9†	18·4†	20·9	20·3	19·8
Weeah ...	10,909	83,784	11·9†	4·7†	2·7†	2·4	7·7
Others (21)†	43,374	902 999	12·5	11·1	13·6	14·7	20·8
Total ...	2,154,163	19,581,304	8·33	4·01	4·49	6·38	9·09

* In 1899-1900 the produce was as follows:—Wheat, 15,205,350; oats, 6,111,263; barley, 1,465,904 bushels; potatoes, 173,381; and hay, 593,627 tons. See foot-note (*) on preceding page.

† In these instances there was less than 10,000 acres under cultivation.

Acreable yield of wheat.

1320. As regards the acreable yield of wheat, it will be noticed that in 1898–9, taking the colony as a whole, it was nearly half as high again as in 1897–8, and about twice as high as in 1895–6 and 1896–7, and three-fourths of a bushel more than in 1894–5. The yield per acre in 1898–9 was much lower in Tatchera, Karkarooc and Weeah than in 1894–5, lower in Moira than in 1897–8, in Dalhousie than in 1896-7 or 1897–8, and in Gunbower than in 1894–5, 1896–7, or 1897–8; but with these exceptions the yield per acre was higher in 1898–9 than in any previous year shown in the table.

Area under other principal crops in principal counties.

1321. Most oats in 1898–9 were cultivated in the counties of Lowan, Talbot, Borung, Moira, Kara Kara, Bendigo, and Gladstone; most barley in Moira; most potatoes in Bourke, Grant, Talbot, Villiers, Buln Buln, and Dalhousie; and most hay in Borung, Grant, Bourke, Talbot, and Moira. The following table gives a statement of the number of acres under these crops in each county cultivating over 3,000 acres of any of the crops named:—

OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY.—AREA UNDER CROP.

Counties.	Area under Crop, 1898–9.			
	Oats.	Barley.	Potatoes.	Hay.
	Acres.	Acres.	Acres.	Acres.
Bendigo	18,449	550	1	33,154
Bogong	4,938	168	602	14,541
Borung	19,620	828	16	69,923
Bourke	11,688	4,142	7,421	48,146
Buln Buln	4,628	422	3,554	9,299
Dalhousie	15,255	1,129	3,478	14,826
Delatite	7,611	495	1,384	9,266
Dundas	3,243	750	56	4,381
Evelyn	611	58	806	6,450
Gladstone	18,090	386	21	19,440
Grant	11,210	3,426	5,832	58,138
Grenville	3,768	1,008	1,115	14,039
Gunbower	9,766	1,560	4	15,340
Hampden	615	341	323	3,736
Kara Kara	18,455	234	100	24,827
Karkarooc	4,150	70	...	9,726
Lowan	23,419	398	10	29,740
Moira	19,496	12,979	9	40,666
Mornington	904	129	1,804	10,675
Normanby	4,560	1,420	1,078	5,323
Polwarth	2,129	627	1,365	3,771
Ripon	7,417	373	467	15,952
Rodney	11,796	4,070	5	19,735
Talbot	19,966	1,379	5,058	47,029
Tanjil	1,729	1,957	840	7,462
Tatchera	9,570	894	...	11,555
Villiers	5,473	6,873	4,020	6,147
All others (10)... ...	7,603	1,193	1,883	12,058
Total	266,159	47,859	41,252	565,345

Gross produce of other principal crops in principal counties.

1322. By the next table, which shows the gross produce of oats, barley, potatoes, and hay in the same counties, it will be seen that in 1898–9 most oats were grown in Talbot, Dalhousie, Moira, Bendigo, Grant, and Gladstone, in the order named; 40 per cent. of the barley in Villiers and Moira; most potatoes in Grant, Bourke, Talbot, Buln Buln, Villiers, and Dalhousie; and most hay in Grant, Talbot, Borung, Bourke, Moira, and Bendigo:—

GROSS PRODUCE OF OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY, 1898–9.

Counties.	Gross Produce, 1898–9.			
	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Tons.	Tons.
Bendigo	377,952	9,759	2	34,567
Bogong	135,069	4,191	2,854	19,581
Borung	229,568	12,261	25	67,474
Bourke	217,740	95,459	23,921	51,172
Buln Buln	133,913	10,827	16,984	19,964
Dalhousie	472,681	34,767	12,954	26,740
Delatite	259,348	12,550	5,824	14,620
Dundas	108,757	27,497	186	8,527
Evelyn	21,097	1,240	3,862	12,111
Gladstone	316,378	6,416	85	19,248
Grant	325,767	89,014	25,264	89,512
Grenville	106,144	24,797	2,705	23,273
Gunbower	65,076	19,352	14	7,979
Hampden	18,806	11,309	1,975	8,064
Kara Kara	295,740	4,531	635	22,018
Karkarooc	23,388	606	...	6,052
Lowan	235,671	5,710	12	27,014
Moira	382,479	160,097	12	36,224
Mornington	34,076	2,200	9,285	20,779
Normanby	132,371	35,813	2,561	9,063
Polwarth	70,308	22,156	3,817	7,925
Ripon	194,200	9,547	1,407	28,098
Rodney	234,294	69,026	12	19,432
Talbot	597,648	39,926	21,164	88,550
Tanjil	56,198	64,681	2,346	12,550

Gross Produce of Oats, Barley, Potatoes, and Hay in each County, 1898–9—*continued.*

Counties.	Gross Produce, 1898-9.			
	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Tons.	Tons.
Tatchera	66,385	18,396	...	7,067
Villiers	182,801	280,141	14,877	15,092
All others (10)* ...	229,564	40,298	8,359	20,603
Total ...	5,523,419	1,112,567	161,142	723,299

1323. The average produce per acre of oats, barley, potatoes, and hay in the same counties during the last five seasons is given in the following table :— Average yield of other principal crops in each county.

Average Produce per Acre of Oats, Barley, Potatoes, and Hay in each County, 1894–5 to 1898–9.

Counties.	Oats (Bushels).					Barley (Bushels).				
	1894–5.	1895–6.	1896–7.	1897–8	1898–9.	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
Bendigo	26·9	9·4	15·8	19·7	20·5	19·0	6·2	10·3	16·0	17·7
Bogong	15·7	21·4	26·0	20·7	27·4	9·7	14·7	15·8	18·4	25·0
Borung	16·5	5·7	5·2	5·8	11·7	13·8	6·3	4·3	9·7	14·8
Bourke	24·3	20·1	26·0	24·5	18·6	23·8	24·4	24·5	28·0	23·1
Buln Buln ...	24·1	23·1	20·7	22·9	28·9	23·7	25·5	19·2	24·6	25·7
Dalhousie ...	24·1	21·1	24·2	24·6	31·0	19·0	15·8	20·0	31·2	30·8
Delatite	16·8	19·3	27·7	20·3	34·1	15·3	17·6	22·2	26·2	25·4
Dundas	19·3	20·2	25·5	25·0	33·5	21·7	19·5	29·9	28·2	36·7
Gladstone ...	21·5	8·7	12·6	14·0	17·5	15·4	4·9	6·5	10·4	16·6
Grant	27·2	22·3	30·3	25·1	29·1	25·7	22·1	27·8	27·4	26·0
Grenville ...	21·3	23·0	22·0	24·7	28·2	28·0	29·4	15·6	30·1	24·6
Gunbower ...	21·8	5·0	17·0	15·7	6·7	17·0	5·3	11·8	15·3	12·4
Kara Kara ...	18·5	8·8	9·9	13·7	16·0	15·6	5·8	5·3	11·6	19·4
Karkarooc ...	18·4	3·8	8·3	·5	5·7	14·7	1·3	3·9	4·0	8·7
Lowan	13·6	8·6	5·1	6·4	10·1	12·0	10·4	5·0	10·3	14·4
Moira	22·6	11·3	22·6	18·6	19·6	13·4	6·5	9·0	13·7	12·3
Normanby ...	19·1	16·1	19·6	21·2	29·0	21·8	24·5	27·7	24·0	25·2
Ripon	18·7	19·4	22·6	22·8	26·2	14·7	9·3	23·4	16·0	25·6
Rodney	23·9	8·7	17·6	18·8	19·9	16·3	4.5	9·3	17·5	17·0
Talbot	24·3	21·6	22·6	24·1	29·9	22·2	20·7	17·5	23·1	29·0
Tatchera ...	21·4	4·7	10·9	7·6	6·9	19·8	5·2	7·2	14·3	20·6
Villiers	22·1	18·9	22·6	25·0	33·4	29·7	29·6	33·7	32·0	40·8
All others * ...	22·5	18·8	26·5	24·8	31·6	22·3	18·9	29·8	31·5	33·0
Total ...	21·1	11·3	16·3	16·4	20·8	16·4	9·1	13·1	20·4	23·3

* Cultivating less than 3,000 acres of each of the crops named.

Average Produce per Acre of Oats, Barley, Potatoes, and Hay in each County, 1894–5 to 1898–9—*continued.*.

Counties.	Potatoes (Tons).					Hay (Tons).				
	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
Bendigo	1·69	1·07	1·33	...	2·00	1·24	·52	·64	·92	1·04
Bogong	3·74	2·60	3·39	2·00	4·74	·72	·68	1·08	·96	1·35
Borung	2·06	·91	1·00	1·13	1·56	1·00	·61	·43	·56	·96
Bourke	2·93	2·30	3·17	2·10	3·22	1·64	·83	1·82	1·52	1·06
Buln Buln ...	4·13	3·89	4·56	1·26	4·78	1·56	1·42	1·43	1·54	2·15
Dalhousie ...	2·62	2·20	3·00	1·17	3·72	1·45	1·18	1·60	1·72	1·80
Delatite	3·05	2·80	3·52	1·48	4·21	·98	·85	1·33	1·14	1·58
Gladstone ...	1·83	·95	·58	1·21	4·05	1·15	·60	·56	·79	·99
Grant	2·90	2·60	4·00	1·64	4·33	1·76	1·32	1·69	1·57	1·54
Grenville ...	3·69	2·69	2·48	1·23	2·43	1·22	1·17	1·31	1·47	1·66
Gunbower ...	2·13	·50	2·22	·73	3·50	1·13	·46	·61	·76	·52
Karkarooc ...	1·80	1·20	1·50	1·50	...	·93	·42	·47	·97	·62
Lowan	2·28	1·38	2·14	1·20	1·20	·85	·60	·43	·58	·91
Moira	1·94	·33	·25	·59	1·33	1·08	·55	·88	·92	·89
Mornington ...	4·80	3·98	4·59	2·29	5·15	1·24	1·03	1·39	1·48	1·95
Normanby ...	4·11	3·04	3·94	1·73	2·38	1·17	·88	1·12	1·29	1·70
Polwarth ...	4·48	3·28	2·72	1·59	2·80	1·75	1·90	1·53	2·17	2·10
Ripon	2·39	1·37	2·16	1·14	3·01	1·50	1·29	1·48	1·66	1·76
Rodney	2·43	1·00	2·00	...	2·40	1·30	·46	·72	·96	·98
Talbot	2·42	1·96	2·73	1·17	4·18	1·57	1·23	1·27	1·71	1·88
Tatchera ...	1·87	·17	1·50	·33	...	1·00	·47	·53	·68	·61
Villiers	4·74	2·86	3·14	1·28	3·70	1·80	1·38	1·52	1·83	2·46
All others * ...	3·60	2·49	3·20	1·40	4·33	1·22	·81	1·10	1·16	1·42
Total ...	3·49	2·67	3·36	1·52	3·91	1·26	·84	1·08	1·14	1·28

Yield of oats, barley, potatoes, and hay, 1898-9.

1324. It will be noticed that in the year ended 1st March, 1899, the highest acreable yield of oats in the counties specified was in Delatite, Dundas, Villiers, and Dalhousie, in the order named; that the average yield of barley was highest in Villiers, Dundas, and Dalhousie; that potatoes yielded the largest crop per acre in Mornington, Buln Buln, Bogong, Grant, Delatite, and Talbot, in all of which the average was over 4 tons to the acre; that the highest yields of hay were in Villiers, Buln Buln, and Polwarth, in which this crop exceeded 2 tons to the acre.

Yield of other principal crops in past two seasons.

1325. Comparing the averages of 1898–9 with those of the previous year, an increase is observed in the acreable yield of oats in nineteen counties, the principal increases being in Delatite, Dundas, and Buln Buln; of barley in fifteen counties, the principal being Kara Kara and Ripon; in potatoes in every one of the counties; and of hay in fifteen counties.

* Cultivating less than 3,000 acres of potatoes and less than 10,000 acres of hay.

1326. In 1898–9, over the colony as a whole, the acreable yield of each of the five principal crops was above the average, barley showing a substantial improvement ; but the increases in the other cases were only slight. The following are the averages for the last sixteen years :— Yield of principal crops, 1884 to 1899.

AVERAGE PRODUCE OF PRINCIPAL CROPS, 1884 TO 1899.*

Year ended March.	Average Produce per Acre of—				
	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1884	14·10	25·07	22·84	4·01	1·43
1885	9·52	23·40	17·38	4·16	1·09
1886	8·99	21·72	17·58	3·83	1·05
1887	11·49	22·91	22·36	3·41	1·09
1888	10·81	22·92	23·34	4·11	1·41
1889	7·10	14·20	13·55	3·04	·75
1890	9·75	23·87	20·18	3·33	1·48
1891	11·13	22·25	17·91	3·79	1·37
1892	10·26	23·43	18·75	3·50	1·39
1893	11·04	25·75	20·63	3·51	1·44
1894	10·38	22·62	21·05	3·54	1·22
1895	8·33	21·14	16·40	3·49	1·26
1896	4·01	11·27	9·12	2·67	·84
1897	4·49	16·25	13·08	3·37	1·08
1898	6·38	16·35	20·39	1·53	1·14
1899	9·09	20·75	23·25	3·91	1·28
Mean	8·97	20·33	17·82	3·45	1·20

NOTE. For the average produce per acre during each of the twenty-one years ended with 1892, see *Victorian Year-Book* 1892, Vol. II., paragraph 452.

1327. Malting barley is distinguished from other descriptions of the same cereal. The following are the particulars under each head for the year under review :— Malting and other barley.

MALTING AND OTHER BARLEY, 1898–9.

Description of Barley.	Area under Crop.	Gross Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.
Malting	33,584	776,785	23·13
Other	14,275	335,782	23·52
Total ...	47,859	1,112,567	23·25

* According to preliminary returns the average yields for 1899-1900 were as follow :—Wheat, 7·03 ; oats, 22·55 ; barley, 18·43 ; potatoes, 3·13 ; hay, 1·32.

Area under and yield of malting barley.

1328. About 70 per cent. of the barley crop, both in regard to area and produce, consisted of malting barley. In the previous year the proportions were respectively 70 per cent. in respect to area, and 64 per cent. in respect to produce. It will be observed that the average yield of both kinds of barley was about the same in 1898–9, but, as a rule, malting barley is the least productive.

Increased growth of wheat in Australasia, 1870 to 1899.

1329. The area placed under wheat in the Australasian Colonies has increased by $4\frac{2}{3}$ million acres since 1870, by nearly $2\frac{1}{2}$ million acres since 1880, and by about $2\frac{1}{3}$ million acres since 1890. In the period from 1880 to 1890, there was a decline in the acreage in South Australia, Queensland, Tasmania, and New Zealand; but, since 1890, there has been a large increase in every colony, more especially in Victoria and New South Wales. The wheat product of the colonies likewise has increased, viz., by about $40\frac{3}{4}$ million bushels since 1870, and by about 23 and $21\frac{2}{3}$ million bushels since 1880 and 1890 respectively. Notwithstanding its smaller area (Tasmania alone excepted), Victoria has produced more wheat in each of the years referred to than any other Australasian colony, with the exception of South Australia in 1870. New Zealand, owing to its exceptional yield per acre, was second to Victoria in 1898–9, and New South Wales—which has largely increased her production of wheat in recent years—was third, whilst South Australia, which was formerly the leading wheat-producing colony of the group, stood fourth. The following table shows the area under and produce of wheat in the various colonies in 1899, and in every tenth year commencing with 1870–1 :—

Cultivation of Wheat in Australasian Colonies at Various Periods.*

(000's omitted.)

Colony.	Acreage.				Produce in Bushels.			
	1871.	1881.	1891.	1899.	1871.	1881.	1891.	1899.
Victoria ...	284,	977,	1,145,	2,154,	2,870,	9,727,	12,751,	19,581,
New South Wales	150,	253,	333,	1,319,	1,000,	3,709,	3,649,	9,286,
Queensland ...	3,	11,	10,	46,	40,	223,	208,	607,
South Australia ...	605,	1,734,	1,674,	1,790,	6,961,	8,607,	9,400,	8,779,
Western Australia	27,	28,	34,	75,	182,	414,	465,	871,
Total ...	1,069,	3,003,	3,196,	5,384,	11,053,	22,680,	26,473,	39,124,
Tasmania ...	57,	50,	39,	85,	897,	750,	643,	2,304,
New Zealand ...	78,	325,	301,	399,	1,834,	8,148,	5,724,	13,073,
Grand Total...	1,204,	3,378,	3,536,	5,868,	13,784,	31,578,	32,840,	54,501,

Average produce in Australasian Colonies.

1330. In the following table the average yield of wheat, oats, barley, potatoes, and hay in Victoria is placed side by side with the

* Years ended with March in each of those named.

average of the same crops in the other Australasian Colonies during each of the six years ended with 1899:—

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN AUSTRALASIAN COLONIES, 1894 TO 1899.

Year ended March.	Victoria.	New South Wales.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.
WHEAT.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1894 ...	10·38	10·95	14·25	7·86	12·19	15·07	20·15
1895 ...	8·33	10·88	18·80	4·93	7·95	16·76	24·32
1896 ...	4·01	8·71	4·56	4·20	8·09	18·02	27·88
1897 ...	4·49	10·22	16·78	1·75	7·75	17·26	22·92
1898 ...	6·38	10·63	16·86	2·64	10·56	19·42	17·95
1899 ...	9·09	7·04	13·13	4·90	11·61	27·01	32·76
Mean ...	7·11	9·74	14·06	4·38	9·69	18·92	24·33
OATS.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1894 ...	22·62	20·55	19·96	12·68	18·51	24·82	32·27
1895 ...	21·14	18·37	20·62	12·67	12·39	26·98	29·05
1896 ...	11·27	15·76	11·81	12·67	10·28	27·74	33·62
1897 ...	16·25	21·10	17·11	4·71	10·76	21·71	30·15
1898 ...	16·35	19·02	17·17	6·51	17·44	28·88	27·45
1899 ...	20·75	13·99	14·93	11·77	18·18	38·16	39·56
Mean ...	18·06	18·13	16·93	10·17	14·59	28·05	32·02
BARLEY.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1894 ...	21·05	18·69	16·96	15·73	13·41	22·60	25·11
1895 ...	16·40	17·25	26·67	15·73	7·53	24·81	27·40
1896 ...	9·12	12·66	10·76	15·73	9·67	22·47	29·29
1897 ...	13·07	17·10	17·23	7·44	6·73	18·75	27·56
1898 ...	20·39	19·32	24·00	12·25	13·83	17·08	23·72
1899 ...	23·25	14·37	11·84	13·80	13·40	32·36	36·74
Mean ...	17·21	16·57	17·91	13·45	10·76	23·01	28·30
POTATOES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1894 ...	3·54	3·16	2·07	3·53	3·67	4·03	5·99
1895 ...	3·49	2·83	2·68	3·53	3·62	3·88	5·52
1896 ...	2·67	2·27	2·06	3·53	3·43	4·23	6·47
1897 ...	3·36	2·70	2·40	2·51	2·90	3·33	5·25
1898 ...	1·52	2·32	2·26	1·44	3·14	2·20	3·35*
1899 ...	3·57	2·21	2·06	2·17	3·40	4·35	7·73
Mean ...	3·08	2·58	2·26	2·79	3·36	3·67	5·72
HAY.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1894 ...	1·22	1·15	1·88	·93	1·12	1·16	1·42
1895 ...	1·26	1·15	1·99	·93	·77	1·31	·40
1896 ...	·84	·72	1·78	·93	·84	1·14	·54
1897 ...	1·08	1·02	1·95	·50	·73	·92	·54
1898 ...	1·14	1·01	1·96	·66	·93	1·36	1·50*
1899 ...	1·28	·72	1·99	·82	·98	1·67	2·00*
Mean ...	1·14	·96	1·93	·80	·90	1·26	1·07

NOTE.—For average yields for each year from 1873, see issue of this work for 1890-91, Vol. II., page 268 *et seq.* For the land under, and total produce of, each crop in the respective colonies during the twenty-six years ended with 1898-9, see summary of Australasian Statistics (third folding sheet), *post.*

* Estimated.

Colonies with highest and lowest average yields.

1331. It will be observed that, according to the mean of the six years, the average produce of wheat, oats, barley, and potatoes is much the highest in New Zealand, and that of hay is highest in Queensland. The lowest average yield of wheat, oats, and hay is in South Australia; whilst the yield of barley is lowest in Western Australia, and that of potatoes in Queensland. Victoria stands third in regard to the average per acre of hay, fourth in regard to oats, barley, and potatoes, and sixth in regard to wheat.

Average produce 1898-9 and previous years compared.

1332. It will be further noticed that in Victoria, Western Australia, Tasmania, and New Zealand in 1898–9 the average produce of each of the principal crops, and in South Australia, of each except potatoes, was above, whilst in New South Wales that of every crop, and in Queensland that of each except hay, was below, the mean of the same crop during the six years to which reference is made.

Land under crop in British and Foreign countries.

1333. The next table shows the acreage under various crops in the United Kingdom, Australasia, British North America, the Cape of Good Hope, the principal countries on the continent of Europe, and the United States, the Argentine Republic, and Uruguay, in America. All the information has been taken from official documents :—

Land under certain Crops in some British and Foreign Countries.

(000's omitted.)

Country.	Year.	Number of Acres under—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom*	1897–8	2,155,	4,083,	2,062,	81,	1,190,
Australasia	1898–9	5,868,	792,	126,	...	144,
Canada—						
Ontario	1897	1,274,	2,432,	452,	188,	169,
Quebec, Nova Scotia, and New Brunswick	1890	223,	...	...	...	226,
Manitoba	1897	1,291,	468,	153,	...	14,
Prince Edward Island, British Columbia, and the Territories	1890	174,	...	...	...	52,
Cape of Good Hope† ...	1898	215,	82,	34,	15,	19,

* Exclusive of the Channel Islands and the Isle of Man.
† The area under the different crops is roughly estimated from the quantity of seed used.

Land under certain Crops in some British and Foreign Countries—*continued.*

(000's omitted.)

Country.	Year.	Number of Acres under—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
Argentine Republic ...	1897	5,500,	...	...	...	...
Austria	1897	2,614,	4,722,	2,898,	4,554,*	2,866,
Belgium	1895	446,	614,	99,	700,	456,
Denmark	1896	85,	1,083,	690,	717,	129,
France	1897	16,262,	9,857,	2,119,	3,856,	3,825,
Germany	1897	4,744,	9,878,	4,115,	14,738,	7,557,
Holland	1896	154,	317,	97,	531,	371,
Hungary	1897	7,442,	2,449,	2,506,	2,690,	1,243,
Italy	1896	11,315,	...	760,	...	...
Japan†	1896	1,082,	...	1,594,	1,648,	...
Norway	1890	11,	256,	128,	34,	97,
Russia in Europe ...	1897	35,610,	36,210,	17,221,	62,654,	6,328,
Sweden	1896	176,	2,022,	538,	1,007,	390,
United States ...	1897	39,465,	25,730,	2,719,	1,704,	2,535,
Uruguay	1894	503,	...	7,	...	36,

Gross yield of crops in British and Foreign countries.

1334. The official returns of the various countries contain statements of produce, and these are given in the following table. The produce of potatoes is not returned in tons, as in the Australasian Colonies, but in bushels :—

Gross Produce of certain Crops in some British and Foreign Countries.

(000's omitted.)

Country.	Year.	Number of Bushels ‡ of—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom	1897–8	74,885,	172,578,	74,731,	...	248,991,
Australasia ...	1898–9	54,495,	24,948,	3,337,	...	25,299,
Canada—						
Ontario ...	1897	28,856,	86,318,	12,022,	3,382,	16,101,
Quebec, Nova Scotia, and New Brunswick	1890	2,794,	5,494,	442,	...	24,966,
Manitoba ...	1897	18,262,	10,630,	3,184,	48,	2,033,
Prince Edward Island, British Columbia, and the Territories	1890	1,944,	21,491,	1,834	...	8,295,
Cape of Good Hope	1898	1,880,	1,426,	898,	287,	1,037,

* Including spelt (*Triticum spelta*).
† Exclusive of the district of Okinawa.
‡ See footnote (*) on following page.

Gross Produce of certain Crops in some British and Foreign Countries—*continued.*

(000's omitted.)

Country.	Year.	Number of Bushels * of—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
Argentine Republic	1897	56,000,	...	...	...	...
Austria	1897	34,751,	93,193,	48,218,	63,900,†	314,900,
Belgium	1895	12,769,	24,675,	3,809,	18,551,	105,316,
Denmark	1896	3,550,	37,078,	20,453,	19,328,	20,889,
France	1897	238,975,†	220,561,	39,885,	46,662,	445,429,
Germany	1897	107,014,	266,764,	98,829,	305,585,	1,172,886,
Holland	1896	4,890,	14,867,	4,422,	13,151,	80,440,
Hungary	1897	87,084,	54,927,	42,091,	36,513,	90,500,
Italy	1896	140,745,	...	9,746,	...	...
Japan	1896	17,622,	...	38,932,	29,379,	...
Mexico	1896	22,467,	...	...	...	...
Norway	1890	256,	9,512,	4,093,	918,	23,214,
Russia in Europe ...	1897	237,811,	436,492,	194,618,	633,577,	627,783,
Sweden	1896	4,528,	54,356,	13,945,	23,283,	61,635,
United States ...	1897	513,920,	677,377,	64,644,	26,524,	158,995,
Uruguay	1894	8,641,	...	113,	...	415,

Average yield of wheat in United Kingdom.

1335. The following is an official statement of the average produce of wheat in the United Kingdom during each of the fifteen years ended with 1898 :—

Average Produce per Acre of Wheat in the United Kingdom, 1884 to 1898.‡

	Bushels per Acre.		Bushels per Acre.
1884	30	1892	26·5
1885	31	1893	26·1
1886	27	1894	30·7
1887	32	1895	26·3
1888	28	1896	33·6
1889	30	1897	29·1
1890	31	1898	34·7
1891	31·3		

Wheat yield in United Kingdom and colonies

1336. The average produce in the fifteen years was about 29·8 bushels per acre, which is much above the yield in any of the Australasian Colonies ; but, it must be remembered, that in the United Kingdom, not only are the holdings comparatively small, but manuring is extensively resorted to, and an abundant rainfall occurs—conditions

* The produce was originally given in Imperial bushels, except in the case of Germany, where it was stated in cwts., and the United States in Winchester bushels. Moreover, the potato crop of Austria, Belgium, France, and Italy was stated n cwts., and that of Australasia in tons. All these have been converted into Imperial bushels upon he assumption that 60 lbs. of wheat, 40 lbs. of oats, 50 lbs. of barley or rye, and 56 lbs. of potatoes are in each case equal to an Imperial bushel; also that a Winchester bushel is equivalent to about ·9688 of an Impe ial bushel.

† Including also spelt (*Triticum spelta*).

‡ For a statement of the acreable yield of wheat in the United Kingdom during each of the 18 years, 1866 to 1883, see *Victorian Year-Book*, 1892, Vol. II., paragraph 460.

which do not, as a rule, prevail in the wheat-growing districts of Australia. The yield in 1898 (34.7 bushels to the acre) was, it will be observed, the highest in the fifteen years.

1337. The acreable produce for the latest year in the countries named in a previous table has been calculated in the office of the Government Statist, Melbourne, and is given in the following table:— Average yield of crops in British and Foreign countries.

AVERAGE PRODUCE PER ACRE OF SOME BRITISH AND FOREIGN COUNTRIES.

Country.	Bushels* per Acre of—				
	Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom	34·7	42·3	36·2	...	209·2
Australasia	9·3	31·5	26·5	...	175·7
Canada—					
Ontario	22·6	35·5	26·7	18·0	95·3
Quebec, Nova Scotia, and New Brunswick	12·5	...	...	...	110·5
Manitoba	14·2	22·7	20·8	...	145·2
Prince Edward Island, British Columbia, and the Territories	11·2	...	...	...	159·5
Cape of Good Hope	8·7	17·4	26·4	19·1	54·6
Argentine Republic	10·2	...	...	...	...
Austria	13·3	19·7	16·6	14·0	109·9
Belgium	28·6	40·2	38·5	26·5	231·0
Denmark	41·8	34·2	29·6	27·0	161·9
France	14·7	22·4	18·8	12·1	116·5
Germany	22·6	27·0	24·0	20·7	155·2
Holland	31·8	46·9	45·6	24·8	216·8
Hungary	11·7	22·4	16·8	13·6	72·8
Italy	12·4	...	12·8	...	...
Japan	16·3	...	24·4	17·8	...
Norway	23·3	37·2	32·0	27·0	239·3
Russia in Europe	6·7	12·1	11·3	10·1	99·2
Sweden	25·7	26·9	25·9	23·1	158·0
United States	13·0	26·3	23·8	15·6	62·7
Uruguay	17·2	...	16·1	...	11·5

1338. It will be observed that in all the other countries named, except Russia and Cape of Good Hope, the acreable yield of wheat is higher than in Australasia, also that the yield per acre of oats in Australasia is exceeded by the United Kingdom, Belgium, Norway, Holland, Denmark, and Ontario, but is higher than in any other of the countries named. Australasia, however, stands as high as fifth in regard to the average yield of potatoes, the only countries having a higher yield being the United Kingdom, Belgium, Norway, and Holland. Yield of crops in Foreign countries and Australasia.

* See first footnote (*) on preceding page.

Wheat crop of the principal countries of the world.

1339. The following table contains a statement of the area under, and produce of, wheat in various countries in 1890–91, together with the deficiency or surplus of wheat in each country as indicated by the net quantity it imported or exported in that year; also the produce of wheat in each country in 1898, and the average during the decade 1881–1890. The European countries are placed separately from the others, and the countries are arranged according to their importance as wheat-importing, or inversely as wheat-exporting, countries :—

Wheat Production of the World.

(000's omitted.)

Countries.	1890-91.			1881-90.	1898.
	Area under Crop.	Produce.	Deficiency imported (−). Surplus exported (+).	Average Annual Produce.	Produce.
European Countries.	Acres.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom ...	2,388,	77,016,	−163,200,	77,677,	77,186,
France	17,450,	331,749,	−39,886,	309,433,	363,498,
Belgium	682,	19,410,	−24,809,	17,930,	14,069,
Italy	11,125,	141,455,	−23,684,	122,283,	137,345,
Germany	4,844,	104,021,	−19,717,	92,862,	132,557,
Switzerland	110,	2,622,	−12,887,	2,041,	4,500,
Holland	211,	6,890,	−11,365,	5,748,	5,000,
Greece	...	6,969,	−9,000,	6,969,	4,000,
Spain	7,059,	73,245,	−5,598,	91,557,	99,000,
Sweden and Norway ...	177,	4,029,	−4,722,	3,695,	4,842,
Portugal	642,	8,512,	−3,543,	7,778,	7,800,
Cyprus	170,	800,	−132,	1,240,	2,400,
Malta	6,	166,	...	162,	...
Turkey	3,890,	38,107,	...	40,915,	25,000,
Denmark	120,	4,978,	+332,	4,838,	2,991,
Servia	380,	8,065,	+2,216,	6,033,	11,000,
Bulgaria	4,450,	40,022,	+9,957,	40,022,	35,000,
Austria-Hungary ...	10,195,	192,078,	+15,232,	160,529,	175,497,
Bosnia and Herzegovina	...	...	...	...	2,100,
Croatia and Slavonia ...	...	...	...	...	11,408,
Montenegro	...	...	...	...	220,
Roumania	3,812,	45,672,	+34,272,	49,640,	58,457,
Russia and Poland ...	28,879,	225,662,	+101,581,	242,266,	408,288,
Total, Europe ...	96,590,*	1,331,468,	−154,953,*	1,283,618,	1,582,158,
Extra-European Countries.					
Natal	1,	12,	−678,	10,	...
Japan	1,122,	12,568,	−95,	13,858,	20,000,
Cape Colony	...	3,865,	...	3,865,	2,012,
Tunis	...	4,256,	...	4,256,	6,500,
Syria	...	12,969,	...	12,969,	...

* Information incomplete.

WHEAT PRODUCTION OF THE WORLD—*continued.*

(000's omitted.)

Countries.	1890–91. Area under Crop.	1890–91. Produce.	1890–91. Deficiency imported (—). Surplus exported (+).	1881–90. Average Annual Produce.	1898. Produce.
EXTRA-EUROPEAN COUNTRIES—*continued.*	Acres.	Bushels.	Bushels.	Bushels.	Bushels.
Algeria	...	21,584,	...	21,584,	24,118,
Persia	...	22,131,	...	22,131,	17,600.
Asia Minor	...	37,339,	...	37,339,	44,000,
Caucasus	...	74,269,	...	74,269,	91,101,
Chile	...	15,175,	+1,964,	15,175,	14,000.
Canada	1,361,	33,611,	+3,107,	39,899,	68,154,
Egypt	1,200,	10,381,	+3,128,	10,381,	14,000,
Australasia	3,738,	35,963,	+12,149,	35,120,	34,980,
Argentine Republic ...	...	28,708,	+12,588,	28,708,	46,603,
Uruguay	...	...	...	...	6,000,
India	26,424,	255,435,	+26,606,	254,927,	259,670,
United States	39,917,	611,780,	+103,960,	439,767,	675,149,
Mexico	...	...	...	...	15,000,
Total out of Europe	...	1,180,046,	+162,729,	1,014,258,	1,338,887,
Grand Total ...	...	2,511,514,	+7,776,*	2,297,876,	2,921,045,

NOTE.—The figures, except those for Australasia, have been mainly derived from the publications of the U.S. Department of Agriculture.

Value of world's wheat crop.

1340. Supposing these figures to be correct, and the wheat to be worth two shillings and sixpence per bushel, the total value of the world's wheat crop in 1898 would be three hundred and sixty-five millions sterling (£365,130,625). It appears, moreover, that a fall of sixpence in the price of wheat represents a depreciation in the value of the world's annual supply of over seventy-three millions sterling.

Principal wheat exporting and importing countries.

1341. By the third figure column of the table, it will be observed that almost the only countries which grow an insufficiency of wheat for their own consumption are those of Western and Southern Europe; the principal of which are the United Kingdom, which in 1890–91 required an importation of 163 million bushels, or more than that of all the others together, France with one of 40 millions, Belgium and Italy with from 23 to 25 millions, Germany with 20 millions, followed by others of less importance. The total importation by Western and Southern Europe amounted to 318½ million bushels, of which 163½ million bushels were supplied by Eastern Europe—chiefly Russia, Roumania, Austria-Hungary and Bulgaria; and the balance (155 million bushels) by countries out of Europe, 104 millions, or about two-thirds of such balance, having been contributed by the United States, 26½ millions, or one-sixth, by India, and from 12 to 12½ millions each—or about half the Indian supply—by the Argentine Republic and Australasia. The conditions

* Including flour, reduced to its equivalent in bushels of wheat.

have not much changed since 1890–91, except that Europe in 1898, as compared with 1890–91, has increased her production by 250 million, and extra-European countries by 159 million bushels. To the former increase, Russia alone contributed 182 million bushels, and Germany and France, which now practically supply their own requirements, nearly the whole of the remainder. To the latter, the United States contributed 63, Canada 35, Caucasus and Asia Minor 24, Argentina 18, Japan 7½, India 4, and Egypt 3½ millions of bushels. The following is an approximate summary of the demand for, and supply of, this article in 1890–91 :—

Wheat Requirements of—	Millions of Bushels.
The United Kingdom	163¼
Countries on the Continent of Europe ...	155¼
	318½
Wheat Supplied by—	
Eastern Europe	163½
Extra-European Countries	155
Total	318½

Wheat crop of world, 1898 and 1899.

1342. The following are the estimates of the wheat crop of the world in 1898 and 1899 according to different authorities. The first three show the crop for 1899 (including estimates for the Southern Hemisphere for 1899–00) to have been between 377 and 392 million bushels less than in 1898; but the United States Department of Agriculture (which included the previous crop harvested in the Southern Hemisphere) shows it to have been nearly 200 million bushels less. The other two authorities show a decrease of about 300 million bushels.

WHEAT CROP OF THE WORLD, 1898 AND 1899.

Year.	Millions of Bushels as estimated by—					
	Broomhall.	Beerbohm.	Dornbusch.	"Bulletin des Halles."	Hungarian Ministry.	United States Department of Agriculture.
1898 ...	2,886,	2,822,	2,923,	2,807,	2,777,	2,921,
1899 ...	2,496,	2,445,	2,531,	2,506,	2,465,	2,725,
Decrease...	390,	377,	392,	301,	312,	196,

NOTE.—The United States Department of Agriculture includes the crops actually harvested in the Southern Hemisphere about the beginning of each year; whereas most of the other authorities include estimates for the crops to be harvested at or about the end of each year.

Wheat crop of principal countries of world, 1898 and 1899, compared.

1343. Subjoined is a statement of the crops of the principal divisions of the world in the years 1898 and 1899, according to returns compiled by the United States Department of Agriculture. It will be noticed that there was a gross decrease in all those divisions, except

Argentina and Australasia, of 263 million bushels ; but, after allowing for an increase of 67 millions in the two latter, a net decrease for all countries of 196 millions :—

WHEAT CROP OF PRINCIPAL COUNTRIES, 1898 AND 1899.

Year.	Crop in Millions of Bushels in—					
	Europe.	United States.	India.	Argentina.	Australasia.	All other Countries.
1898 ...	1,580,	675,	260,	46,	34,	326,
1899 ...	1,500,	547,	233,	92,	55,	298,
Decrease...	80,	128,	27,	...	...	28,
Increase ...	...	...	...	46,	21,	...

NOTE—The figures for India, Argentina, and Australasia relate to the seasons 1897-8 and 1898-9 respectively. In 1899-1900, the crop of Australasia was 48½ million bushels.

Experimental farm, Dookie.

1344. In order to carry out experiments, devised for the purpose of ascertaining the suitability of the Victorian climate and soil for various kinds of useful products, and of obtaining data respecting the rotation of crops, as well as for the instruction of students in agriculture, a block of 4,806 acres, subsequently increased by 40 acres, was reserved in 1874, at Dookie, situated in Moira, a county in the North-eastern district of Victoria, on which to found a Government Experimental Farm.* The following account of the present state of the farm has been furnished for this work by Mr. D. Martin, Secretary for Agriculture :—

The farm has, under the provisions of the *Agricultural Colleges Act* 1884, been vested in trustees, and all moneys received from the sale of stock and produce since June, 1885, have been paid into the Agricultural College fund.

The total receipts for the year 1899 were £1,197, and the expenditure £2,348. Of the amount expended £553 was paid for live stock, which has considerably increased in value ; £560 (including that for dam-sinking, fencing, and other permanent improvements) for labour ; £490 for machinery, implements, &c. ; and £137 10s. for salary. So far as possible, the provisions necessary for the students at the Agricultural College, and the staff thereof, were obtained from the farm, and, at a fair valuation, are worth £550.

A new dairy is being erected, at a cost of £1,069, on the most scientific plans, and will be fitted with a complete dairying plant of latest pattern, including a pasteurizer refrigerator, &c.

A wine cellar has recently been erected at a cost of about £800, and students are instructed in the art of wine-making. There are in cellar about 11,000 gallons of wine, representing vintages from 1894 to 1900, and also 298 gallons of spirit made from the by-products of the vintage; while during the same period 7,497 gallons of wine were disposed of. There are 32 acres under vines, consisting of 4 acres table grapes, planted in 1887 ; 5 acres Gordo, Blanco, and Zante currants, planted in 1888 ; 11 acres Red Hermitage, 7 acres planted in 1889, and 4 acres in 1895 ; 10 acres Cabernet, planted in 1894 ; and 2 acres Baxter Sherry, planted in 1895.

There are 20 acres under fruit-trees of all the approved varieties.

During the year the rainfall recorded was 17·95 inches.

* For further particulars relating to the establishment and development of the farm see *Victorian Year-Book* 1888-9, Vol. II., paragraph 448.

Considerable attention is paid to experimental work in connexion with the cereals. The rearing of new varieties of wheat, suitable for the different parts of this country, has special attention paid to it.

Manurial tests are carried out each year, and the results are published for the benefit of the farmers.

There is a good and growing demand for seed-wheat, oats, and barley from the College farm; whilst, for the commercial training of the students, a good deal of grain is marketed. The threshing and the harvesting in general are carried out by the students under competent instructors. The cropping also is mainly carried out by the students, who are taught how to use the ploughs, cultivators, seed-drills, and all other farming implements.

Experiments with new fodder plants and with others of economic importance are carried out, whilst attention is also paid to the indigenous grasses.

A variety of medicinal and other plants is also grown on the farm for educational purposes.

There is a $4\frac{3}{4}$-acre plantation of fifteen-year-old olives, of six varieties, from which 160 gallons of oil have been made during 1899, and an additional 25 gallons were obtained from olives grown elsewhere.

A valuation of the farm and its belongings was made at the end of 1890, of which the following is a summary :—

Farm and improvements ...	£20,991	Wine	203
Buildings, furniture, &c. ...	4,546	Dairy	150
Live stock	3,063		
Implements and machinery ...	1,657		£30,645
Bees	35		

There are 40 students, to whom the charge per head per annum is £25 for maintenance, £1 5s. for medical attendance and medicines, and £1 12s. for books and other school materials, or £27 17s. in all. No charge is made for instruction.

Attention is being given to the breeding of draught horses and Indian remounts. Most of the horses used on the farm have been bred on it. There are several highly-bred Clydesdale mares, and lately a first-class stallion has been purchased by the Council of Agricultural Education, to be used for stud purposes on the farm and for approved mares of the farmers from the surrounding districts.

The cattle on the farm include Ayrshires principally, also Herefords and Shorthorns. Farmers, on paying a small fee, may have the use of the stud bulls for their cows.

The breeds of sheep kept are Lincolns, Merinoes, Hampshire Downs, and South Downs. The raising of early lambs for the market occupies considerable attention. Twenty-four bales of wool were sold in 1899, which is more than during the previous year, the prices obtained being about the same.

The pigs kept are pure Berkshires. There is a good demand for them for stud purposes.

The poultry industry is fostered, and pens of the best breeds are kept. The Pekin ducks were highly spoken of in London, and obtained the highest prices.

Agricultural colleges.

1345. An Act for the establishment of Agricultural Colleges was passed towards the close of 1884. Particulars respecting this Act and its operations were given in the *Victorian Year-Book* 1890-91. Since then Mr. Martin has reported that of the land intended as endowment, 142,088 acres have been reserved and vested in the trustees, the greater part of which area so vested has been leased for agricultural and grazing purposes. The areas reserved under section 4 of Act No. 825, as sites for Colleges and Experimental Farms, amount to 13,393 acres. At the Dookie Agricultural College the course of instruction has been supplemented with lectures on agriculture, arboriculture, and viticulture, and practical dairying, wine-making, blacksmith's, and carpenter's work. At the Longerenong College the buildings have been completed, and accommodation is provided for

40 students; 800 acres are under cultivation, of which 600 are devoted to various varieties of wheat, 100 to oats, 100 to rye and other fodder plants, and 4 acres to barley. The rye crop, which was very heavy, being nearly 6 feet in height, and very thick, has been converted into ensilage. The area under vines, fruit trees, &c., has been increased to 35 acres; and a third tank has been excavated. There are 40 students, to whom the charge per head per annum is £25 for maintenance and £1 5s. for medical attendance and medicines, 16s. 6d. for books and other school materials, or £27 1s. 6d. in all. No charge is made for instruction.

Population and breadstuffs.

1346. For the twenty-three years ended with 1899, with one exception (1897), the colony has raised more than enough breadstuffs for the consumption of its own inhabitants. In each of those years but the one referred to there was a surplus of Victorian-grown wheat exported, which reached a maximum of 10⅔ million bushels in 1899—the next largest quantity being 8¼ million bushels in 1884, and the next 7⅓ millions in 1894, whilst there was none available for export in 1897, and but very little in 1896. The following table shows, for 1887 and each subsequent year, the mean population of Victoria, the stocks of old wheat and flour on hand at the beginning of each year so far as available, the quantity of wheat grown, according to the Agricultural Statistics, and the quantity of wheat, flour, and biscuit exported after deducting imports; also the residue of breadstuffs left for consumption during each of those years:—

Population and Breadstuffs, 1887 to 1899.
(Based on Agricultural Statistics.)

Year.	Mean Population.	Stocks of old wheat and flour on hand (1st January).	Wheat harvested for season ended March in each year.	Wheat, Flour, and Biscuit. *	
				Exported after deducting Imports.†	Available for Home Consumption.
		Bushels.	Bushels.	Bushels.	Bushels.
1887 ...	1,016,750	...	12,100,036	4,005,118	8,094,918
1888 ...	1,054,980	...	13,328,765	4,536,231	8,792,534
1889 ...	1,090,350	...	8,647,709	1,478,612	7,169,097
1890 ...	1,118,500	...	11,495,720	2,288,002	9,207,718
1891 ...	1,146,930	...	12,751,295	6,673,782	6,077,513
1892 ...	1,162,710	...	13,679,268	5,809,541	7,869,727
1893 ...	1,170,330	...	14,814,645	6,401,514	8,413,131
1894 ...	1,174,730	...	15,255,200	7,350,322	7,904,878
1895 ...	1,180,040	...	11,445,878	4,443,343	7,002,535
1896 ...	1,177,435	2,009,368	5,669,174	80,154	7,598,388 ‡
1897 ...	1,172,790	516,099	7,091,029	− 39,644	7,646,772 ‡
1898 ...	1,172,950	330,224	10,580,217	1,855,951	9,054,490 ‡
1899 ...	1,160,700§	1,282,902	19,581,304	10,662,011	10,202,195 ‡

NOTE.—For particulars relating to previous years, commencing with 1840, see *Victorian Year-Book*, 1892, Vol. II., paragraphs 470 and 471. In 1900 the stocks on hand and the quantity harvested were 2,121,700, and 15,205,350 bushels respectively.

* The quantities of flour and biscuit, &c., imported and exported are reduced to their equivalents in bushels of wheat.

† Figures prior to 1894 have been revised and corrected since last publication. The minus sign (−) indicates a net import.

‡ Including stocks on hand remaining over from previous years.

§ Based on estimate agreed upon by Conference of Statisticians in 1900. Hence the apparent decrease.

Consumption of bread-stuffs according to farmers' returns.

1347. The probable manner in which the breadstuffs available for home consumption—as given in the last column of the preceding table—have been disposed of in each of the same years is shown in the following table, in which are distinguished the quantity stored (for the last four years only), that required for seed, and that used for food, &c. The average allowed for seed is set down at 1 bushel per acre for the seven years ended with 1893, but at ¾ of a bushel after that period—allowing for the greater economy exercised in more recent years through the partial employment of sowing drills and other appliances. The balance, set down as "used for food, &c.," may in some of the years include quantities for animal feeding, but little or none would have been so used in the years 1896 to 1898 owing to the deficient harvests.

Breadstuffs Available for Consumption 1887 to 1899.

(Based on Agricultural Statistics.)

Year.	Wheat and Flour.*				
	Quantity available for Home Consumption.	How disposed of			
		Stocks on hand on 31st December.	Required for Seed. ‡	Used for Food, &c.†	
				Total.	Per Head.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1887 ...	8,094,918		1,380,214	6,714,704	6·60
1888 ...	8,792,534		1,354,302	7,438,232	7·05
1889 ...	7,169,097		1,329,250	5,839,847	5·36
1890 ...	9,207,718		1,282,847	7,924,871	7·08
1891 ...	6,077,513		1,455,849	4,621,664	4·03
1892 ...	7,869,727		1,513,387	6,356,340	5·47
1893 ...	8,413,131	Not returned.	1,606,767	6,806,364	5·81
1894 ...	7,904,878		1,153,396	6,751,482	5·75
1895 ...	7,002,535		1,186,619	5,815,916	4·93
1896 ...	7,598,388 §	516,099	1,278,504	5,803,785	4·93
1897 ...	7,646,772 §	330,224	1,331,008	5,985,540	5·10
1898 ...	9,054,490 §	1,282,902	1,770,941	6,000,647	5·12
1899 ...	10,202,195 §	2,121,700	1,769,636	6,310,859	5·43

Note.—See note to last table.

* See footnotes (* and †) on preceding page.

† Prior to 1896 only the quantity *available* for food can be given, owing to the absence of information as to stocks on hand.

‡ Reckoning 1 bushel per acre prior to 1894, and ¾ bushel per acre subsequently.

§ Including stocks remaining over from previous years.

1348. An independent estimate of the consumption of wheat can be formed from the millers' returns, which give the quantity of wheat ground and the flour made annually. After allowing for the fluctuations in stocks on hand (where available), and for the net export of flour, the balance represents the quantity used in the colony mainly for human consumption, which—after conversion into its equivalent in bushels of wheat—may be compared with the figures already given as based on farmers' returns. The following are the results, according to the method described :— Consumption of bread-stuffs according to millers' returns.

BREADSTUFFS AVAILABLE FOR CONSUMPTION, 1887 TO 1899.

(Based on Millers' Returns.)

Year.	Stocks of Old Flour on Hand on 1st January.	Quantity of Flour made.	How Disposed of—				Flour consumed, reduced to its equivalent in Wheat.‡	
			Added to Stocks.*	Exported after deducting Imports.†	Flour consumed in the Colony.		Total.	Average per Head.
					Total.	Average per Head.		
	tons.	tons.	tons.	tons.	tons.	lbs.	bushels.	bushels.
1887	...	177,225	...	42,430	134,795	265	6,331,186	6·23
1888	...	184,056	...	41,310	142,746	271	6,905,052	6·54
1889	...	146,828	...	26,273	120,555	221	5,914,669	5·42
1890	...	209,773	...	38,726	171,047	306	8,054,432	7·20
1891	...	186,935	...	47,075	139,860	244	6,652,860	5·80
1892	...	187,908	...	48,289	139,619	242	6,662,758	5·73
1893	...	183,474	...	41,497	141,977	243	6,905,193	5·90
1894	...	193,372	...	45,076	148,296	252	7,157,358	6·09
1895	...	167,424	...	27,372	140,052	237	7,077,388	5·96
1896	9,980	122,541	−3,494	1,502	124,533	212	6,262,391	5·32
1897	6,486	121,823	−2,473	−269	124,565	212	6,256,153	5·34
1898	4,013	154,722	1,401	13,935	139,386	238	7,159,701	6·10
1899	5,414	184,835	6,124	35,577	143,134	246	7,077,404	6·10

NOTE.—The tons referred to are tons of 2,000 lbs.

* The minus sign (−) indicates withdrawal from stores of old flour.

† Including biscuits, &c. The minus sign (−) indicates a net import.

‡ Based on millers' returns, showing the quantity of wheat required to make a ton of flour which has varied in the different years from 47 to 51⅓ bushels. The figures for the years since 1895 are based on actual returns, and represent the quantity actually consumed ; but for the other years, only the quantity available for consumption can be stated, as no returns of stocks on hand are available.

Consumption of wheat as shown by farmers' and millers' returns compared.

1349. A fair comparison of the consumption of wheat, as shown by the two methods, can be made for individual years since 1895, but only for a series of years at earlier periods, owing to the absence of particulars as to stocks on hand. The results by both methods for periods of six and nine years respectively ended with 1895, and for each of the last four years, are therefore set side by side in the following table :—

ANNUAL CONSUMPTION OF WHEAT FOR FOOD, ETC., IN THE COLONY (EXCLUSIVE OF REQUIREMENTS FOR SEED).

Period.	Quantity in bushels based on—		Bushels per head based on—	
	Agricultural Statistics.	Millers' Returns.	Agricultural Statistics.	Millers' Returns.
Average of—				
6 years, 1890 to 1895	6,379,440	7,084,998	5·51	6·12
9 " 1887 to 1895	6,474,380	6,851,000	5·76	6·12
1896	5,803,785	6,262,000	4·93	5·32
1897	5,985,540	6,256,000	5·10	5·32
1898	6,000,647	7,160,000	5·12	6·10
1899	6,310,859	7,077,000	5·43	6·10

Larger consumption shown by millers' returns.

1350. It will be observed that the millers' returns show a much greater uniformity of consumption than those based on the farmers' returns, the average being 6·12 bushels per head at each period prior to 1896, and 6·10 bushels in 1898 and 1899 ; whereas in 1896 and 1897—when wheat was scarce owing to the failure of crops—the consumption fell to $5\frac{1}{3}$ bushels. In all cases a lower consumption is shown by the farmers' than by the millers' returns—the difference per head varying from a third of a bushel, according to the average of the nine years, to two-thirds of a bushel in 1899, and to as much as a bushel in 1898. The results shown by the agricultural statistics are, however, substantiated by those obtained by a third method in 1896,* when cards—which had been despatched from this office to a number of families living in various parts of the colony—were returned, showing the actual consumption of those families about the middle of 1896 to have been at the rate of 4·95 bushels per head per annum, which closely agrees with that shown by the agricultural statistics (4·93), but was nearly two-fifths of a bushel lower than that shown by the millers' returns for the same year.

Consumption of wheat in New South Wales.

1351. According to figures published by the Government Statistician of New South Wales,† the consumption of wheat per head appears to be larger in that colony than in Victoria, the quantity consumed per head in the twelve years ended with 1898 varying from 7·8 bushels in 1887 to 5·5 in 1898, and averaging $6\frac{1}{5}$ bushels. According to the same authority, New South Wales never grew enough wheat for her own consumption in any year prior to 1898 ; but in that year the

* See Part "Production" of the *Statistical Register of Victoria*, 1895, page 25.

† See *Statistical Register of New South Wales* for 1898, Part V.—Agriculture, Grazing, and Dairying, Forestry, Water Conservation, Fisheries, and Mining : Gullick, Sydney, 1899.

quantity exported, after deducting the imports, was about 1,122,758 bushels, whilst 10,560,111 bushels were grown in the colony. The crop in 1898 was far larger than in any previous year; but the increase in the growth of wheat in New South Wales of recent years is remarkable, the area having increased from 330,000 acres in 1891 to nearly a million acres in 1897–8,* and the produce from $3\frac{2}{3}$ million to $10\frac{1}{2}$ million bushels.

Consumption of wheat in various countries.

1352. In Australasia, in the years 1891 to 1898, the estimated consumption of wheat was $5\frac{4}{5}$ bushels per head, which was a little less than the average in the United Kingdom, viz., 6 bushels, and considerably less than in France, where it was as high as $8\frac{1}{2}$ bushels, or in Canada, where it averaged $7\frac{1}{4}$ bushels. In the United States the rate of consumption was four-fifths, in Denmark little more than one-third, and in Russia only one-fifth of that in Australasia; but in Russia, rye to a large extent takes the place of wheat. It is interesting to note that the United Kingdom has to import two-thirds of her requirements, whilst the neighbouring country of France has to import only 11 per cent of hers. The following are the proportions for each of the countries named, the production, net imports or exports, and seed requirements being also shown:—

WHEAT CONSUMPTION IN VARIOUS COUNTRIES, 1881 TO 1890.

(000's omitted.)

Countries.	Production.	Wheat and Flour.		Seed Requirements.	Available for Consumption.	
		Net Import.	Net Export.		Total.	Per Head of Population.
	bushels.	bushels.	bushels.	bushels.	bushels.	bushels.
France ...	309,433,	38,500,	...	25,828,	322,105,	8·5
Canada ...	39,899,	...	2,774,	3,600,	33,525,	7·3
United Kingdom†	77,677,	143,434,	...	3,796,	217,315,	6·0
Australasia‡ ...	33,662,	...	5,450,	4,293,	23,919,	5·8
United States ...	439,767,	...	126,165,	53,912,	259,659,	4·6
Denmark ...	4,838,	...	274,	194,	4,370,	2·1
Russia ...	229,916,	...	79,754,	51,850,	98,312,	1·1

NOTE.—The figures in this table, except those for Australasia, have been taken from a report issued by the U.S. Department of Agriculture. The quantities are given in Winchester bushels, which are less than Imperial bushels by one thirty-second part. According to the well-known authority, Mr. C. Wood Davis, the consumption in France in 1891-5 fell to 8·01; that of Austria-Hungary was 4·1 per head, whilst Belgium and France were the largest bread eaters in the world.

Net exports of wheat and flour, 1887 to 1899

1353. The net export of wheat—distinguishing that exported in the form of grain from that in the form of flour and biscuit—for each of the last thirteen years is shown in the following table. It will be noticed that, formerly, in ordinary seasons from 2 to $2\frac{1}{4}$ million bushels were sent away as flour and biscuit annually, but, owing to a succession of bad seasons, the millers' trade has fallen off considerably since 1895,

* The area has more recently been increased to 1,426,000 acres.

† For consumption of wheat in the United Kingdom for the years 1884 to 1888, see issue of this work for 1892, Vol. II., table following paragraph 474.

‡ The figures for Australasia are for the period 1891 to 1898.

and even in 1899, when the harvest was unprecedented, the export trade in flour fell short of that in 1892 by 550,000 bushels.

NET EXPORTS OF BREADSTUFFS, 1887 TO 1899.

Year.	Net Exports.		
	Wheat.	Flour and Biscuit (Equivalent in wheat).	Total.
	bushels.	bushels.	bushels.
1887	2,012,154	1,992,964	4,005,118
1888	2,537,960	1,998,271	4,536,231
1889	189,650	1,288,962	1,478,612
1890	464,560	1,823,442	2,288,002
1891	4,434,523	2,239,259	6,673,782
1892	3,505,200	2,304,341	5,809,541
1893	4,383,270	2,018,244	6,401,514
1894	5,174,818	2,175,504	7,350,322
1895	3,060,107	1,383,236	4,443,343
1896	4,630	75,524	80,154
1897	-26,110*	-13,534*	-39,644*
1898	1,144,035	711,916	1,855,951
1899	8,910,632	1,751,379	10,662,011

Imports and exports of breadstuffs, 1837 to 1898.

1354. The quantity and declared value of the Victorian imports and exports of breadstuffs during the 62 years, 1837 to 1898, are set down in the following table:—

IMPORTS AND EXPORTS OF BREADSTUFFS,† 1837 TO 1898.

Wheat, Flour, and Biscuit.	Quantity.	Value.
	bushels.	£
Imported, 1837 to 1898	38,088,901	14,845,751
Exported, ,, ,, ...	84,944,919	18,156,970
Exports in excess of imports ...	46,856,018	3,311,219

Excess of quantity and value exported.

1355. It will be observed that the quantity of breadstuffs exported from the colony from the period of its first settlement to the end of 1898 exceeded that imported during the same period by nearly 47 million bushels; but in consequence of the prices of wheat and flour during the earlier years, in which the imports invariably exceeded the exports, being much higher than in the later years, in which the exports exceeded the imports, the declared value of the breadstuffs sent away has only exceeded that of those received by $3\frac{1}{3}$ million sterling.

Breadstuffs imported into and exported from Australasian Colonies, 1898.

1356. The principal wheat-exporting colonies of Australasia are Victoria, South Australia, and New South Wales. The net exports of breadstuffs from all the colonies, in 1898, amounted to only $1\frac{1}{6}$ million bushels as compared with $6\frac{2}{3}$ million bushels in 1895, and $12\frac{1}{3}$ million

* Excess of imports over exports.

† The quantity and value of breadstuffs imported and exported during each year will be found in the Statistical Summary of Victoria (first folding sheet *ante*).

bushels in 1894. In 1896 and 1897, however—owing to severe droughts —the imports exceeded the exports by nearly $3\frac{1}{2}$ and $3\frac{1}{5}$ million bushels respectively. The following were the imports and exports of breadstuffs by each colony during 1898:—

BREADSTUFFS IMPORTED AND EXPORTED IN AUSTRALASIAN COLONIES, 1898.

Colony.	Wheat, Flour, and Biscuit.*		Excess of—	
	Imported.	Exported.	Imports over Exports.	Exports over Imports.
	bushels.	bushels.	bushels.	bushels.
Victoria	781,032	2,636,983	...	1,855,951
New South Wales ...	1,556,270	2,701,388	...	1,145,118
Queensland	2,131,255	6,915	2,124,340	...
South Australia ...	66,384	1,238,632	...	1,172,248
Western Australia ...	1,046,966	...	1,046,966	...
Total	5,581,907	6,583,918	...	1,002,011
Tasmania	561	198,244	...	197,683
New Zealand	87,916	49,658	38,258	...
Grand Total ...	5,670,384	6,831,820	...	1,161,436†

World's wheat supply overtaken by population.

1357. According to an interesting article which appeared in *The Forum* (New York), of October, 1897, on the Impending Deficiency of Breadstuffs, Mr. C. Wood Davis points out that the bread-eaters constitute only those persons of European lineage who inhabit Asiatic Russia, the United States, Canada, Australasia, Argentina, Brazil, Uruguay, Chili, South Africa, and Europe and its colonies. They numbered 371 milllons in 1871, 422 millions in 1882, and 510 millions in 1896—thus showing an increase in the 26 years of $37\frac{1}{2}$ per cent. Between 1870 and 1880 the increase of population was at the rate of 1·16 per cent.; and between 1880 and 1890 it was 1·27 per cent. per annum. The area under all bread-making grains (with which is included rye, spelt and maslin, and buckwheat) has, however, increased only from 259 millions in 1871 to 280 millions in 1882, and has again fallen back to 278 millions in 1897, thus showing an increase of only $7\frac{1}{2}$ per cent. over the whole period of 26 years, whilst "not an acre has been added to the world's wheat and rye area since 1884." During the period of 26 years the area under wheat increased by nearly 26 per cent., whilst that under other bread-grains was reduced, viz., that under rye by 4 per cent., under spelt and maslin by 23 per cent., and under buckwheat by 41 per cent. Of the bread-making grains supplied during the nine years ended with 1895, 59 per cent. consisted of wheat, 35 per cent. of rye, and only 6 per cent. of spelt, maslin, and buckwheat. Bread-eaters draw 99 per cent. of their supplies from countries which they themselves inhabit—only 1 per cent. being drawn from other countries —situated in Asia and North Africa. The opinion is expressed that, unless the United States should convert a portion of its over-abundant maize lands into wheat-fields, any material increase in the world's wheat area is probable only in South America—especially Argentina and

* The quantities have been reduced in all cases to their equivalent in bushels of wheat.
† Net figures. In 1899, the net export was 14,588,000 bushels.

Uruguay, and the general belief in the great capacity of Siberia as a wheat-producer is set aside by an authoritative statement that Siberia never had produced, and never would produce, wheat and rye enough to feed its own population.

Net imports of agricultural products.

1358. The following are the values of the net imports—*i.e.*, the values of imports after the values of the exports have been deducted—of certain vegetable productions during each of the six years ended with 1898. All the articles named are capable of being produced, and all, or nearly all, are to a certain extent now produced, in the colony:—

NET IMPORTS* OF CERTAIN ARTICLES OF AGRICULTURAL PRODUCE, 1893 TO 1898.

Articles.	Balance of Imports over Exports in—					
	1893.	1894.	1895.	1896.	1897.	1898.
	£	£	£	£	£	£
Oats	...	...	...	28,339	...	...
Barley and pearl barley	...	107	...	4,830	9,657	...
Maize	...	...	...	56	1,856	...
Maizena and corn flour	3,996	9,978	3,311	8,396	8,098	8,631
Arrowroot ...	590	508	153	562	520	1,522
Macaroni and vermicelli	1,047	1,215	212	410	311	628
Starch	2,953	1,421	...	...	...	...
Fruit—fresh, bottled, dried, currants, raisins, and peel	88,012	67,182	32,370	47,592	27,301	59,311
Nuts, almonds, walnuts	4,129	5,502	3,316	5,977	5,331	5,746
Peanuts	732	512	376	1,019	1,007	2,386
Ginger	1,258	2,338	2,858	874	...	...
Opium	21,347	6,294	12,936	10,835	13,758	15,349
Hops	...	4,691	7,190	7,124	5,953	19,090
Pickles	2,399	695	966	1,503	686	418
Mustard	10,678	12,765	10,123	11,653	10,446	9,204
Oil, olive and salad...	6,109	8,228	4,908	6,705	4,573	4,258
„ linseed ...	16,031	19,894	18,944	23,548	22,040	8,990
„ castor ...	8,943	7,544	7,771	4,801	10,259	9,790
Linseed and meal ...	2,389	1,556	3,463	1,893	955	3,720
Tobacco, cigars, and snuff	114,907	108,230	122,367	147,954	118,388	135,405
Flax (Phormium) ...	9,564	6,727	4,032	3,706	5,122	13,294
Hemp	27,756	26,669	26,083	29,443	33,445	46,511
Jute	1,075	1,950	1,846	4,848	3,961	2,193
Broom corn and millet	3,633	6,903	5,772	4,895	3,005	4,928
Cork, cut and uncut	7,755	9,554	11,403	12,886	16,691	14,951
Vegetables, preserved	400	...	...	...	...	...
Canary seed ...	2,666	4,242	3,294	3,451	2,189	2,254
Grass and clover seed	11,557	12,325	12,290	14,077	10,205	45,041
Seeds, undescribed...	5,340	5,483	3,291	3,748	4,316	7,622
Tares	118	146	40	37	22	74
Total ...	355,384	332,659	299,315	391,162	320,095	421,317

* The total imports and total exports of these articles during 1898 will be found in the table following paragraph 677 *ante*, under Orders 14, 22, 23, 25, and 26.

1359. It will be observed that, with the exception of 1896, when there was an importation to the value of £28,000, oats has disappeared from the list since 1892; barley was also absent in the years 1895 and 1898; maize, with slight exception, has entirely disappeared; starch has not been imported since 1894, nor jams, jellies, preserves, and pulp since 1892. There was no importation of ginger during the last two years, whilst preserved vegetables were absent entirely from the table during the years 1894 to 1897 inclusive, and only a very small quantity was imported during 1898. It is also noticeable that the import of linseed oil is decreasing rapidly, and the importation of macaroni, pickles, and tares is hardly worth considering. The following articles, however, show an increase in 1898 as compared with 1893, more especially the nine first named :—Maizena, arrowroot, peanuts, hops, tobacco, flax, hemp, cork, grass and clover seeds, seeds undescribed, nuts, castor oil, linseed, jute, and broom corn and millet. Decreased imports of agricultural products, 1898.

1360. Besides the articles named in the above table, eggs, of which it might reasonably be supposed that Victoria would produce sufficient for her own consumption, were imported in 1898 to the number of 18,516 gross, and to the value of £6,773, although subject to an import duty of 10 per cent.; and exported to the number of 3,868 gross, and to the value of £2,399, the difference in favour of the former being 14,648 gross in number, and £4,374 in value. The following are the imports and exports of eggs in the five years 1894 to 1898 :— Trade in eggs.

QUANTITY AND VALUE OF EGGS IMPORTED AND EXPORTED, 1894 TO 1898.

Year.	Imported.		Exported.		Net Imports+ Net Exports−	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	gross.	£	gross.	£	gross.	£
1894 ...	1,987	819	2,639	974	−652	−155
1895 ...	1,027	395	3,094	1,496	−2,067	−1,101
1896 ...	13,212	4,984	2,479	1,131	+10,733	+3,853
1897 ...	15,930	5,765	7,035	3,913	+8,895	+1,852
1898 ...	18,516	6,773	3,868	2,399	+14,648	+4,374

NOTE.—In 1894 and 1895 the duty on eggs imported into Victoria was 2s. per gross, but from 1896 to 1898 the rate of duty was 10 per cent. *ad valorem.*

1361. Of every 1,000 acres cultivated during the past season, 555 acres were placed under wheat, 69 under oats, 12 under barley, 11 under potatoes, 146 under hay, and 207 (including 133 in fallow) under other tillage. The following table shows the proportion that Proportion of land under each crop.

the land under different crops has borne to the total area under tillage during the last six years, and for every tenth year commencing with 1871 :—

PROPORTION OF LAND UNDER EACH CROP TO TOTAL UNDER CULTIVATION, 1871 TO 1899.

Year ended March.	Proportion to the Total Land under Tillage of that under—					
	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Other Tillage.*
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1871	31·26	16·43	2·16	4·29	17·95	27·91
1881	48·97	6·72	3·43	2·25	12·51	26·12
1891	43·17	8·33	3·31	2·03	15·57	27·59
1894	48·67	7·25	1·63	1·36	13·65	27·44
1895	46·09	8·94	3·27	1·89	16·53	23·28
1896	48·98	8·86	2·72	1·52	16·10	21·82
1897	51·02	13·54	2·01	1·41	13·45	18·57
1898	50·84	9·03	1·14	1·35	17·79	19·85
1899	55·55	6·86	1·23	1·06	14·58	20·72

Minor crops.

1362. In addition to the principal crops of which mention has been made, various descriptions of minor crops are also raised. It is not, however, presumed that the whole of such crops, or the full measure to which they are grown, is recorded by the collectors. It is certain that they are often raised in gardens, in which case the different kinds would not be distinguished in the returns. It is also probable that they may be sometimes grown upon allotments of one acre in extent, or even less, which are not taken account of. The following list must, therefore, be looked upon as indicating, during the five years ended with 1898–9, the nature of certain minor crops grown in Victoria rather than the extent to which those crops have been cultivated :—

MINOR CROPS,† 1895 TO 1899.

Nature of Crop.		1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
Artichokes ...	acres ...	...	...	...	...	3
	tons ...	...	...	...	...	9
Beet, carrots, parsnips ...	acres ...	415	417	355	443	445‡
	tons ...	4,655	3,207	3,220	2,115	2,829‡
Beans (French) ...	acres ...	4	10	2	58	25
	tons ...	4	12	1	195	35
Broom-millet ...	acres ...	189	20	4	9	40
	fibre, cwt. ...	864	77	...	80	309
	seed, bush. ...	1,327	360	50	134	456
Buckwheat ...	acres ...	16	7	2	§1	2
	bushels ...	157	94	24	...	43

* Including land in fallow, the proportion in 1899 being 13·34.

† Exclusive of those grown in gardens. It is estimated there are over 1,500 acres planted with oranges and lemons, but such plantations are seldom distinguished separately, being included under orchards.

‡ Including turnips in 1898-9.

§ Reported to have failed.

Minor Crops* 1895 to 1899—*continued.*

Nature of Crop.		1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
Canary seed ...	acres ...	93	12	16	...	...
	bushels ...	342	13	22	...	...
Cauliflowers and cabbages	acres ...	35	466	399	397	427
	dozens ...	18,747	143,878	111,834	112,440	140,118
Chicory ...	acres ...	120	69	120	117	159
	tons ...	868	239	508	117	201
Durra ...	acres ...	5	...	...	...	...
Flax ...	acres ...	452	1,969	377	108	72
	fibre, cwt. ...	670	497	171	37	60
	linseed, cwt.	2,297	3,044	544	91	260
Hemp ...	acres ...	262	140	...	...	...
	fibre, cwt. ...	801	11	...	...	...
	seed, cwt. ...	751	214	...	...	...
Grass and clover seeds	acres ...	2,198	2,899	2,906	3,301	2,220
	bushels ...	22,466	22,239	32,433	30,522	23,078
Green peas ...	acres ...	32	376	265	259	706
	tons ...	39	383	286	282	850
Hops ...	acres ...	668	791	945	918	847
	lbs. ...	515,536	441,952	692,496	406,336	767,088
Maize ...	acres ...	5,675	7,186	9,752	10,847	10,647
	bushels ...	294,555	351,891	566,027	515,025	587,064
Mangel-wurzel ...	acres ...	1,236	1,067	823	876	1,008
	tons ...	19,005	10,160	11,388	5,584	9,701
Mustard ...	acres ...	24	56	63	†97	20
	cwt. ...	68	107	134	...	38
Onions ...	acres ...	3,178	3,780	3,735	3,751	4,472
	tons ...	17,377	10,759	11,256	11,217	17,308
Opium poppies ...	acres ...	...	4	2	...	3
	lbs. of opium	...	10	5	...	12
Osiers ...	acres ...	3	8	4	4	9
	tons ...	8	10	8	7	12
Peas and beans	acres ...	37,045	32,766	21,612	11,959	11,115
	bushels ...	716,193	287,200	148,956	137,452	206,165
Pumpkins ...	acres ...	335	393	241	334	807
	tons ...	2,710	3,208	2,804	3,394	5,774
Rape for seed ...	acres ...	81	273	62	186	809
	bushels ...	508	1,636	767	1,216	3,735
Rumax ...	acres ...	1	...	...	..	...
Rye ...	acres ...	1,207	947	1,031	1 859	2,131
	bushels ...	18,378	8,524	14,392	23,785	31,196
Seeds (agricultural and garden)	acres ...	98	77	45	66	58
	cwt. ...	422	258	68	92	129
Sugar-beet ...	acres ...	38	14	15	1,479	1,677
	tons ...	505	192	206	10,281	12,097
Sunflowers for seed	acres ...	16	475	27	4	19
	bushels ...	724	7,624	444	37	624
Tobacco ...	acres ...	1,412	2,029	1,264	522	78
	cwt. ...	7,155	15,223	7,890	3,419	190
Turnips ...	acres ...	307	228	301	189	.. ‡
	tons ...	2,684	1,462	2,127	851	...‡
Vetches and tares for seed	acres ...	57	47	...	...	1
	bushels ...	647	464	...	...	12
Vines ...	acres ...	30,307	30,275	27,934	27,701	27,568
	wine, galls. ...	1,909,972	2,226,999	2,822,263	1,919,389	1,882,209

* For footnote (*) see previous page.
† Reported to have failed.
‡ Included with beet, carrots, parsnips.

Increase or decrease of minor crops.

1363. In 1898–9, as compared with any of the previous four years, an increase will be observed in the area under and in the produce of green peas, pumpkins, rape, rye, and sugar-beet; in the area only in the case of beet, carrots and parsnips, chicory and onions, and in the produce only of hops and maize; but a falling-off in both area and produce of mustard, tobacco, and vines, and in the area only of flax, peas, and beans.

Hops.

1364. Hops but little inferior to Kentish are grown in Victoria, and the comparative failure for several successive seasons of this crop in the United Kingdom gave a considerable stimulus to that industry, commencing about 1882–3 when over 1,000 acres were under cultivation, or nearly twice the area in the preceding year. The maximum was reached in the following year, when 1,758 acres were under that crop and 1,760,000 lbs. were produced, but in 1884–5 there was a slight, and in 1885–6 a further considerable, decline—both in the area under hops and the quantity produced. Ever since 1884–5, the area has been under 900 acres, with the exception of 1896–7 and 1897–8, when that area was exceeded; but the largest crop gathered since 1884–5 was in 1890–91, the next in 1892–3, and the next in 1898–9.

Tobacco.

1365. At a very early period of the colony's history, it was the custom of the pastoral occupiers of the soil to cultivate tobacco in small quantities for the purpose of making a decoction wherein to dip their sheep for the cure of the disease called "scab." That complaint has ceased to exist amongst the Victorian flocks; but of late years tobacco has been grown for the purpose of manufacture into an article suitable for the use of man. For several years past a parasitic fungus, locally called "blue mould," has caused serious damage to the crop, so much so as to cause many tobacco-growers to abandon the industry. It appears that "blue mould" is unknown in the United States, where a very large area is under tobacco culture. Experiments have been made with the object of destroying the spores of the fungus, and plants grown from seed introduced from Java are said to be absolutely free from the disease. It is considered by experts that if this scourge could be removed and the farmers instructed in the proper method of curing the leaf, a prosperous future would be in store for the tobacco industry, especially as there are large tracts of land in the North-eastern and other parts of the colony well suited for its growth. With this object, a tobacco expert is engaged in giving instruction in the growing, the curing and preparing of tobacco leaf for the market, and experiments are being made by the Vegetable Pathologist in connexion with the treatment of "blue mould." If this work prove successful, no doubt a fresh impetus will be given to the industry, which has at present shrunk to its lowest dimensions.*

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* The Government tobacco expert (Mr. Bondurant) is of opinion that the outlook of the tobacco industry has since become more promising, the quality of the tobacco grown having much improved in 1899 and 1900; and that, with careful and intelligent management, it ought to become in the near future one of the most profitable agricultural pursuits in Australia. In a recent period of eighteen months about 150 tons of Victorian-grown leaf (unstemmed) was exported and placed on the English market, nearly the whole of it being purchased by the Manchester Co-operative Society, which was not only perfectly satisfied with it, but has invited further shipments on a large scale. A central warehouse at Wangaratta, in the midst of the tobacco districts, is now being fitted by the Government as a stemmery, for preparing the crops of growers into strips for the English market.

Tobacco consumed in Australasia.

1366. The total quantity of tobacco consumed in Australia and Tasmania in 1898 amounted to 8,933,000 lbs., of which 2,403,000 lbs. were used in Victoria,* 3,431,000 lbs. in New South Wales, 1,360,000 lbs. in Queensland, and the balance in the other three colonies. Of the quantity consumed in Victoria 1,288,000 lbs. were locally manufactured —chiefly from imported leaf, 2,225,000 lbs. in New South Wales, and 573,000, nearly all from home-grown leaf, in Queensland. During the five years ended with 1898, the average consumption per head varied from $1\frac{4}{5}$ lbs. in South Australia and Tasmania to $4\frac{3}{4}$ lbs. in Western Australia, and it averaged for the six federating colonies 2·4 lbs.—or rather more than a third of a pound higher than in Victoria. The following are the averages for these colonies during the period referred to:—

CONSUMPTION OF TOBACCO PER HEAD IN AUSTRALASIAN COLONIES.—AVERAGE OF FIVE YEARS, 1894–8.†

	lbs.		lbs.
Western Australia ...	4·74	Tasmania	1·80
Queensland	3·05	South Australia ...	1·78
New South Wales ...	2·50		
Victoria	2·06	Average ...	2·40

Production and consumption of sugar in Victoria.

1367. In Victoria, in 1898, the total consumption of sugar of all kinds, including glucose and molasses, amounted to 55,951‡ tons, equivalent to nearly 107 lbs. per head, as against $97\frac{1}{4}$ lbs. according to the average of the last five years. Of this quantity, 53,478 tons consisted of sugar proper, 1,544 tons of molasses, and 929 tons of glucose. Of the sugar proper only 617 tons (from beet) were entirely produced within the colony; whilst the whole of the remainder (of which only $\frac{1}{2}$ ton was beet sugar) was imported, although 39,892 tons of it were refined in the colony. The duty on cane sugar imported is £6 per ton, and on beet and other sugar £12 per ton; but on cane sugar refined in the colony in bond only £5 15s. per ton is charged on being entered for home consumption. Of 53,263 tons (gross) of sugar proper imported duty paid, 46,525 came from Queensland, 4,118 from Mauritius, 1,481 from Hong Kong, 330 from Java, and 809 from other countries. In Victorian refineries in 1898, 47,779 tons of raw cane sugar were treated, and 44,544 tons of refined sugar produced—or 93 per cent. of the quantity treated, whilst of the latter 7,771 tons were exported during the year, chiefly to New South Wales, Tasmania, and Western Australia, the balance being required for home consumption. The average wholesale price of refined sugar in the colony in 1898 was £20 15s. per ton, and the retail price $2\frac{1}{2}$d. per lb. (equivalent to £23 6s. 8d. per ton).

Prospects of sugar-beet industry in Victoria.

1368. Much consideration has been given to the subject of the cultivation of sugar beet on a large scale in Victoria, for which its soil and climate in many parts are well adapted, and numerous experiments have been conducted by the Agricultural Department, under the

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* See also paragraph relating to tobacco factories, *post*.

† For particulars of the production, and consumption per head, of tobacco in various countries, see issue of this work for 1893, Vol. II., paragraphs 351 and 352; and for consumption of sugar per head, see same work, paragraph 356.

‡ Quantity duty paid, less drawbacks.

supervision of the agricultural chemist (Mr. A. N. Pearson). The advantages of this industry are, in addition to the economical production of sugar, the provision of succulent fodder for cattle at a time of year when it is most required, the production of manure for the land, and the placing at the disposal of the farmers of an additional crop for rotation—beet being grown once every three or four years, as well as a large increase in the yield of all crops grown, due to the more perfect cultivation of the soil. As the result of numerous experiments summarized later on, Mr. Pearson considers that there is every prospect of obtaining in certain parts of Victoria, with proper treatment and after a little practice, an average yield of about 20 tons of roots (dressed and washed) per acre, containing at least 14 per cent. of sugar. The experiments for one season at Port Fairy and Bacchus Marsh gave an average of 15 per cent. of sugar. In several cases experimental crops grown on a large scale have contained over 3 and 4 tons of sugar per acre. As to economical considerations, it is first to be noted that sugar, like butter, carries with it but little of the plant-foods out of the soil, and consequently most of the richness taken out of it by beets may be replaced by the pulp and refuse from the sugar factories; and, secondly, that beet matures after only six months' growth, and a yield is obtained from the whole area sown each season; whereas cane takes over twelve months to mature, and only 3 out of every 4 acres each season are productive. As to the profits of the industry, assuming an average yield of 15 tons of dressed roots per acre, and the price to be 16s. 6d. per ton, together with $3\frac{3}{4}$ tons of tops and collars at 5s., the return per acre would be £13 6s. 4d.; and if from this be deducted the cost of production, estimated by Mr. Pearson at £8 11s.* (including £1 16s. for manuring after first year, £3 10s. for cost of cultivation, £2 for harvesting and cartage, and £1 5s. for interest on capital), the net profit would be £4 15s. 4d. per acre. And, of course, this would be much increased by higher yields, and by the production of beets containing more than 15 per cent. of sugar. The following is an epitome of the results obtained from experiments made by or under the direction of Mr. Pearson:—

BEET-GROWING EXPERIMENTS IN VICTORIA.

The growth of beet-root and the establishment of the beet-sugar industry has received a good deal of attention from this office. Official experiments have been carried out at Bacchus Marsh, Bellarine, Berwick, Childers, Maffra, Port Fairy, and Riddell's Creek. Of these the most successful were at Port Fairy, in the years 1893–5. In a dry year the smallest crop obtained in this place was over 11 tons to the acre, and the heaviest was $19\frac{1}{3}$ tons. In 1894–5 a field of $8\frac{1}{6}$ acres in this locality produced 176 tons of dressed and washed roots, and $44\frac{1}{2}$ tons of tops and collars; that is to say, $21\frac{1}{2}$ tons of roots to the acre, and $5\frac{1}{2}$ tons of tops and collars. The average of several analyses of these roots gave the following results:—

Sugar	14·97 per cent.
Organic impurity	1·79 "
Ash	·53 "
Purity	86·5°
Saline co-efficient	28·0
Average weight of roots	1lb. $5\frac{3}{4}$ozs.

* In South California it is only £5, exclusive of interest on capital; and in 1894, with an unfavorable season, and a yield of only 12 tons per acre, the net return, owing to the high percentage of sugar (16), was £8 per acre.

Thus the crop contained $3\frac{1}{4}$ tons of sugar to the acre, as compared with $1\frac{1}{4}$ tons, the average in the beet crops of Europe, and $1\frac{3}{10}$ tons per acre produced from the cane plantations of Queensland.

The actual cost of producing and harvesting this crop was as follows :—

	£	*s.*	*d.*	
Preparing seed-bed and planting ...	1	5	$10\frac{1}{2}$	per acre
Thinning and hoeing	2	1	$10\frac{1}{2}$	"
Harvesting, topping, and carting ...	3	9	4	"
Seed	0	8	0	"
Manure	2	8	0	"
Interest on farm	1	0	0	
	£10	13	1	

With labour-saving appliances the cost would have been less.

The value of the roots at 13s. per ton, and of the tops and collars at 5s., would have been as follows :—

	£	*s.*	*d.*	
$21\frac{1}{2}$ tons dressed roots, @ 13s. ...	13	19	6	per acre
$5\frac{1}{2}$ tons tops and collars, @ 5s. ...	1	7	6	"
	£15	7	0	
Cost of production	10	13	1	
Profit per acre	£4	13	11	

Closely similar results were obtained from 5 acres at Bacchus Marsh.

There have been several cases of individual roots containing over 20 per cent. of sugar.

Besides the official experiments, there have been several unofficial ones. Altogether, roots have been sent to this office for analysis from 43 districts during the last thirteen years. In some of these districts the experiments in beet-growing were continued for three seasons.

The general outcome of these trials has been to show that there are localities in the southern regions of Victoria which are peculiarly adapted for beet-growing, and where, with ordinary care, unusually large crops of roots, specially rich in sugar, may be regularly obtained. On the other hand, it has been found that other localities are liable to some irregularities of rainfall at sowing time, which render necessary certain precautions to insure the regular germination of the seed.

In 1894 an offer was made by the Australasian Sugar Refining Co.—now amalgamated with the Colonial Sugar Refining Co —to purchase evaporated beet-juice at a valuation which, under existing fiscal conditions, would have admitted of its profitable production at comparatively small evaporating factories. In consequence of this offer experiments in evaporating beet-juice were carried out at Port Fairy and Bacchus Marsh in the season 1894–5. An experimental plant was erected by the Government under the direction of this office, and the produce of 8 acres at Port Fairy and 5 acres at Bacchus Marsh was operated upon. Owing to causes of a non-technical character the experiment was delayed for some months into a season which made it impossible to conduct the work on an economic basis. But the trial was interesting, as having demonstrated the possibility of evaporating beet-juice on a practical scale without injury. The evaporation was done by means of an evaporator specially invented for the purpose, and consisting essentially of revolving cylindrical rollers, 6 feet in diameter, heated internally by steam, the juice being taken up as a thin layer on the exterior of these rollers on the one side, and renewed by scrapers in an evaporated state on the other side. Samples of evaporated juice obtained in this way were analyzed by Mr. Steel, chemist to the Colonial Sugar Refining Co., also in this office, and by the chemist

to the Maffra Beet Sugar Co., the last-named having analyzed the material three years after storage. The following were the results obtained by each analyst :—

	Government Agricultural Chemist.	Colonial Sugar Refining Co.	Maffra Beet Sugar Co. (after three years' storage.)
Cane Sugar	81·00	81·20	80·30
Invert Sugar	·55	1·02	1·73
Soluble Ash	2·73	4.88	
Lime *	1·04		
Sand	·31	·10	3·52
Total	4·08	4·98	
Organic impurity, separable by filtration	·20	—	—
Organic impurity, to a great extent separable by defecation	6·68	6·77	8·02
Moisture	7·49	6·03	6·43
Purity (not counting lime) ...	88·85°	—	—
Purity (counting lime)	87·85°	86·5°	85·82°

After the amalgamation of the two sugar refining companies the offer to purchase this material was withdrawn ; but in view of the fact that such a material could be utilized for keeping a beet factory at work continuously, instead of during only three or four months in the year, the results of the experiment may at some future time demand further attention.

Mode of cultivating sugar beet.

1369. The soil adapted for the growth of sugar beet should be deep, crumbly, and moist—a dark loam being the best ; whilst first-class potato, turnip, and mangold soils, if comparatively free from saline matter, are especially suitable. The roots should not exceed 1½ lbs. in weight, small roots being the richest in sugar, a result to be attained by planting as close as the richness of the soil will allow. The manuring, which, of course, must vary according to the quality of the land, generally recommended by Mr. Pearson for Victorian soils is, for the first year, ⅘ cwt. of concentrated superphosphate at 13s. 6d. (or 2 cwt. ordinary superphosphate at 5s.) and 1½ cwt. of sulphate of ammonia at 13s. 6d. per cwt. per acre for a light dressing ; or twice those quantities for a heavy dressing ; but after the first year much less will be required, owing to the great value as manure of the refuse of the crops. The ground should be ploughed or broken up not less than 12 inches deep, and manured to a depth of 6 inches ; whilst the seed should be planted in rows 14 to 18 inches apart—according to richness of soil—in holes from 7 to 10 inches apart and ½ inch deep. The best time for sowing is from July to September, and the roots mature in from five to eight months†; and, in Victoria—according to the result of recent experiments in the Maffra district—may be kept in the soil for five to six months after the commencement of maturity, without loss of purity, and with considerable gain of sugar per acre. Mr. Pearson reports that it has recently been ascertained, by experiments in the Maffra district, that beet may be sown in that district as early as the end of June ; and that the early sown crops grow well, notwithstanding winter frosts, and by the month of September are so far advanced as to be practically independent of spring rains or drought. Beets require plenty of moisture

* Purposely added.

† In South California, 18 to 20 inches between the rows and from 6 to 12 inches between the plants is practised ; and the beets generally mature in from four and a half to five months. Analysis of sample roots before cropping is strongly recommended.

during the first two months of growth; but in the later stages the formation of sugar is said to be especially favoured by dry weather and an unclouded sky. The favorite varieties for planting in California are the Vilmorin Ameliorée and the Klein Wanzelebener.

Beet sugar factory.

1370. The first attempt to establish the beet-sugar industry in Victoria was made about the year 1873, when a stone building (used as a wool shed) at Anakies, near Geelong, was leased for the purpose by a company, which got the machinery made in the colony from pictures out of books. The company grew 3,000 tons of roots, which had to be stacked in the open, where it was partly eaten by cattle, until the erection of the machinery. From this was extracted 90 tons of sugar, of which, however, only 11½ tons were refined and were sold at auction at Melbourne at £37 per ton—the top market price for cane sugar. A great deal of sugar was also carried away in the molasses, from which spirit was distilled on the premises.* About the year 1875, the machinery, which had cost about £20,000, was purchased for £3,500, by Mr. W. Murray Ross and removed to a new building erected at Rosstown, near Melbourne; but there the enterprise was suspended, owing to his inability, unaided, to command the necessary capital. He received no assistance, though he built the Rosstown Junction Railway, connecting with all the other railways, to bring beets, at a cost of £100,000. In 1894 a fresh effort was made to start the industry, and Parliament in 1895 passed an Act authorizing the Government to advance £2 for every £1 supplied privately for building and equipping sugar-beet factories. The sites which had been suggested for the purpose were Maffra (in Gippsland), and Port Fairy (in the Western District). The former site was selected for the next factory, which was erected by the Maffra Beet Sugar Company (which had a paid-up capital of £23,500), with Government assistance, at a cost of £72,000, viz.:—£1,000 for land, £27,000 for buildings, and £44,000 for machinery and plant. The buildings are of substantial construction, equipped with excellent machinery of the most modern type, capable of treating from 350 to 420 tons of beet per diem, or over 40,000 tons per season; whilst room is afforded for expansion to 60,000 tons with additional machinery. The steam power employed is derived from five sets of boilers, each having a heating surface of 1,614 square feet; whilst there are twelve steam-engines with a combined horse-power of 600 to 700, of which four are driving engines, two for pumping feed water, and six for pumping water, juice, vapours, and air respectively. The initial steam pressure is six and a half atmospheres, and the exhaust steam is utilized for heating purposes. The company commenced its first campaign on the 21st April, 1898, which was completed on 19th June, thus occupying 60 days, although beets were put through for only two-thirds of that period, when the machinery was barely worked at its minimum capacity. The quantity of clean dressed roots treated by the factory (which averaged about

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* Mr. Ross, to whom the editor is indebted for these particulars, states that, from the molasses found on the premises, he distilled 2,500 gallons of 60 per cent. o.p. spirits of an excellent, pure and emollient character, which were sold at 3s. 6d. per gallon for blending. He considers it admirably suited for making brandy as in France, by steeping in it the lees, skins, and stalks of the vineyard, and re-distilling it.

† Including 232 tons of bad topping and dressing not paid for. The dirty dressed roots as received at the factory weighed 10,281 tons in 1898, and 7,735 tons in 1899.

16 oz. each) was 9,110† tons in 1898, and 6,562 tons in 1899 ; and the granulated sugar produced was 617 tons in the former and 348 tons in the latter year—being equivalent to only 6·76 and 5·3 per cent. respectively of the weight of beets treated. The price realized in 1898 for the first product sugar (polarizing between 99·3 and 99·85 per cent.) was £20 15s. 11d. per ton. In the former season there was also a residue of about 500 tons of molasses (equal to the unusually high proportion of 5½ per cent. of the roots) worth £1 1s. per ton at the factory, and as well as 4,000 tons of pulp—taken gratis by the growers, or sold to outsiders as feed for stock at the low rate of 2s. per ton in order to introduce the article. No process was adopted for recovering sugar from the molasses. The price per ton paid for the roots in 1898 varied according to the percentage of sugar, from 8s. for 12 per cent. to 19s. for 18 per cent.—the scale rising by 1s. for every additional ½ per cent. up to 18s. for 17 per cent. ; whilst the average price paid for the season was 11s. 10d. per ton—the roots containing on the average 13·78 per cent. of sugar ; it is stated, however, that the percentage of sugar was as high as 16 per cent. early in the season, but through rain and sprouting it fell in the latter portion to as low as 12. In 1899 a different scale was adopted, being higher for the lower, and lower for the higher percentage beets. The average analysis, during the first season, of the diffusion juice as resulting from the diffusion battery just before purification, was as follows :—Brix, 17·42 per cent. ; sugar, 13·97 per cent. ; purity, 80·22 per cent. The average number of hands employed during the campaign of 1898 was 204, and 240 during that of 1899, all being males over the age of 15 years ; whilst the wages paid was 6s. for boys, and 8s. 6d. for men per shift of 10½ hours. The small supply of roots in two successive bad seasons being quite inadequate for the successful working of the factory, the latest attempt at beet sugar production in Victoria also resulted in failure. The factory was taken over on the 13th November, 1899, by the Government, which was creditor for £66,000 on account of advances to the company ; and has since been temporarily closed, as a guarantee for the cultivation of a sufficient area of sugar-beet could not be obtained. The cause of failure, according to the directors of the company, was the absence of the necessary deep ploughing in autumn and winter fallowing, together with abnormally dry springs and abnormally wet autumns. To these reasons may also be added inexperience or neglect on the part of the farmers, who, whilst cultivating nearly two-thirds of the total area, obtained (in the first season) less than half the average crop yielded on land cultivated by a sugar-beet cultivating company (under contract to the sugar company) viz., 9 $\frac{1}{10}$ tons per acre. Such an average over the total area of 1,550 acres would have produced over 14,000 tons of roots instead of less than the actual 9,000 tons, and would probably have saved the failure of the factory.

Area under sugar beet in Victoria

1371. The area (according to the Agricultural Statistics) under sugar beet in the colony was 1,479 acres in 1897–8, and 1,677 acres in 1898–9, whilst the yield of uncleaned dressed roots was 10,281 tons in the former and 12,097 tons in the latter year. The directors of the Maffra Sugar Company, however, state that in 1896–7 the area

cultivated at Maffra was 1,550 acres, from which a yield of 9,030 tons of clean dressed roots was obtained, or an average of 5·8 tons per acre, although land cultivated by the company gave a yield of over 9 tons per acre. It should be pointed out, however, that several portions of the areas sown failed, owing to exceptionally unfavorable seasons, hence the acreable yields indicated cannot be regarded as a fair indication of a general average.

Cost of sugar production at Maffra (Victoria).

1372. According to a Report made to the Government on the beet sugar industry at Maffra by Mr. C. Van de Velde*, the cost of cultivation (including rent, harvesting, topping, and cartage, but not manure) of beet-root per acre at Maffra under present circumstances is £8 0s. 10d. per acre, and assuming a crop of 13 tons (containing 15 per cent. of sugar) at 16s. 6d., the gross yield would be £10 14s. 6d., resulting in a net profit of £2 13s. 8d. per acre, which would be raised to £7 18s., if no allowance were made for that portion of the work which could be performed *gratis* by the farmer's family. This is compared (by means of estimates furnished by the most competent farmers of the district), with a net profit per acre of £2 0s. 9d. from onions and 3s. 1d. from wheat, but a loss, at current prices, of £1 11s. 6d. from potatoes. Although 15 per cent. of sugar in the roots is assumed as a fair average, the actual yield of granulated sugar is set down at only $7\frac{1}{2}$ per cent., whilst a yield of 7 per cent. is allowed for molasses, and $1\frac{1}{4}$ per cent. for after-products. It is pointed out, however, that 38 per cent. of sugar could be recovered from the molasses by the Steiffen process, with a profit of £3 10s. per ton of molasses (at present only worth £1 in limited quantities) by the addition of special machinery, which could be obtained from Germany and erected at a cost of about £4,000. By the alternative methods the cost of manufacture per ton of granulated sugar is computed as follows for different supplies of roots varying from 18,000 to 60,000 tons of roots per campaign, allowance being made for salaries and wages, material, fuel, repairs, insurance, and contingencies, but apparently not for interest on capital or depreciation :—

ESTIMATED COST OF MANUFACTURE OF GRANULATED SUGAR PER TON AT MAFFRA.

Tons of Roots per Campaign.	Ordinary Process.			With Steiffen's Process added.		
	£	s.	d.	£	s.	d.
18,000	17	8	3	14	17	2
25,000	16	3	10	13	12	10
40,000	15	1	5	12	10	5
60,000	14	0	10	11	9	10

Sugar production and consumption in Australia.

1373. Queensland and New South Wales are the only colonies which at present produce sugar at a profit in Australia, whilst only the former has a surplus available for export. The former produced 163,734 tons in 1898, as against 97,916 tons in 1897, and 100,774 tons in 1896; whereas the latter manufactured only 23,658 tons in 1898. In Queensland the total area under cane was 111,012 acres in 1898, but, deducting 27,308 acres which were unproductive and 1,313 acres

* Parliamentary Paper No. 56 ; session, 1899.

under plants, the productive area—the cane from which was crushed—amounted to only 82,391 acres,* or 74 per cent. of the whole. Based on the productive area, the yield of cane was 12·3 tons per acre in 1897, and 18·7 tons in 1898; whilst that of sugar per acre was 1·50 and 1·99 tons in the two years respectively. In 1898 the quantity of cane required for a ton of sugar varied in different districts from 12·83 to 8·24 tons; whilst the actual sugar obtained per productive acre varied from 1·49 to 2·79 tons—the latter being reached at Rockhampton. The present annual requirements of sugar by the six federating colonies of Australia—based on the estimated population in 1899, and the average consumption of the five years 1894–8—were as follow:—Victoria, 51,300 tons; New South Wales, 56,200 tons; Queensland, 30,500 tons; South Australia, 15,600 tons; Western Australia, 7,500 tons; Tasmania, 6,800 tons; making a total for Australia and Tasmania of 167,900 tons. As Queensland and New South Wales produced about 122,000 tons in 1897 and over 187,000 tons in 1898, it is evident that under federation those colonies will readily supply the existing requirements of the Federation, but it is a question how far they will be able to keep pace with the growth of population in the future.† The following is the consumption per head in each of the Australian colonies:—

ANNUAL CONSUMPTION OF SUGAR PER HEAD IN AUSTRALIAN COLONIES, 1894–8.

	lbs.		lbs.
Queensland	138·01	New South Wales ...	94·24
Western Australia ...	99·50	Tasmania	86·84
Victoria	97·34		
South Australia ...	97·03	Australia	101·03

Sugar production and consumption in the United States.

1374. In the United States in 1891–2, there were 4,977 licensed producers of sugar, of whom 4,240 extracted it from maple, 727 from cane, 6 from beet (of whom 3 were in California), and 4 from sorghum; whilst the quantity of sugar manufactured was nearly 185,000 tons, of which 164,000 were from cane, 5,400 from beet, 500 from sorghum, and nearly 15,000 from maple. Seven years later (in 1898–9) the production of cane sugar increased to 245,500 tons, and that of beet sugar to 32,500 tons,‡ making a total (exclusive of maple and sorghum sugar) of 278,000 tons. Rapid progress is thus being made in the beet sugar industry, which is established chiefly in California and Michigan; and no fewer than sixteen new factories were opened in 1898–9, two capable of treating 3,000 and 2,000 tons, respectively, and the others from 350 to 700 tons, of roots per diem. In 1891–2, the total consumption of sugar in the States amounted to 4,025½ million lbs. (equal to 1·8 million tons), of which only 414 million lbs., or little more than 10 per cent., was derived from home products; whilst 74½ million lbs. were manufactured from imported molasses, and the balance imported. The gross imports in 1897–8 amounted to 2,690 million lbs. (equal to about 1·2 million tons), valued at £12,598,500, of which nearly 622 million lbs. came from the Dutch East Indies, 500 from Hawaii, 440 from Cuba, and 439 from other

* In 1896 the area was 66,640 acres.

† The nearest sugar-producing British colony to Australia is Fiji, which in 1898 had 22,078 acres under sugar cane, which produced 34,156 tons of sugar.

‡ For 1899–1900 the output is set down at 72,944 tons. Beet sugar is produced chiefly in California, Michigan, Utah, and Nebraska.

West India Islands, 239 (chiefly beet) from Europe, 165 from British and Dutch Guiana, 139 from Brazil, and the remainder from other countries. The average consumption per head in the years 1894–8 was 63·2 lbs.

1375. The following is the estimated visible production of cane sugar for 1898–9 in the principal sugar-producing countries of the world :— Cane sugar in various countries.

CANE SUGAR PRODUCED IN VARIOUS COUNTRIES, 1898–9.

	Tons.		Tons.
Java	689,281*	West Indies—*continued*—	
Australia and Polynesia—		(French) Martinique ...	34,000*
Queensland	163,734	Other	20,000
New South Wales ...	23,658	Mauritius	186,487
Fiji Islands	34,156*	Brazil	151,495
Hawaiian Islands ...	252,506	Peru	110,000*
United States (Louisiana) ...	245,511	Egypt	90,822
West Indies—		British Guiana	81,535*
(American) Cuba ...	345,261	Philippine Islands ...	76,000*
,, Puerto Rico ...	53,825	Argentine Republic ...	72,000
(British) Trinidad ...	53,436*	Haiti and San Domingo ...	50,000
,, Barbados ...	40,876*	Réunion	37,781
,, Jamaica ...	27,000	Central America	20,000
,, Antigua and St. Kitts	22,000	Other Countries	33,000
(French) Guadeloupe ...	40,000	Total Cane Sugar ...	2,954,364

1376. Consequent upon the indirect subsidies by which the industry is fostered, beet sugar, not only for internal consumption but also for export, is manufactured at a considerable profit in several European countries. The following is a statement of the estimated quantity of beet sugar made during the three years 1896–7 to 1898–9 in the different countries in which that product is manufactured. Beet sugar in European countries.

BEET SUGAR PRODUCED IN VARIOUS COUNTRIES, 1896–7 TO 1898–9.† (TONS.)

Countries.	1896–7.	1897–8.	1898–9.
Germany	1,836,536	1,852,857	1,721,718
Austria	934,007	831,667	1,051,290
France	752,081	821,235	830,132
Russia	728,667	738,715	776,066
Belgium	288,009	265,397	244,017
Holland	174,206	125,658	149,763
Other European Countries	202,990	196,245	209,115
Total Europe	4,916,496	4,831,774	4,982,101
United States	37,536	40,398	32,471
Total Beet Sugar ...	4,954,032	4,872,172	5,014,572

1377. Careful estimates of the bounties in force in European countries have been made in the United States, which imposes a countervailing duty on beet sugar imported thereinto. The following Bounties on sugar in Europe.

* Exports only.
† Taken from the United States Year-Book of the Department of Agriculture for 1899.

are the results of such estimates for 1898, as given in Mr. Martineau's paper:—

BOUNTIES ON BEET SUGAR IN EUROPEAN COUNTRIES, 1898.

Country.	Class of Sugar.*	Rate of Bounty per ton.
		£ s. d.
Austria-Hungary	93 % (P)	1 3 4
	93–99½% (P)	1 5 0
	99½% (P)	1 15 6
Germany	90–98% (P)	1 5 0
	98–99½% (P)	1 10 0
	99½% (P)	1 15 6
France	65–98% (A)	4 8 9
	Hard dry refined	4 14 0
	98% (A)	4 11 0
Holland	Under 98% (A)	1 18 0
	98% (A)	1 10 0
	Hard dry refined	0 5 0
Belgium	Raw	1 16 8
	Refined	2 3 9
Russia	Up to 99% (P)	3 7 9
	88–99% (P)	2 18 6
	75–88% (P)	2 5 6
Denmark	Refined	0 12 8

Increase of world's production of sugar, 1872 to 1899.

1378. The world's production of sugar has made rapid strides within the last 27 years, having increased from under 3 million tons in 1872, to nearly 8 million tons in 1899. Formerly only 38½ per cent. of the supply was from beet, but owing to the great expansion of the beet-sugar industry in Europe under the stimulus of bounties, nearly two-thirds of the world's supply is now the produce of beet-root. In Germany, which of all countries has made the greatest progress in beet-sugar production, the output has gradually increased from 263,000 tons in 1872–3, to 882,000 tons in 1882–3, to 1,231,000 tons in 1892–3, and to 1,853,000 tons in 1897–8; and in France, from 350,000 tons in 1872–3 to 821,000 tons in 1897–8. The following are the figures for three decades, commencing with 1872, and also for 1899:—

WORLD'S PRODUCTION OF SUGAR, 1872 TO 1899.†

(000's omitted.)

Year.	Cane Sugar.	Beet Sugar.	Total.
	tons.	tons.	tons.
1872 ...	1,850,	1,143,	2,993,
1882 ...	2,116,	1,783,	3,899,
1892 ...	2,784,	3,501,	6,285,
1899 ...	2,954,	5,015,‡	7,969,

* (P) indicates percentage according to *polarization*; and (A) according to *analysis*.

† This refers to the visible production only; the internal consumption of India, for example, which is vast and indefinite, being omitted. The figures prior to 1899, as well as some of the other facts and figures in this and other paragraphs on the sugar question, have been derived from a most interesting paper on the "Statistical Aspect of the Sugar Question," read by George Martineau before the Royal Statistical Society, London. See Journal of that Society for June, 1899.

‡ Including 33,000 tons made in the United States.

Price of sugar in Victoria and United Kingdom.

1379. The average wholesale price of refined sugar in Victoria in 1898 was £20 15s. per ton, and the retail price 2½d. (equivalent to £23 6s. 8d. per ton). Making allowance for duty paid (averaging £5 16s. 5d. per ton), the wholesale price, ex duty, was equivalent to £14 18s. 7d. per ton, or about £2 13s. higher than in the United Kingdom. In the latter country the price of raw sugar fell rapidly from over £26 per ton in 1872 to £15 10s. in 1884, and further to as low as £9 per ton in 1897. A corresponding fall also has taken place in refined sugar, as will be seen by the following figures. The present price is believed to be lower than the cost of production, and is possible only by reason of the large bounties granted in Europe :—

AVERAGE PRICE OF SUGAR (EX DUTY) CONSUMED IN UNITED KINGDOM, 1872 TO 1897.

Year.	Price per cwt.		Year.	Price per cwt.	
	Raw.	Refined.		Raw.	Refined.
	s. *d.*	*s.* *d.*		*s.* *d.*	*s.* *d.*
1872 ...	26 2	36 4	1885 ...	13 10	18 2
1873 ...	24 0	33 10	1886 ...	13 0	16 8
1874 ...	22 5	30 8	1887 ...	12 1	15 8
1875 ...	21 2	30 4	1888 ...	13 5	17 6
1876 ...	21 0	29 5	1889 ...	15 5	19 8
1877 ...	25 9	33 9	1890 ...	12 6	16 4
1878 ...	21 6	29 3	1891 ...	12 10	16 6
1879 ...	20 3	27 5	1892 ...	13 0	17 1
1880 ...	21 9	29 3	1893 ...	14 2	18 4
1881 ...	21 9	28 11	1894 ...	11 5	15 6
1882 ...	21 1	28 8	1895 ...	9 7	13 4
1883 ...	20 1	27 2	1896 ...	10 5	13 7
1884 ...	15 6	20 11	1897 ...	9 0	12 3

Cost of sugar production in various countries.

1380. In Germany it requires nearly 8 cwt. of roots to make 1 cwt. of sugar, and, according to the average of 68 factories—4 of which each treated over 100,000 tons of roots, and seventeen over 50,000 tons, whilst 39 of the 68 treated more than the average of German factories, which is 30,000 tons*—the price paid for roots was 10½d. per cwt., and the cost of manufacture 4¼d. per cwt. of roots used. This gives, on the basis of 8 cwt. to the 1 cwt. of sugar, 7s. for cost of roots and 2s. 10d. for the cost of manufacture, or a total of 9s. 10d. per cwt. (or £9 16s. 8d. per ton) of raw sugar produced. Hence beet-sugar could not be sold,

* The average for French factories is 18,600 tons. In Germany in 1898-9 there were 402 sugar-beet factories (besides 55 refineries and 6 molasses extraction establishments), each working upon an average of 30,200 tons of beet-root per season. Nearly half the quantity of roots treated was grown by the factories, which obtained an average of 11½ tons per acre, as against an average of about 12½ tons.

even in the most favoured European country, for less than £10 per ton without the aid of some artificial stimulus. There is evidence, however, that cane sugar can be produced for as low as £8 per ton, as will be seen by the following figures* :—

COST OF PRODUCTION OF SUGAR IN VARIOUS COUNTRIES, 1898.

	Per ton. £ s. d.
Cane Sugar.	
British Guiana, Trinidad } leading estates	9 12 6 to 8 0 6
St. Lucia	8 15 0
West Indies (average)	8 16 8
Queensland (eight estates)	8 6 3 to 8 1 0
Java	8 10 0
Egypt	9 2 0
Hawaii	8 4 5
Beet Sugar.	
Germany	9 16 8

Yield of sugar per acre in various countries.

1381. The following figures, which, with the exception of those for Queensland, are taken from Mr. Martineau's paper,† show the average quantity of sugar obtained per acre in various beet and cane-growing countries. It will be observed that the maximum for beet-growing countries is under $1\frac{3}{4}$ tons in Germany, and the average about $1\frac{1}{4}$ tons, whilst the average for cane-growing countries varies from $1\frac{1}{2}$ to as high as $3\frac{1}{3}$ tons or upwards in Hawaii and Java.

YIELD OF SUGAR PER ACRE.

Country.	Beet Sugar.‡	Country.	Cane Sugar.
	tons.		tons.
Germany	1·71	Trinidad (large estates) ...	1·54
Belgium	1·55	British Guiana (1890–98)	1·82
France	1·38	St. Lucia (central factories)	1·75
Austria	1·09	Barbadoes	1·89
Russia	·80	Queensland (two years, 1897–8)	1·75§
		Hawaii	3·6
Europe	1·235	Java (1896–7)	3·344‖

Yield and price of sugar-beet in Europe

1382. In Europe the beet-sugar industry has attained large dimensions, with a yield of only 11 or 12 tons of beet per acre—which in certain parts of Victoria could, it is believed, be largely exceeded—and a percentage of 12 or 13 of sugar obtained from the roots ; whilst the price paid for roots is considerably higher than that paid in Victoria.

* See Mr. Martineau's paper already referred to.

† See footnote on page 848 *ante*.

‡ The figures for beet sugar refer to the average of the three years ended with 1897-8.

§ Based on productive area only, which is about three-fourths of the total area. This, it is believed, applies to all the averages for cane sugar.

‖ In 1893 there were seven factories, which made 4 tons per acre, and many in 1897 got from $4\frac{1}{2}$ to $5\frac{1}{4}$ tons.

during the two seasons the Maffra sugar factory was in operation, as will be seen by the following averages, obtained from Mr. Martineau's paper already referred to :—

AVERAGE YIELD AND PRICE OF SUGAR-BEET IN FRANCE AND GERMANY.

Country.	Annual Yield per acre, 1886–98.	Percentage of Sugar, 1896-8.	Average Price of Roots per ton in 1898.
	tons.		£ s. d.
France	11·1	11·98	1 1 7
Germany	12·1	12·85	0 17 0

Vines

1383. The area under vines steadily increased from about 4,300 acres in 1879–80 to 30,300 in 1894–5; but has since, owing to the ravages of the phylloxera, fallen off to 27,568 acres in 1898–9. Of the total area in 1898–9, 25,395 acres were bearing and only 2,173 were not bearing. The number of vine-growers returned was 2,453. The grapes gathered amounted to 468,887 cwt.; whilst the quantity of raisins made (chiefly at Mildura), was 2,013,599 lbs.; and of currants, 115,753 lbs. The quantity of wine returned was 1,882,209 gallons, which, although nearly a million gallons less than the maximum previously recorded, viz., in 1896–7, was only about a quarter of a million gallons below the average of the last five years. The wine industry received a temporary check some years since, in consequence of an outbreak of the disease called *phylloxera vastatrix*,* which was then found to be confined to one district in the colony (Geelong), where it was promptly stamped out by the eradication of all vines for a distance ranging from 20 to 30 miles from the centre of that district. The disease has unfortunately obtained a footing in other parts of the colony, with the result that many valuable vineyards have, in terms of the Vine Disease Act, been destroyed, and for which compensation has been paid by Government amounting to £36,794. An account of the visitation of the phylloxera in Victoria, and of the measures taken for its suppression, will be found in the *Victorian Year-Book*, 1888–9.†

Vines and wine-making in United States.

1384. According to the United States census of 1890, the extent of land in that country under vines (about a third of which were non-bearing) was 400,000 acres, of which about half was in the State of California. The quantity of wine made was 24,000,000 gallons, nearly two-thirds of which was made in California. This State also converted 41,166 tons of grapes into raisins, and dried 23,352 tons. The value of the land devoted to vines, and of the plant for wine manufacture, was about 32 millions sterling, of which 18 millions was in California.

* It was first recognised in the Geelong district in 1875 (although probably in existence, unrecognised, eight or ten years previously), and in the Bendigo district in February, 1894. At Geelong the disease was found on only 34 properties, comprising 281 acres, but all vines were destroyed on 2,000 separate properties, and compensation granted varying from £1,042 to 1s.

† Vol. II., paragraph 478. See also issue for 1890-91, Vol. II., paragraph 495.

Area under vines in various countries.

1385. The following is a statement—so far as available—of the area under vines, in some of the principal wine-producing countries of the world :—

AREA UNDER VINES IN VARIOUS COUNTRIES.

(000's omitted.)

Country.	Year.	Area under Vines.	Country.	Year.	Area under Vines.
		Acres.			Area.
Algeria	1897	297,	Greece ...	1893	336,
Australasia ...	1897–8	60,	Italy	1896	8,512,
Austria-Hungary ...	1897	1,236,	Portugal ...	1887	504,
Cape of Good Hope	1898	70,*	Roumania ...	1897	118,
France †	1897	4,230,	Tunis	1888	8,
Germany ...	1897	289,	United States ...	1890	401,

Consumption of wine per head in different countries.

1386. The following is a statement of the production, of the net import or export, and of the consumption of wine in different countries for 1897, and the average for the seven years ended with 1897. It will be observed that France, Portugal, Italy, Spain, and Switzerland, are essentially the wine-drinking countries—consuming between 15 and 24½ gallons per head annually, while the Australasian Colonies at present consume only between 1½ and 2 gallons per head :—

ANNUAL CONSUMPTION OF WINE IN VARIOUS COUNTRIES.‡

Gallons (000's omitted).

Country.	Production.		Net Imports (+). Net Exports (−).		Consumption.			
					Total.		Per Head of Population.	
	1891–7.§	1897.	1891–7.§	1897.	1891–7.§	1897.	1891–7.§	1897.
France	795,529,	711,722,	+132,980,	+126,632,	928,509,	838,354,	24·19	21·98
Portugal	89,833,	121,000,	+ 14,194,	− 17,204,	104,027,	103,796,	20·45	20·40
Italy	646,729,	557,700,	− 37,005,	− 47,916,	609,724,	509,784,	19·77	16·30
Spain	488,482,	339,042,	−140,800,	−117,722,	347,682,	221,320,	18·82	14·70
Switzerland ..	24,535,	22,330,	+ 23,293,	25,828,	47,828,	48,158,	15·67	15·60
Austria-Hungary ..	109,576,	89,826,	+ 13,112,	+ 27,720,	122,688,	117,546,	2·86	2·64
Cape of Good Hope ..	5,166,	4,373,	− 693,	− 615,	4,473,	3,758,	2·64	2·00
Western Australia ..	105,	76,	+ 53,	+ 77,	158,	153,	2·17	·98
South Australia ..	1,050,	1,473,	− 332,	− 509,	718,	964,	2·05	2·66
Victoria	1,958,	2,822,	− 226,	− 290,	1,732,	2,532,	1·48	2·16
Germany	59,416,	61,072,	+ 11,716,	+ 10,340,	71,132,	71,412,	1·37	1·34
Belgium	..	..	+ 5,575,	+ 5,676,	5,575,	5,676,	·88	·86
New South Wales ..	835,	794,	+ 75,	+ 53,	910,	847,	·74	·65
Queensland ..	177,	171,	+ 47,	+ 40,	224,	211,	·51	·44
Holland ..	..	..	+ 2,216,	+ 2,156,	2,018,	1,980,	·43	·40
United Kingdom ..	..	..	+ 15,062,	+ 16,592,	14,755,	15,780,	·38	·39
United States ..	18,603,	28,272,	+ 3,735,	3,869,	22,338,	32,141,	·33	·44
New Zealand ..	..	..	+ 107,	107,	104,	105,	·15	·15
Tasmania	..	..	+ 17,	+ 15,	17,	15,	·11	·09

* Approximate only.

†Fourteen years previously there were over 5 million acres.

‡ The information for countries outside of Australasia has been obtained from a statement on "Alcoholic Beverages" published in return to an Order of the British House of Commons, date 15th February, 1900.

§ Average of seven years.

1387. No attempt has yet been made to grow tea in Victoria for commercial purposes, although the tea plant flourishes in gardens around Melbourne, and the late Government Botanist and other scientists have given it as their opinion that many parts of the colony—especially the fern-tree gullies—are well suited for its cultivation. The consumption of tea per head in Victoria was 6·9 lbs. in 1898; 6·6 in 1897; 6·94 in 1896; 6·65 in 1895; 6·37 in 1894; and it varies from 9·5 lbs. per head in Western Australia, and 8⅓ lbs. in South Australia, to 5·8 lbs. in Tasmania; and it is much larger in the Australasian Colonies than in any other countries.* Tea.

1388. Although cotton is so extensively used in articles of clothing —in the manufacture of which it is a powerful competitor against wool —practically none is at present produced in Australasia, although Queensland and Fiji are capable of growing it. According to the Statistician to the United States Department of Agriculture for 1899, the consumption of cotton in Europe and America has increased from 5 million bales (of 500 lbs. each) in 1870–71, to 7½ million bales in 1882–3, to over 8 million bales in 1887–8, to 9 million bales in 1892–3, and to nearly 12 million bales in 1898–9. The following, by the same authority, is an estimate of that portion of the World's cotton crop which enters into the commercial supply of European countries, the United States, and India, and of the consumption of those countries, in 1898–9 :— Cotton.

SUPPLY AND CONSUMPTION OF COTTON, 1898–9.

Bales of 500 lbs. (000's omitted).

Country.	Crop.	Consumption.
United States	11,189,†	3,553,
India	1,934,	1,297,
United Kingdom	809,	3,519,
Other European Countries		4,836,
Other Countries		727,
Total	13,932,	13,932,

NOTE.—In Mexico, the production was about 70,720 bales five years previously.

1389. The following is the extent of land returned as under gardens and orchards in the last six years. Market gardens are included, as well as gardens attached to farms, but not gardens or orchards kept merely for pleasure or private use :— Gardens and orchards.

LAND UNDER GARDENS AND ORCHARDS, 1893–4 TO 1898–9.

	Acres.		Acres.
1893–4	42,463	1896–7	45,734
1894–5	44,235	1897–8	43,763
1895–6	45,419	1898–9	50,521

1390. In each of the last seven years an attempt was made to obtain a statement of the quantity of fruit grown throughout the colony. The Fruit gathered.

* For annual exports of tea from, and its consumption per head, in various countries, see issue of this work for 1893, Vol. II., paragraphs 362 to 364, and for its consumption in Australasian Colonies see Appendix C, *post*.

† Above average of two preceding years, viz., 9,715,000.

following totals have been made up from the figures furnished to the collectors of statistics for 1894–5 and 1898–9 :—

FRUIT GATHERED, 1894–5 AND 1898–9.

Kind.	1894-5.	1898-9.	Kind.	1894-5.	1898-9.
	cwt.	cwt.		cwt.	cwt.
Apples ...	204,613	199,265	Raspberries ...	10,773	9,892
Pears	33,829	47,634	Strawberries ...	3,499	1,889
Quinces ...	15,650	25,630	Gooseberries ...	5,745	6,541
Medlars ...	75	29	Mulberries ...	1,034	396
Plums ...	75,408	49,788	Blackberries ...	32	19
Cherries ...	33,188	30,096	Currants (black, red, and white)	1,318	845
Peaches ...	26,172	58,992	Melons ...	23,236	29,701
Apricots ...	25,026	70,433	Rhubarb ...	21,608	9,843
Nectarines ...	800	1,643	Tomatoes ...	60,254	16,775
Oranges ...	3,367	7,796	Olives ...	114	596
Lemons ...	2,230	15,456	Almonds ...	201	600
Loquats ...	1,399	2,034	Walnuts ...	181	158
Figs ...	3,130	7,267	Filberts ...	18	27
Persimmons ...	45	98	Chestnuts ...	22	39
Passion Fruit ...	12	134			

Imports of fruit into United Kingdom.

1391. As the Australian Colonies have begun to ship fruit to the United Kingdom, the following statement, showing the different kinds of fruit imported into the United Kingdom, and the principal countries of supply, will no doubt prove of interest :—

FRUIT IMPORTED INTO THE UNITED KINGDOM IN 1898.

Kind of Fruit.		Quantity Imported.	Principal Countries of Supply.
Raw—			
Almonds	cwt.	170,274	Spain, Morocco, Italy, and Portugal.
Apples	bushels	3,458,716	Canada, United States, Belgium, France, Tasmania, and Portugal.
Cherries	,,	401,810	France and Holland.
Grapes	,,	1,135,759	Spain and Portugal.
Oranges	,,	7,274,312	Spain and Italy.
Lemons	,,	1,631,644	
Pears	,,	491,669	France and Belgium.
Plums	,,	922,248	France and Germany.
Unenumerated ...	,,	2,177,132	Spain and Canary Islands.
Dried—			
Currants	cwt.	1,241,427	Greece.
Raisins	,,	594,161	Spain and Turkey.
Figs and Fig Cake ...		100,009	Portugal, Spain, and Turkey.
Plums—			
French and Prunellæ	,,	54,013	France.
Dried or Preserved	,,	40,133	Germany and United States.
Prunes	,,	24,190	France.
Unenumerated ...	,,	287,451	Turkey.
Preserved with sugar	lbs.	75,850,332	Italy, United States, Straits Settlement, Spain, France, and Canada.

1392. During the last eight years an attempt has also been made to obtain a return of the honey and beeswax produced. The figures are known to be imperfect, as bees are extensively kept on small holdings and farms devoted almost exclusively to grazing, which the collectors are not called upon to visit. The following table will show the comparative results for the last five seasons :— Produce of beehives.

Season.	Honey.	Beeswax.
	lbs	lbs.
1894–5	1,323,982	38,752
1895–6*	381,683	16,873
1896–7	592,422	20,798
1897–8*	195,163	7,782
1898–9	881,121	22,213

1393. Ensilage was returned as having been made on 224 farms, situated in 30 counties in 1898–9, chiefly from oats, maize, and grass, and partly from rye, lucerne, barley, wheat, and other green fodder, and beet-root slices. The total quantity of material used for making ensilage was set down as 8,764 tons, of which 4,963 tons were put in pits and 3,801 tons in stacks. The largest returns of ensilage, according to the quantity of material used in its manufacture, were obtained from the following counties :—Buln Buln, where 1,267 tons were converted into ensilage on 31 farms ; Evelyn, 1,059 tons on 8 ; Tanjil, 1,034 tons on 10 ; Bendigo, 590 tons on 9 ; Moira, 483 tons on 16 ; Villiers, 467 tons on 7 ; Bourke, 434 tons on 12 ; Anglesey, 388 tons on 14 ; Lowan, 355 tons on 23 ; Mornington, 322 tons on 5 ; Grant, 280 tons on 12; Delatite, 252 tons on 5 ; Rodney, 247 tons on 6 ; Talbot, 205 tons on 8 farms ; and in the other 16 counties, where ensilage was made, 1,381 tons of material were used on 58 farms. Ensilage.

1394. Land in fallow is included in the area under tillage. The number of acres in this condition in 1899 was 517,242, or 117,707 more than in the previous year. Land in fallow.

1395. The Victorian water-works are of two classes, viz., those intended chiefly for irrigation purposes, and those designed chiefly for domestic supply. A full account of the *Water Act* 1890 (54 Vict. No. 1156), which provides for the conservation, management, and distribution of water in the colony, will be found in a former issue of this work.† Waterworks of Victoria.

1396. The more important irrigation works, or those connected with the principal rivers which will form the main supply in some cases for several local schemes, are undertaken by, and are under the entire control of, the State. These are known by the name of National Works. The total expenditure from loans to the 30th June, 1898, on three of the principal works which have been completed—the Goulburn National, Loddon, and Kow Swamp Works,† was £809,816. National Irrigation Works.

* Many of the bee-keepers reported that a great number of bees died, owing to the dryness of the season and the scarcity of flowers.

† For full account of these works see *Victorian Year-Book*, 1890-91, Vol. II., paragraph 510. An interesting report by the Chief Engineer of Water Supply on the position and prospects of irrigation in Victoria will be found in an Appendix to Vol. II. of the issue for 1892

Irrigation and Water Supply Trusts.

1397. On the 30th June, 1899, there were 30 Irrigation and Water Supply Trusts—many of which draw their main supply of water from the National Works—with control over 2,743,449 acres of land, having an irrigable area of 1,843,304 acres, of which 353,662 acres are capable of being irrigated annually from the works constructed or in course of construction. The present value of the irrigable lands, on a low basis of calculation, is set down as £6,888,076, and the annual rateable value of the same as £295,932. Of the 30 schemes 24 have been practically completed, 3 are in progress, and 3 had not been commenced. The aggregate borrowing power of the Trusts is limited to £1,511,517, of which the Government has agreed to advance £1,440,079, the balance to be obtained in the open market; whilst the amount actually advanced to the 30th June, 1899, was £1,093,127.* There are, at present, three storage reservoirs under the control of Trusts, viz., the Wartook Reservoir, near Horsham, with a capacity of 1,035 million cubic feet; Murphy's Lake, near Kerang, with one of 51 million cubic feet; and the Campaspe Weir, near Rochester, with a capacity of 21 million cubic feet.

Mildura Irrigation Colony.

1398. The Mildura Irrigation Colony, established by the Messrs. Chaffey under the *Waterworks Construction Encouragement Act* 1886 (50 Vict. No. 910), which is the most important private irrigation work in Victoria, has been several times referred to in previous issues of the *Victorian Year-Book*. An interesting account of the progress and prospects of this settlement, taken from a Special Report on Irrigation by the Chief Engineer of Water Supply, was published in an Appendix to the issue of this work for 1892. The First Mildura Irrigation Trust, constituted under the provisions of Act 1409, was granted loans amounting to £48,700 for the purpose of carrying out works for improving the water supply, whilst the sum advanced to 30th June, 1899, was £30,537.

Waterworks and Water-works Trusts

1399. There were 69 Waterworks Trusts in existence on the 30th June, 1899, consisting of 17 rural and 52 urban trusts, 6 of the former also providing urban supplies to 10 towns; several of them are almost identical with the municipal councils. The rural schemes have numerous weirs, dams, and tanks, supplying an area of 4,034,200 acres, of an annual rateable value of £590,000. The works, which have been practically completed, cost to 30th June, 1899, after allowing for liabilities transferred to Irrigation Trusts, £386,712; out of a total of loans authorized of £396,540. The urban works completed have a storage capacity of over 500 million gallons; they supply a population of 53,068, who possess property of the annual rateable value of £310,000. The amount of loans authorized to be advanced to these bodies was £967,441, of which £852,885 had been advanced up to the 30th June, 1899. The interest due, but remaining unpaid at that date, was £102,225. Of the total amount, £65,510 was due on account of only three trusts.

Waterworks under Government.

1400. Prior to the constitution of the Waterworks Trusts, extensive works for the storage and supply of water for domestic, mining, and, to a limited extent, for irrigation purposes had been constructed by the

* See *Victorian Year-Book*, 1890-91, Vol. II., paragraph 508.

Government and by Local Bodies in various parts of the colony. The principal of these, however—the Yan Yean Waterworks—has been transferred to the Melbourne and Metropolitan Board of Works. The following table contains a list of such of the works as remained under Government control in 1898–9; also a statement of the estimated storage capacity, and the total cost of each scheme:—

WATERWORKS UNDER GOVERNMENT CONTROL.

Town or District.	Reservoir or Source of Supply.		Cost.
	Where Situated.	Storage Capacity in Gallons.	
COLIBAN SCHEME.			£
Taradale ...	Malmsbury	3,410,000,000	1,069,254
	Taradale	65,000	
Castlemaine and Chewton	Expedition Pass ...	120,000,000	
	Monument Hill ...	1,000,000	
	Barker's Creek ...	629,135,000	
Fryerstown	Crocodile Gully ...	5,407,000	
Maldon ...	Green Gully ...	1,500,000	
	Upper Reservoir ...	4,800,000	
	Lower Reservoir ...	3,428,000	
Bendigo ...	Big Hill	68,000,000	
	Big Hill Tank ...	300,000	
	Crusoe Valley ...	320,000,000	
	New Chum Tank ...	23,000	
	Solomon's Gully ...	1,250,000	
Bendigo District	Spring Gully ...	150,000,000	
	Upper Grassy Flat ...	58,860,000	
	Lower Grassy Flat ...	26,800,000	
Eaglehawk	Sparrow Hawk ...	1,500,000	
Raywood ...	Lightning Hill ...	7,000,000	
	Raywood	2,500,000	
Sebastian	Sebastian	239,200	
Lockwood and Marong ...	Green Gully ...	2,500,000	
GEELONG AND SUBURBS	Upper Stony Creek ...	417,000,000	368,172
	Lower Stony Creek ...	143,000,000	
	Anakie (pipe head) ...	1,280,000	
	Lovely Banks ...	6,000,000	
	Newtown Tank ...	500,000	
	Total	5,382,087 200	1,437,426

1401. In 1891 the waterworks for the supply of the City of Melbourne and suburbs, which comprise an area of 98,900 acres, with a population, on the 5th April, 1891, of 477,891, and rateable property of the annual value of about £6,600,000, were transferred to the control of the Melbourne and Metropolitan Board of Works.* The main source of supply is the Yan Yean Reservoir, in which are stored the waters of the eastern branch of the Plenty River and Jack's Creek, from the southern slopes of the Great Dividing Range, and those of Wallaby and Silver Creeks, brought over the range in an aqueduct from the northern slopes. These streams are collected in the Toorourrong Reservoir, and taken thence in a pitched channel to the Yan Yean Reservoir. Melbourne Waterworks.

* For particulars of the constitution of the Board, see issue of this work for 1892, Vol. I., paragraph 49.

A minor supply is brought to Melbourne by means of the Maroondah aqueduct, which conveys water from the Maroondah River, the Graceburn, and Donnelly's Creek, but without, at present, any provision for storing the surplus winter waters thereof, except the small service reservoirs in the suburbs at Preston, Essendon, Caulfield, Kew, and Surrey Hills. By means of these systems Melbourne is provided with an ample supply of pure water at a high pressure. The Yan Yean is an artificial lake situated 22 miles from the city, 602 feet above sea level. It covers an area of 1,300 acres, or rather more than two square miles, and receives water from a drainage area of 35,000 acres. The total length of aqueduct and mains is 259 miles, and of reticulation pipes (under 12-inch diameter) 1,096 miles. The storage capacity of the main reservoir is 6,400 million gallons, and of the eight subsidiary reservoirs 106 million gallons.*

Revenue and expenditure of Melbourne Waterworks.

1402. The total expenditure to the 30th June, 1898, on the construction of the Melbourne Waterworks was £3,677,000. The gross revenue received since the opening of the works at the end of 1857† has amounted to £4,351,166, whilst the expenses of maintenance and management amounted to only £675,860, and interest to £1,732,796. During 1897–8 the revenue received amounted to £164,909 as against £156,379 in the previous year; and the expenditure on maintenance and management (exclusive of repayments) to £40,202, as against £38,199 in the previous year. The net revenue in 1897–8 was thus £124,707, being equivalent to 3·393 per cent. of the mean capital cost,‡ as compared with £118,180, or 3·213 per cent., in 1896–7. A reference to a previous table will show that the loans raised (£2,359,157) for the construction of the works now bear an average nominal rate of only 3·91 per cent. The aggregate net profit up to the end of 1897–8, after paying all interest and expenses, has amounted to £1,942,510. §

Coliban scheme.

1403. The Coliban Scheme provides water for domestic and mining purposes, as well as for irrigation to a limited extent, to the Bendigo and Castlemaine districts. The chief reservoir of this scheme, which is near Malmsbury, has a capacity of 3,410 million gallons. The cost of the works to the 30th June, 1898, was £1,069,254; whilst the gross revenue during the year 1898–9 was £25,568; and the expense of maintenance and supervision, £11,320. The net revenue was thus £14,248, being equivalent to 1·332 per cent. of the capital cost. The deficiency in 1898–9, after allowing interest on the capital cost at the rate of 4 per cent., was £28,522.

Geelong Waterworks.

1404. The Geelong Waterworks provide water for domestic supply to Geelong and suburbs. The chief storage works in this scheme are the Upper and Lower Stony Creek reservoirs, having a capacity of 560 million gallons, and the whole scheme has cost up to the 30th June, 1899, £368,172. The gross revenue for 1898–9 was £9,778, and the cost of maintenance, £3,666. The net revenue was thus £6,112, or 1·66 per cent. of the capital cost. After allowing interest on capital at 4 per cent., the deficiency for 1898–9 was £8,614.

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* For particulars, see issue of this work for 1893, Vol. II., paragraph 376.
† Although the works were commenced in 1853, they were not opened until the 31st December, 1857.
‡ Or the mean of the capital cost at the beginning and end of the year.
§ The balance in hand on 30th June, 1894, was only £77,562.

Gold-fields reservoirs.

1405. There are 22 gold-fields reservoirs, having an aggregate capacity of nearly 450 million gallons, the largest, at Beaufort, containing about 86 million gallons. These cost £57,172 to 30th June, 1899, and were originally constructed by the Government chiefly for mining purposes. They are for the most part leased to municipal councils at a nominal rental, but it appears that, in many cases, these bodies do not keep them in proper repair. The question of the sale of the works to the municipalities has been under the consideration of Parliament.

Waterworks under Local Bodies.

1406. Advances have been made from the Government loan account to various municipalities to enable them to construct waterworks for their respective districts—the principal to be gradually repaid into a sinking fund. The number of such municipalities was 24, which possessed 21 reservoirs, having a total capacity of nearly 1,699 million gallons, as well as other sources of supply. The expenditure from loans on these works was £681,959, of which £588,862 remained unpaid on the 30th June, 1899. The works supply a population of about 77,600; the chief of these reservoirs are those at Ballarat, now under the Ballarat Water Commission, having an aggregate capacity of nearly 842 million gallons. The Gong Gong reservoir alone contains 427 million gallons; the Beeehworth reservoir at Lake Kerferd, 191 million gallons; the Clunes reservoir at Newlyn, 225 million gallons; and the Talbot reservoir at Evansford, 200 million gallons.

Capacity and cost of reservoirs.

1407. By the following summary of the total storage capacity of reservoirs, and the total cost of these and other works for the conservation of water referred to in the foregoing tables and paragraphs, it is shown that the former amounts to over 14,460 million gallons, and the latter to over seven and two-third millions sterling :—

Capacity of Reservoirs and Cost of Waterworks Scheme to 30th June, 1898.

(*Exclusive of National and other Irrigation Works.*)

Waterworks under—	Storage Capacity of Reservoirs.	Cost of Schemes.
	Gallons.	£
Government—		
Coliban	4,653,697,200	1,069,254
Geelong	564,400,000	360,998
Gold-fields	423,319,000	50,117
Metropolitan Board of Works	6,508,000,000	3,677,000
Local Bodies	1,698,940,000	631,220‡
Waterworks Trusts—		
Urban Works*	611,691,000	479,318‡
Rural „	†	1,415,614‡
Total	14,460,047,200	7,683,521

* Inclusive of works in progress. See also paragraph 1399, *ante*.

† Rural works consist mainly of weirs, dams, tanks, and wells with windmills.

‡ Towards the cost of schemes £692,171 was advanced to local bodies, and £852,885 to Waterworks Trusts from State loans; but since the 30th June, 1899, £163,760 and £184,447 were written off these amounts as a measure of relief to the bodies named. And in addition arrears of interest to the extent of £151,457 in the former, and of £85,556 in the latter, were also wiped out.

Government loans for Water-works.

1408. The total amount of loans outstanding on the 30th June, 1899, borrowed by the Government for Water Supply and Irrigation, was close on £7,740,000, of which about £5,000,000 has been re-lent to various corporations. The following are the amounts raised for various purposes, the net proceeds already advanced or expended, and the balances unexpended :—

GOVERNMENT LOANS FOR WATERWORKS TO 30TH JUNE, 1899 (EXCLUSIVE OF LOANS REDEEMED).

Purposes to which Applied.	Nominal Amount Raised.	Net Proceeds.		
		Total.	Advanced or Expended.	Balance Unexpended.
Loans to—	£	£	£	£
Board of Works, Metropolitan	2,359,157	2,324,948	2,324,948	...
Municipalities	706,808	703,638	692,171	11,467
Waterworks Trusts ...	3,031,433	2,975,155	852,885	125,436
Irrigation and Water Supply Trusts			1,093,128	
National Irrigation Works ...			903,706	
Grants to Waterworks Trusts ...	103,101	100,000	97,558	2,442
Other Works under Government control	1,539,143	1,425,419	1,412,824	12,595
Total	7,739,642	7,529,160	7,377,220	151,940

NOTE.—This statement is only approximate.

Rainfall in Victoria, 1895–8.

1409. According to information furnished by the Government Astronomer, the average rainfall over the whole surface of Victoria during the year 1898 was 21·22 inches, representing a volume of water of about 29 cubic miles, that for 1897, 1896, and 1895 being about 31, 32, and 29 cubic miles respectively. The lowest and highest monthly averages for the year were :—January, ·25 inch ; August, 3·74 inches. The following are the particulars for the last four years :—

RAINFALL IN VICTORIA 1895 TO 1898.

Year.	Rainfall over Surface of Victoria.		Monthly Average.			
	Average.	Volume of Water Represented by—	Highest.		Lowest.	
			Month.	Rainfall.	Month.	Rainfall.
	Inches.	Cubic Miles.		Inches.		Inches.
1895 ...	20·93	29	August	3·29	November	0·28
1896 ..	22·75	32	April	3·07	October	0·54
1897 ...	22·29	31	August	3·74	December	0·53
1898 ...	21·22	29	June	3·68	January	0·25

Water consumption in Melbourne, 1894-9.

1410. The following is the average daily consumption of water for all purposes for each month of the last six years in the water district

of Melbourne and suburbs. According to experience, the consumption rises at first steadily, and after October rapidly, from a minimum in June to a maximum in January or February and then quickly falls again to the minimum. In 1898 during which the highest figures for consumption have been reached, the mean daily consumption per head for the whole year was 63 gallons, varying from 38 gallons in July to 127 gallons in February, as against an average in the last six years of 58 gallons :—

DAILY AVERAGE CONSUMPTION OF WATER IN MELBOURNE AND SUBURBS, 1894–1899.

Month.	1894.	1895.	1896.	1897.	1898.	1899.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
January ...	35,134,583	35,246,832	28,306,891	29,299,267	37,821,998	33,125,839
February ...	34,237,308	39,434,736	28,498,814	28,918,534	41,630,304	38,943,644
March ...	31,922,463	30,447,449	25,008,731	26,809,086	32,332,218	33,339,968
April ..	27,815,385	26,851,599	22,636,980	25,070,089	25,707,596	24,491,527
May ...	24,215,853	22,675,331	19,412,690	21,468,069	22,866,125	21,054,260
June ...	23,135,870	21,048,961	18,182,130	19,886,169	22,477,404	19,429,806
July ...	22,001,374	19,380,734	19,462,582	20,116,104	21,048,262	20,707,049
August ...	21,894,793	18,357,845	20,074,740	19,081,832	20,634,585	22,486,903
September	21,813,375	20,904,890	20,390,175	20,746,009	20,815,493	23,210,708
October ...	23,757,379	28,205,283	21,836,103	22,740,227	25,610,150	22,742,968
November...	28,723,100	29,147,164	27,839,727	27,923,026	31,389,021	29,346,967
December ...	31,676,047	29,524,696	34,500,206	34,177,959	37,593,705	36,710,677
Mean for Year ...	27,193,961	26,768,793	23,845,814	24,686,364	28,327,238	27,132,526

NOTE.—The maximum consumption for one day in 1898 was 57,000,000 gallons, and the minimum 17,000,000 gallons.

Water consumption in towns.

1411. The average daily consumption of water per head throughout the year in the districts reached by the water supply of Melbourne and suburbs is 58 gallons, or more than the average daily consumption in nine, and less than in ten, of the following towns :—

WATER CONSUMPTION IN VARIOUS TOWNS.

	Average daily consumption per head (gallons).		Average daily consumption per head (gallons).
Rome	160	Melbourne	58
Marseilles	158	Auckland	44
Washington	143	Sydney	42
Chicago	102	Paris	36
Ottawa	102	London	31
Wellington	80*	Dresden	15
Boston	73	Naples	15
Dunedin	64†	Berlin	13
New York	61	Madrid	3
Hobart	60	Calcutta	2‡

* Deducting the quantity used for business purposes, the quantity for domestic purposes only is about 65 gallons.

† In 1884 it was as high as 91 gallons, the subsequent reduction being due to the prevention of waste through the use of the "waterphone."

‡ The residents of Calcutta, and probably also of other towns situated on the banks of rivers, use river water in addition to that derived from the house supply. Rain water is also largely used where such supply is limited.

Mansergh's sewerage scheme for Melbourne.

1412. In the original scheme for the disposal of the sewage of the metropolis, drawn up by Mr. Mansergh, it was recommended that the sewage should be conveyed to two pumping stations, wherefrom it was to be forced to high levels and to be allowed to flow by gravitation to two sewage farms situated on the opposite coasts of Port Phillip Bay. The capital cost of the scheme was calculated to be £5,030,800 within the first eight years, and the ultimate cost to be £5,816,500; it was expected that it would take five years to execute the main works, and at least eight years to completely sewer the whole district. For the eighth year the gross annual charge, including an allowance of £214,481 for repayment of principal, with interest at the rate of $3\frac{1}{2}$ per cent., in 50 years (viz., £176,078 towards interest, and £38,403 in reduction of principal) was set down at £249,303, towards which at least £81,140 (equivalent to the net profit in 1888–9*) would, it was expected, be defrayed from the water revenue, leaving a net charge of £168,163 to be provided for from the proceeds of a rate of 5·29d. in the £1 levied on all rateable property, which it was assumed would steadily increase at the rate of $2\frac{3}{4}$ per cent. per annum, commencing with £5,806,521 in 1888. It was also estimated that after the payment of the principal in the time stated, the water revenue would alone be sufficient to pay the whole of the working cost. It was calculated that the rate levied would probably never exceed 5·29d. in the £1 for the main works only; but this rate does not cover the cost of sewers in yards, passages, and public right-of-ways, which would represent an additional rate of 1·13d. in the £1 on the rateable value of 1898. For all purposes Mr. Mansergh considered that the maximum rate would be 7·52d. in 1898.

Modified scheme adopted by Melbourne and Metropolitan Board of Works.

1413. Since Mr. Mansergh's report, however, circumstances have considerably altered. Instead of it being possible to raise loans at $3\frac{1}{2}$ per cent., assumed in the report, $4\frac{1}{2}$ per cent. has to be paid; the annual surplus from water revenue, moreover, has dwindled from £81,140* in 1888–9 to £23,154 in 1898–9; and, although the number of tenements rose from 85,167 to 105,587, the value of rateable property had fallen from £5,800,000 in 1888 to £3,941,518 in 1899, whilst the annual rate of increase of such property assumed by Mr. Mansergh—$2\frac{3}{4}$ per cent.—can now no longer be relied on. Considerations such as these induced the Melbourne and Metropolitan Board of Works†—under whose direction the works are being carried out—to considerably modify the original scheme, although adopting generally the principal recommendations. Accordingly it has been decided to provide eventually for a population of 1,000,000 in 30 years instead of 1,700,000 in 50 years, and to curtail the provision for rain water to a minimum consistent with sanitary efficiency, thus enabling the carrying capacity of the sewers to be reduced from 50 to 30 cubic feet of sewage matter per head per diem,

* According to statements issued by the Melbourne and Metropolitan Board of Works, the net revenue from Water Supply, after paying interest and expenses, was £103,750 in this year; whilst the average for the three years ended with 1888-9 was £95,000, so that Mansergh's figures were well below the mark.

† For particulars of the constitution and functions of the Board, see issue of this work for 1892 Vol. I., paragraph 49.

by which means, moreover, the sewers will be more easily maintained in a good sanitary condition during their early history; to concentrate all the sewage over one farm instead of two, for which purpose a block of 8,847 acres of red loamy soil, averaging 30 feet overlying basalt, was purchased near the Werribee River; also to have one pumping station and one outfall sewer, instead of two. By these modifications it is estimated that a total saving of £1,500,000 will be effected in the capital cost at the outset. The following are the estimates of the cost of the original and the modified scheme for the year 1898, when, it was assumed, the district would be completely sewered; also the Board's estimate of the ultimate cost. The Board's Engineer (Mr. Thwaites), however, points out that the Board's scheme embraces works not taken into account by Mr. Mansergh, and estimated to cost £1,660,000:—

RELATIVE ESTIMATES OF COSTS OF METROPOLITAN SEWERAGE SCHEMES.

Item.	Mansergh's "M" Scheme to—	Board's Modified Scheme to—	
	1898.	1898.	1906.
	£	£	£
Main Sewers	2,199,714	1,839,694	1,600,000
Pumping Stations ...	300,000	200,000	200,000
Rising Mains	83,456	100,000	420,000
Outfalls	1,169,286	250,000	
Ventilation	45,000	45,000	2,100,000
Flushing Chambers ...	45,000	45,000	
Screening Apparatus ...	10,000	10,000	
Local Sewers	559,721	559,721	
Farm Preparation ...	72,550	72,550	250,000
Farm Channels ...	88,000	88,000	...
,, Purchase ...	...	...	155,037
House Connexions ...	...	...	200,000
	4,572,727	3,209,965	4,925,037
Contingencies ...	457,273	320,996	...
Total ...	5,030,000*	3.530,961	4,925,037

NOTE.—In addition there was an amount of £500,000 which has been advanced to householders for house-connexions, repayable by quarterly instalments extending over ten years.

Board's resources and annual cost as compared with Mansergh's scheme.

1414. The district over which the Board exercises control consists of 18 cities, towns, and boroughs, and 6 shires, embracing a total area of 83,860† acres, and containing an estimated population on the 31st December, 1899, of 462,932. The annual value of rateable property in the district in 1899 was £3,941,518 (of which about £479,051 represents vacant land formerly not taxed for water supply purposes), which, at 1s. in the £1, the maximum rate the Board is empowered to levy in any one year, would yield a revenue of £197,075.

* The exact amount was £5,030,800. The ultimate cost in 1939 was estimated at £5,816,509.

† Exclusive of 18,240 acres in the Greensborough riding of Heidelberg shire, which is practically outside the district.

The annual charge to ratepayers for interest and expenses alone when the scheme is completed will be about £185,000, equivalent to about 11d. in the £1. The additional cost of connecting the houses with the sewers will be about £10 to £11 each on the average, to be defrayed by the householders. It is considered that, when all the work is completed, a general rate of 11d. in the £1 on the valuation of 1896 will be required to meet the cost of interest, maintenance, and management. The following is a comparison of the two estimates:—

ESTIMATED ANNUAL COST OF SEWERAGE AT END OF CENTURY.

	1. Mansergh's Scheme. (1898.)	2. Board's Scheme. (1900.)
Capital Cost.		
Principal works	£5,030,800	
Sewering existing yards, passages, and public rights-of-way ...	841,485	£3,500,000
Purchase of all lands and easements required	819,145	
Total	£6,691,430	£3,500,000
Annual Cost.		
Interest	£234,200 (3½%)	£175,000 (5%)
Redemption of principal ...	51,080	...
Working expenses	34,822	70,000
Interest, Water Supply ...	...	110,000
	£320,102	£355,000
Less—Water revenue ...	81,140	170,000
Charge to ratepayers ...	£238,962	£185,000*
Charge per £1 of annual value of rateable property in 1894 (£5,187,515)† ...	11d.‡	11d.

Expenditure on sewerage to date.

1415. To enable it to commence the works, the Board has raised loans amounting to £4,993,580, at 3½, 4, 4½, and 5 per cent. The total amount it is authorized to borrow is £5,000,000, exclusive of Government loans amounting to £2,389,934, which were originally contracted by the Government but taken over by the Board. The expenditure on the construction of sewerage works to the 30th June, 1899, was £2,891,665, of which £330,968 was for farm purchase and preparation, £402,902 for main outfall sewer and rising mains, £131,113 for pumping-station buildings and engines, £1,073,776 for main and branch sewers, £779,724 for reticulation sewers, and £173,182 for house connexions.

Leases and rental of farms.

1416. Throughout Victoria, the duration of leases of farms from private persons was returned in 1898–9 as averaging from 2 to 5¾ years, the extreme figures being 1 year and 14 years. The average rental of agricultural land per acre was stated to be from 5s. 2d. to 22s. 10d., the extreme figures being 2s. and 100s. The average rental of pastoral land

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* Exclusive of any provision for the redemption of loans, equivalent to about £19,780 (at 4½ per cent.).

† Assuming the rateable value of property to stand at the same value in 1898 and 1900 as it did in 1894 to allow for any stagnation that might take place. Exclusive of vacant land, the charge would be 13d. and 9d. respectively.

‡ Or about 8¾d. if no provision were made for redemption of loans. Mr. Mansergh's original calculation was only 7·52d., being based on a rateable value of £7,618,080, which is what the value would be assuming an increase at the rate of 2¾ per cent per annum between 1888 (when it stood at £5,806,521) and 1898. As a matter of fact, however, the value in 1894 (£5,187,515) was even less than in 1888.

per acre was stated to be from 1s. 7d. to 8s. 6d., the extreme figures being 1s. and 30s. It may be mentioned that 3s. 6d. per acre per annum for land carrying one sheep to the acre is considered a fair rental; thus land capable of carrying two sheep to the acre ought to be let for 7s. per acre per annum.*

Prices of agricultural products.

1417. Each collector of statistics is required to furnish a statement of the prices of the principal articles of agricultural produce in his district at the time he makes his rounds. The prices, being those prevailing in the place where the crops are grown, are generally lower than those obtaining in Melbourne, which are quoted at the end of Part Interchange, *ante*. The following is an average, deduced from the returns, of all the districts during each of the last 30 years :—

PRICES OF AGRICULTURAL PRODUCE, 1870 TO 1899.

During February and March.	Wheat.	Oats.	Barley.		Maize.	Hay.	Potatoes (Early Crop).	Turnips.	Mangolds.
			Malting.	Other.					
	per bushel.	per bushel.	per bushel.	per bushel.	per bushel.	per ton.	per ton.	per ton.	per ton.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1870 ...	4 3	3 7	4 0	...	4 10	77 0	75 0	...	40 0
1871 ...	5 4	3 9	4 11	...	5 3	76 0	70 0	...	36 0
1872 ...	4 8	2 11½	3 6¼	...	4 2	64 0	65 6	...	28 1
1873 ...	4 9	3 5	4 1	...	3 10	81 0	67 4	...	24 5
1874 ...	5 9	5 6	5 3	...	5 9	88 0	118 3	...	31 4
1875 ...	4 5	4 3	4 6	...	4 8	89 0	89 0	...	28 0
1876 ...	4 7	3 3	3 10	...	4 8	82 0	87 0	...	23 8
1877 ...	5 10	3 7	3 10	...	4 4	93 0	114 0	...	31 6
1878 ...	5 1	4 6	4 4	...	5 4	87 0	115 0	...	37 3
1879 ...	4 2	3 6	4 1	...	4 2	75 0	92 4	...	25 6
1880 ...	4 0½	2 3½	4 8	...	3 6½	63 0	69 11	...	24 11
1881 ...	4 1¾	2 3	4 11¼	...	5 0	60 0	46 3	...	24 0
1882 ...	5 0	3 3	3 6	...	5 4	76 0	70 0	...	25 4
1883 ...	4 9	3 1	4 1	...	4 7	81 0	75 4	...	30 5
1884 ...	3 8	2 8	3 6	...	4 8	67 0	74 8	35 5	29 5
1885 ...	3 4	3 0	3 6	...	4 5	74 0	80 0	40 0	34 0
1886 ...	3 10	2 10	3 3	...	4 1	74 0	100 0	48 6	24 6
1887 ...	3 9	2 9	3 3	...	4 4	73 0	80 0	54 0	28 4
1888 ...	3 4	2 7	3 6	...	4 2	59 0	65 0	27 0	24 0
1889 ...	4 7	3 10	4 2	...	4 10	102 0	163 2	46 6	30 7
1890 ...	3 8	2 10	3 2	...	4 1	62 0	83 4	58 3	28 5
1891 ...	3 5	2 4	2 9	...	3 6	55 0	77 10	32 6	28 7
1892 ...	4 1	2 2	2 9	...	3 5	54 0	64 9	41 3	28 0
1893 ...	2 11¼	1 10½	2 9¾	...	3 5	46 0	65 5	35 8	27 9
1894 ...	1 11¼	1 5¼	3 1¼	...	2 6½	33 0	55 5	34 9	23 1
1895 ...	1 7½	1 0¾	2 8¾	1 6¼	1 8¼	35 6	38 0	22 3	17 9
1896 ...	4 5¼	2 10¾	3 10	3 3¾	3 4¼	77 2	85 10	27 0	20 9
1897 ...	5 3¼	2 2½	3 10½	3 0	3 8½	56 8	70 1	29 7	21 9
1898 ...	4 1	1 7½	4 2½	2 8	2 10¾	52 6	129 2	34 3	33 10
1899 ...	2 2	1 7¾	4 2½	2 2¼	2 11½	34 5	73 0†	...	...

1418. The prices of all crops in 1899 were below the average of the previous three years, but still showed a marked advance on those

Prices of agricultural produce, 1899 and previous years.

* In certain parts of the colony, where the soil is of specially good quality—especially in the Western District much higher rentals have sometimes been obtained.

† The average price of potatoes in July and August, 1899, when the principal portion of the crop for that year was dug, was ascertained to be £1 16s. 5d. per ton.

for 1894 and 1895, which were about the lowest that prevailed in the whole period. The prices of wheat, oats, maize, and hay, in 1899, were lower than in any previous year, except 1894 and 1895 in the case of wheat and maize, in 1894, 1895, and 1898 of oats, and in 1894 only of hay. The price of malting, as distinguished from other barley is shown only since 1894; in 1899, the value of the former was the same as in 1898, and was higher than in any other of the last five years, and of the latter though higher than in 1895, was the lowest of the years since. The price of potatoes in 1899 was higher than in 12, but lower than in 17 of the 30 years shown. The prices of turnips and mangolds were not ascertained in 1899, but up to then since 1894, a noticeable yearly improvement had taken place.

Years of highest and lowest prices.

1419. It will be observed that the price of wheat was highest in 1877, that of oats, barley, and maize in 1874, that of turnips in 1890, that of mangolds in 1870, and that of hay and potatoes in 1889; also, that the price of each of these crops was lowest in 1895, excepting hay, which was lowest in 1894.

Price of wheat in London.

1420. The wholesale price of wheat per Imperial quarter* in London during 1898 varied from about 46s. in May to 26s. 5d. in September—the average for the year being 34s. The price showed a marked advance on that in the previous four years, and was the highest since 1891, when it was 37s. The low record of 26s. 9d.† in 1761 was reached since only in the four years 1893 to 1896 with the following prices, 26s. 4d. in 1893; 22s. 10d. in 1894; 23s. 1d. in 1895; and 26s. 2d. in 1896. Since the very low quotation in 1894 there has been a distinct annual improvement, averaging nearly 2s. 10d., though it may be observed that this is not maintained in the last four months of 1898. The following statement of the average *Gazette* prices (wholesale) during the five years ended with 1898 has been taken from an official source‡ :—

AVERAGE PRICE PER QUARTER OF WHEAT IN LONDON.

Month.	1894.	1895.	1896.	1897.	1898.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
January	26 3	20 7	25 7	31 2	34 9
February	25 0	20 0	26 2	29 4	35 1
March	24 3	19 11	25 2	27 11	35 7
April	24 7	20 5	24 10	27 3	36 0
May	24 7	22 5	25 6	28 0	46 0
June	23 10	25 9	25 1	27 3	43 7
July	24 6	24 9	24 4	27 9	37 5
August	24 3	24 2	22 11	30 3	33 1
September	20 7	22 10	23 9	33 7	26 5
October	17 8	24 6	27 10	32 5	26 6
November	18 10	25 9	32 4	33 9	28 1
December	20 7	24 11	31 8	33 11	27 2
The Year ...	22 10	23 1	26 2	30 2	34 0

* The Imperial quarter is equal to 8 bushels.
† See Supplement to *The Statist* for 1887.
‡ Giffen's Statistical Abstract for the United Kingdom, 1884 to 1898.

1421. Another official authority * gives the highest, lowest, and average *Gazette* price of wheat, barley, and oats in England and Wales as follows, during each of the eighteen years ended with 1898 :— Price of wheat, barley, and oats in England

AVERAGE PRICE OF WHEAT, BARLEY, AND OATS IN ENGLAND AND WALES.

Year.	Average Price per Quarter.								
	Wheat.			Barley.			Oats.		
	Highest Weekly.	Lowest Weekly.	The Year.	Highest Weekly.	Lowest Weekly.	The Year.	Highest Weekly.	Lowest Weekly.	The Year.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
1881	52 2	40 9	45 4	35 8	26 11	31 11	24 6	19 5	21 9
1882	51 3	39 2	45 1	36 11	25 10	31 2	25 9	19 1	21 10
1883	43 10	39 0	41 7	35 0	25 6	31 10	24 1	19 1	21 5
1884	39 0	30 5	35 9	32 8	27 1	30 8	23 5	18 10	20 3
1885	38 1	30 2	32 10	32 6	24 10	30 2	23 6	18 1	20 7
1886	33 11	29 0	31 1	29 7	22 4	26 7	21 4	16 7	19 0
1887	36 4	28 5	32 6	29 7	20 5	25 4	17 9	14 7	16 3
1888	38 1	30 0	31 11	32 5	18 8	27 10	20 9	15 5	16 9
1889	31 2	27 11	29 10	31 3	19 5	25 10	20 6	16 2	17 9
1890	36 6	29 8	31 11	32 3	22 6	28 8	20 5	17 3	18 7
1891	41 8	32 3	37 0	31 3	24 4	28 2	22 4	17 6	20 0
1892	36 4	25 8	30 3	29 5	21 1	26 2	22 2	16 3	19 10
1893	27 10	24 8	26 4	29 6	20 3	25 7	22 3	16 8	18 9
1894	26 4	17 6	22 10	29 2	16 5	24 6	20 5	13 3	17 1
1895	26 5	19 9	23 1	25 8	18 2	21 11	16 7	13 2	14 6
1896	33 4	22 4	26 2	29 7	16 2	22 11	17 7	13 1	14 9
1897	34 4	26 6	30 2	29 10	17 4	23 6	19 0	16 0	16 11
1898	48 1	25 5	34 0	28 8	23 4	27 2	21 5	16 6	18 5

1422. The value of the principal agricultural products raised in Victoria during the year ended 1st March, 1899, may be estimated at $6\frac{2}{3}$ millions sterling or about £140,000 less than in either of the two Value of agricultural produce.

* Report on the Agricultural Returns of Great Britain issued from the Privy Council Office.

preceding years, but nearly £600,000 more than in 1895-6 or in 1894-5. The following table shows the items of which the estimate is made up for each of the last five years :—

VALUE OF AGRICULTURAL PRODUCE,* 1894-5 TO 1898-9.

Name of Crop.	Gross Produce.					Estimated Value.				
	1894-5.	1895-6.	1896-7.	1897-8.	1898-9.	1894-5.	1895-6.	1896-7.	1897-8.	1898-9.
						£	£	£	£	£
Wheat .. .. bush.	11,445,878	5,669,174	7,091,029	10,580,217	19,581,304	929,978	1,257,847	1,868,781	2,160,128	2,121,308
Oats .. .. .. ,,	5,633,286	2,880,045	6,816,951	4,809,479	5,523,419	299,268	417,007	752,705	390,770	454,531
Barley { Malting .. ,,	1,337,643	624,388	641,406	502,411	776,785	182,533	119,674	124,272	105,716	163,449
Barley { Other .. ,,	258,820	91,204	174,199	256,043	335,782	19,681	15,106	26,130	34,139	36,726
Maize .. .. .. ,,	294,555	351,891	566,027	515,025	587,064	24,853	59,015	104,951	74,571	86,837
Other cereals .. .. ,,	734,571	295,724	163,348	161,237	237,361	61,213	69,002	40,837	32,247	35,604
Grass and clover seed .. ,,	22,466	22,239	32,433	30,522	23,078	4,493	4,448	6,487	6,104	4,615
Potatoes .. .. tons	196,706	117,238	146,555	67,296	161,142	373,741	503,146	513,552	434.620	326,312
Onions .. .. .. ,,	17,377	10,759	11,256	11,217	17,308	39,098	64,554	61,908	58,889	69,232
Chicory .. .. ,,	868	239	508	117	201	8,680	2,390	5,080	1,170	1,989
Other root crops .. ,,	26,344	14,829	16,735	8,550	12,530	24,039	16,683	19,215	14,535	17,229
Hay .. .. .. ,,	621,547	390,861	449,056	659,635	723,299	1,103,246	1,508,071	1,272,325	1,731,542	1,244,677
Green forage .. .. acres	217,847	206,190	195,625	138,425	169,962	326,770	309,285	293,438	207,637	254,943
Tobacco .. .. cwt.	7,155	15,223	7,890	3,419	190	20,034	42,625	22,091	9,574	532
Sugar Beet .. .. tons	..	..	..	8,878	12,097	..	..	..	5,252	6,049
Grapes, not made into wine, raisins, nor currants cwt.	89,390	100,818	130,745	121,059	122,281	44,695	50,409	65,372	60,529	61,140
Raisins .. .. lbs.	2,039,184	1,252,542	1,262,888	1,482,236	2,013,599	76,469	46,970	47,358	55,584	75,510
Currants .. .. ,,	26,768	76,886	85,389	51,746	115,753	502	1,441	1,601	970	2,171
Wine .. .. .. galls.	1,909,972	2,226,999	2,822,263	1,919,389	1,882,209	286,496	334,050	423,339	287,909	282,331
Brandy .. .. ,,	226,228	126,498	117,234	196,900	133,692	98,974	55,342	51,281	86,143	80,365
Hops .. .. .. cwt.	4,603	3,946	6,183	3,628	6,849	21,864	18,743	36,171	27,210	37,670
Flax { Fibre .. .. ,,	670	497	171	37	60	318	236	81	18	28
Flax { Seed .. .. bush.	4,289	5,682	1,015	170	260	3,342	4,426	790	132	202
Hemp { Fibre .. .. cwt.	801	11	..	..	..	481	7	..	..	..
Hemp { Seed .. .. bush.	1,869	532	..	..	..	1,098	..	..	..	..
Other crops .. .. acres	1,005	2,246	1,205	1,484	2,980	9,045	20,214	10,845	13,356	26,820
Garden & orchard produce ,,	44,235	45,419	45,734	43,763	50,521	1,105,875	1,135,475	1,143,350	1,094,075	1,263,025
Total	..	..	..	..	..	5,066,786	6,056,166	6,891,990	6,892,820	6,653,295

* For a summary of the estimated value of agricultural produce during a series of years, see table "Value of Agricultural, Pastoral, and Mining Produce," *post.*

1423. The prices of agricultural produce assumed in making the foregoing estimates were as follow :— Prices of agricultural produce, 1894-5 to 1898-9.

ASSUMED PRICES OF AGRICULTURAL PRODUCE, 1894–5 TO 1898–9.

Name of Crop.	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Wheat ... per bush.	0 1 7½	0 4 5¼	0 5 3¼	0 4 1	0 2 2
Oats ... ,,	0 1 0¾	0 2 10¾	0 2 2½	0 1 7½	0 1 7¾
Barley Malting ,,	0 2 8¾	0 3 10	0 3 10½	0 4 2½	0 4 2½
Barley Other ,,	0 1 6¼	0 3 3¾	0 3 0	0 2 8	0 2 2¼
Maize ... ,,	0 1 8¼	0 3 4¼	0 3 8½	0 2 10¾	0 2 11½
Other cereals ,,	0 1 8	0 4 8	0 5 0	0 4 0	0 3 0
Grass and clover seed ... ,,	0 4 0	0 4 0	0 4 0	0 4 0	0 4 0
Potatoes ... per ton	1 18 0	4 5 10	3 10 1	6 9 2	2 0 6
Onions ... ,,	2 5 0	6 0 0	5 10 0	5 5 0	4 0 0
Chicory ... ,,	10 0 0	10 0 0	10 0 0	10 0 0	9 18 0
Other root crops ,,	0 18 3	1 2 6	1 3 0	1 14 0	1 7 6
Hay ... ,,	1 15 6	3 17 2	2 16 8	2 12 6	1 14 5
Green forage per acre	1 10 0	1 10 0	1 10 0	1 10 0	1 10 0
Tobacco ... per cwt.	2 16 0	2 16 0	2 16 0	2 16 0	2 16 0
Sugar Beet ... per ton	...	...	...	0 11 10	0 10 0
Grapes, not made into wine per cwt.	0 10 0	0 10 0	0 10 0	0 10 0	0 10 0
Raisins ... per lb.	0 0 9	0 0 9	0 0 9	0 0 9	0 0 9
Currants ... ,,	0 0 4½	0 0 4½	0 0 4½	0 0 4½	0 0 4½
Wine ... per gall.	0 3 0	0 3 0	0 3 0	0 3 0	0 3 0
Brandy ... ,,	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9
Hops ... per cwt.	4 15 0	4 15 0	5 17 0	7 10 0	5 10 0
Flax Fibre ,,	0 9 6	0 9 6	0 9 6	0 9 6	0 9 6
Flax Seed per bush.	0 15 7	0 15 7	0 15 7	0 15 7	0 15 7
Hemp Fibre per cwt.	0 12 0	0 12 0	...	...	...
Hemp Seed per bush.	0 11 9	...	...	...	...
Other crops per acre	9 0 0	9 0 0	9 0 0	9 0 0	9 0 0
Garden and orchard produce ,,	25 0 0	25 0 0	25 0 0	25 0 0	25 0 0

1424. Some idea of the sources of the agricultural wealth of the United States may be formed from the following statement of the Foreign exports of agricultural products for 1897–8. The figures Agricultural products of United States.

have been derived from the *Year-Book* for 1898, of the Statistician to the United States Department of Agriculture :—

AGRICULTURAL EXPORTS OF UNITED STATES, 1897-8.

(000's omitted).

Articles.	Value.*	Articles.	Value.*
	£		£
Animal—		Vegetable—*continued.*	
Living	9,249,	Fruit and Nuts ...	1,803,
Beef and Mutton ...	5,759,	Hops	529,
Pork Products... ...	22,160,	Oil Cake	2,520,
Oleomargarine... ...	1,658,	Seeds (chiefly clover seed)	591,
Other Meat Products ...	856,	Spirits—Distilled and Malt Liquors ...	447,
Milk, Cheese, Butter ...	1,819,	Tobacco	4,434,
Hides, Skins, and Tallow	831,	Vegetables	476,
Wool	4,	Wine	146,
Other Animal Products	1,226,	Sugar and Molasses ...	276,
Vegetable—		Other Vegetable Products	2,022,
Wheat, Flour, and Biscuit	43,148,		
Corn and Meal ...	15,193,	Total Agricultural Exports	171,702,
Oats and Meal	4,478,		
Rye and Flour ...	1,767,		
Other Breadstuffs ...	2,194,	All Exports ...	242,058,
Cotton and Cotton Seed Oil	48,116,		

Principal agricultural exports from United States.

1425. It will be observed that cotton and wheat form more than one-half of the agricultural exports of the United States, and living animals and meat (especially pork products) more than one-fifth ; whilst of other articles, corn and tobacco are the most important ; but that wool and wine are exported to an insignificant extent. Exports of agricultural products formed 71 per cent. of the total exports.

Value of agricultural produce in various countries.

1426. The following figures, showing the annual value of agricultural produce in some of the principal countries of the world, have been re-arranged from those contained in a table published in the report of the United States Department of Agriculture for the month of April, 1890:—

ANNUAL VALUE OF AGRICULTURAL PRODUCE IN VARIOUS COUNTRIES.

	Millions of £.
United States	604
Russia	509
Germany	456
France	444
Austria	322
United Kingdom	266
Italy	178
Spain	136
Australia	76
Canada	58
Argentine Republic	19⅕

* Originally given in dollars, which have been converted into sterling on the assumption that a dollar is equal to 4s.

1427. The standard weight of crops in Victoria is reckoned to be 60 lbs. to the bushel for wheat, 40 lbs. for oats, 50 lbs. for barley, and 56 lbs. for maize. The actual weight, however, differs in different districts. The wheat, during 1898–9, ranged from 54 lbs. to 66 lbs.; oats, from 35 lbs. to 45 lbs.; barley, from 45 lbs. to 56 lbs.; and maize, from 54 lbs. to 60 lbs. In the same year, taking the districts as a whole, the average weight per bushel of wheat was 61 lbs.; of oats, 40 lbs.; of barley, 51 lbs.; and of maize, 57 lbs. Specific weight of crops.

1428. The following figures show the average rates paid for agricultural labour in the last seven years. Rations are allowed in all cases in addition to the wages quoted, except in the case of threshers, hop-pickers, and maize-pickers :— Rates of agricultural labour.

RATES OF AGRICULTURAL LABOUR,* 1892–3 TO 1898–9.

Description of Labour.	1892–3.	1893–4.	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Ploughmen, per week ..	19 3	17 0	15 10	16 0	17 0	16 10	17 8
Farm labourers, ,, ..	16 7	15 0	13 3	12 11	14 3	14 1	16 8
Married couples, ,, ..	24 5	22 0	21 8	20 9	21 2	20 2	21 10
Females—Dairymaids, ,, ..	11 2	9 11	9 5	9 1	8 8	9 2	9 4
,, Others ,, ..	10 6	8 10	8 10	8 6	8 0	9 2	9 0
Mowers, ,, ..	26 9	23 9	23 6	25 10	26 6	26 9	27 2
,, per acre	5 2	5 0	4 11	4 11	5 7	4 8	5 7
Reapers, per week	29 8	24 6	24 4	23 8	26 2	25 3	26 10
,, per acre	9 3	8 5	6 6	7 2	8 8	7 6	10 2
Threshers, per bushel (without rations)	0 6	0 6	0 5	0 5¾	0 5¾	0 4¾	0 5
Hop-pickers, ,, ,,	0 3	0 3¼	0 3	0 3¼	0 3	0 2¾	0 3¼
Maize-pickers, per bag ,,	0 5	0 4	0 3	0 3½	0 3¾	0 3¾	0 3¾

1429. The values of improvements were returned for each year up to 1894–5, and those of farming implements for each year up to 1897–8. They were as follow for each of the five years ended with 1897–8, so far as available :— Plant and improvements on farms.

STEAM ENGINES, IMPLEMENTS, AND IMPROVEMENTS ON FARMS, 1893–4 TO 1897–8.

Value of—	1893–4.	1894–5.	1895–6.	1896–7.	1897–8.
	£	£	£	£	£
Farming implements and machines	2,600,628	2,352,711	2,138,497	2,177,618	2,192,490
Improvements on farms...	14,478,558	14,853,808	... †	... †	...

* See also table of Wages at the end of Part "Interchange," *ante.*
† Information for these years not furnished.

Machine labour.

1430. The following figures, which have been obtained by means of averages struck from the returns of the collectors in all the districts, show the rates paid for machine labour in the last five years :—

MACHINE LABOUR, 1894–5 TO 1898–9.

Average Rates paid for—	1894–5.	1895–6.	1896–7.	1897–8.	1898–9.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Machine reaping, per acre { With binding	5 11	6 0	6 6	6 4	6 7
Machine reaping, per acre { Without binding	4 1	4 2	4 4	4 4	4 2
Machine mowing, per acre ...	3 8	3 10	4 0	4 1	4 2
„ threshing, per 100 bushels—					
With winnowing ...	14 4	15 4	15 1	14 6	15 0
Without winnowing ...	13 1	12 10	15 3	12 3	14 0

Live stock, 1891 and 1900

1431. Correct information as to the numbers of live stock kept was obtained at the census of 1891; but no authentic information is available for more recent years, except in regard to milch cows on farms. A careful estimate has been made for sheep and pigs. The following is a comparison of the estimates for 1900, so far as available with the numbers returned in 1891 :—

LIVE STOCK, 1891 AND 1900.

Period.	Horses.	Cattle.			Sheep.	Pigs.
		Milch Cows.	Exclusive of Milch Cows.	Total.		
5th April, 1891 (enumerated)	436,469	395,192	1,387,689	1,782,881	12,692,843	282,457
March, 1900 (estimated)	...	465,500*	...	...	12,300,000	450,000
Increase ...	...	70,300	...	...	...	168,000
Decrease ...	...	...	...	...	392,800	...

Goats, asses, and mules.

1432. Besides the live stock returned, as shown in the table, 44,482 goats, 139 asses, and 224 mules were enumerated at the census of 1891.

Average increase and mortality amongst cattle, 1891 to 1898.

1433. According to returns received, in response to circulars, on a somewhat limited scale, in respect to cattle numbering from 1,300 to 4,000 in different years—it appears that during the eight years ended with 1898, the gross increase of cattle varied from $12\frac{1}{2}$ to over 25 per cent., and averaged nearly 21 per cent. The worst years were 1892 and 1894—when the increase averaged $15\frac{1}{4}$ and $12\frac{1}{2}$ respectively—and the best years were 1891, 1893, 1895, and 1897—when it varied from $23\frac{1}{2}$ to 25 per cent. The number of deaths in proportion to cattle and

* On agricultural and dairy farms only. There were also 243,600 calves under 12 months.

calves varied from $1\frac{1}{3}$ per cent. in 1893 to 4 per cent. in 1897, and to nearly 5 per cent. in 1898. The following are the figures :—

INCREASE AND DEATHS OF CATTLE ON CERTAIN STATIONS, 1891 TO 1898.

Year.	Number of Cattle on 1st January.	Calves marked during the Year.		Total Cattle and Calves.	Losses by Death.	
		Number.	Increase per cent.		Number.	Average per cent.
1891 ...	1,364	319	23·4	1,683	38	2·3
1892 ...	1,503	230	15·3	1,733	44	2·6
1893 ...	3,851	970	25·2	4,821	64	1·3
1894 ...	4,115	513	12·5	4,628	163	3·5
1895 ...	3,942	1,003	25·4	4,945	135	2·7
1896 ...	4,163	800	19·2	4,963	164	3·3
1897 ...	4,140	968	23·4	5,108	204	4·0
1898 ...	4,018	835	20·8	4,853	237	4·9
Total ...	27,096	5,638	20·8	32,734	1,049	3·2

Sex and age of cattle on stations.

1434. The sexes and ages of cattle on breeding and fattening stations in the colony in 1899 were also returned for the same properties as follow :—

SEXES AND AGES OF CATTLE ON CERTAIN STATIONS IN 1899.

Age.	Numbers.		Total.	Proportions per cent.		
	Males.	Females.		Males.	Females.	Total.
Calves ...	523	503	1,026	8·0	7·7	15·7
1–2 years	512	522	1,034	7·9	8·0	15·9
2–3 „	532	595	1,12	8·2	9·1	17·3
3–4 „	566	654	1,220	8·7	10·0	18·7
4 and over	331	1,779	2,110	5·1	27·3	32·4
Total ...	2,464	4,053	6,517	37·9	62·1	100·0

Natural increase of sheep.

1435. According to information received, in response to circulars, from pastoralists—numbering from 17 to 27 in different years—in various parts of the colony in respect to flocks numbering between 240,000 and 400,000 sheep, the following interesting particulars respecting the increase of sheep for the years 1891 to 1898 have been obtained. It will be observed that the gross natural increase varied from about 23 to 25 per cent. in the first six years, but fell to as low as $17\frac{1}{2}$ per cent. in the last two years (1897 and 1898) ; that the losses of sheep and lambs by death averaged nearly 3 per cent., being as high as $3\frac{3}{4}$ per cent. in 1898, and over 3 per cent. in the years 1891, 1893, and 1895, and as low as $2\frac{1}{2}$ per cent. or less in the years 1894, 1896, and 1897 ; whilst there was an annual net increase on the total flocks

of only $4\frac{1}{4}$ per cent. in 1891, of as much as 20 per cent. in 1892, which gradually fell to $10\frac{1}{4}$ per cent. in 1895, but an actual decrease in the last three years, varying from 2 to 12 per cent.

Increase of Sheep according to Returns furnished by certain Squatters, 1891–8.

	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
	Numbers.							
On 1st January ..	228,942	238,771	285,397	325,457	361,901	399,113	392,725	344,412
Purchased	..	51,357	41,672	36,226	35,713	23,803	1,242	24,316
Natural increase (*i.e.*, Lambs marked) ..	56,612	55,104	69,487	81,861	91,183	90,606	69,342	59,901
Total (Gross) ..	285,554	345,232	396,556	443,544	488,797	513,522	463,309	428,629
Disposed of—								
Deaths (Sheep and Lambs)	8,754	8,517	11,605	9,582	14,352	12,946	11,308	15,065
Slaughtered on Station	5,296	5,438	6,633	7,499	6,674	10,270	11,221	10,874
Sold	32,733	45,880	52,861	64,562	68,658	97,581	96,368	74,587
Total	46,783	59,835	71,099	81,643	89,684	120,797	118,897	100,526
On 31st December ..	238,771	285,397	325,457	361,901	399,113	392,725	344,412	328,103
Natural Increase per cent.—								
Gross (Lambs marked)	24·8	23·1	24·4	25·1	25·2	22·7	17·7	17·4
Net (Lambs shorn) ..	23·1	20·7	23·2	24·3	23·0	21·0	16·1	15·5
Losses per cent. on—								
Sheep since 1st January*	1·68	0·67	1·3	1·9	1·6	1·3	1·4	2·5
Lambs marked†	1·7	2·4	1·2	0·8	2·2	1·7	1·6	1·9
Sheep and Lambs (Gross Number)‡	3·06	2·91	3·28	2·36	3·18	2·56	2·46	3·74
Yearly increase per cent.	4·3	19·5	14·0	11·2	10·3	−1·60	−12·3	−4·7
Number of stations sending in returns ..	17	17	19	21	22	24	25	27

Note.—Minus sign (−) indicates decrease.

* Up to shearing time.

† Decrease of number *shorn*, as compared with number *marked*.

‡ Based on gross numbers, *i.e.*, number, 1st January, plus Natural Increase.

Average weight of wool per sheep.

1436. From the same returns were obtained the following averages relative to the average weight of fleece, and the average weight of the clip per sheep on the runs on the 31st December of each year. The latter will form a fairly reliable basis for computing from the total wool clip, which can be ascertained, the estimated number of sheep in the colony each year, respecting which no authentic information is available. It will be observed that the average weight of fleece for sheep shorn varied from 6lbs. $2\frac{1}{4}$ozs. in 1891 to 6lbs. 14ozs. in 1896, and averaged 6lbs. $5\frac{15}{16}$ozs.; for lambs from 2lbs. $1\frac{1}{4}$ozs. in 1897 to 2lbs. 5ozs. in 1895, 1896, and 1898, and averaged 2lbs. $4\frac{1}{16}$ozs.; and for sheep and lambs together from 5lbs. $4\frac{1}{2}$ozs. in 1891 to 5lbs. $14\frac{1}{8}$ozs. in 1896, and averaged 5lbs. $8\frac{3}{8}$ozs. As regards individual stations, the highest average obtained for sheep was 12lbs. 7ozs. in 1896, 10lbs. 10ozs. in 1895, 9lbs.

4ozs. in 1892, 9lbs. in 1893 and 1897, 8lbs. 7ozs. in 1898, and 8lbs. in 1891 and 1894; and the highest for lambs, 3lbs. 6ozs. in 1894, 3lbs. 4ozs. in 1897, 3lbs. 2ozs. in 1892, 1893, and 1898, 3lbs. 1oz. in 1896, 2lbs. 13ozs. in 1895, and 2lbs. 10ozs. in 1891; whilst the lowest average for sheep was 4lbs. 3ozs. in 1897, 4lbs. 6ozs. in 1891, 4lbs. 8ozs. in 1892, 4lbs. 10ozs. in 1894, 4lbs. 12ozs. in 1896, 4lbs. 14ozs. in 1898, 5lbs. in 1895, and 5lbs. 1oz. in 1893; and the lowest average for lambs 1lb. 2ozs. in 1898, 1lb. 6ozs. in 1894 and 1896, 1lb. 8ozs. in 1891, 1892, and 1897, 1lb. 9ozs. in 1895, and 1lb. 10ozs. in 1893.

Sheep shorn and Weight of Wool Clip on certain Stations, 1891 to 1898.

Year.	Number of Sheep on 1st January.	Number shorn.			Weight of Clip in Grease—In lbs.		
		Sheep.	Lambs.	Sheep and Lambs.	Sheep.	Lambs.	Sheep and Lambs.
1891 ...	228,942	190,862	52,638	243,500	1,171,518	113,678	1,285,196
1892 ...	238,771	198,909	51,394	250,403	1,242,562	115,183	1,357,745
1893 ...	285,397	270,059	71,498	341,557	1,725,394	154,907	1,880,301
1894 ...	325,457	273,829	79,413	353,242	1,755,067	173,688	1,928,755
1895 ...	361,901	287,151	83,787	370,838	1,804,714	193,999	1,998,713
1896 ...	399,113	311,349	83,802	395,151	2,128,156	195,884	2,324,040
1897 ...	392,725	301,851	63,477	365,428	1,952,298	133,274	2,085,572
1898 ...	344,412	278,036	53,196	331,232	1,710,088	123,775	1,833,863

Year.	Average Weight of Fleece.			Per cent. of Sheep shorn to Number on 1st January.	Average Weight of Wool to Number of Sheep on 31st December.
	Sheep.	Lambs.	Sheep and Lambs.		
	lbs. ozs.	lbs. ozs.	lbs. ozs.		lbs. ozs.
1891	6 $2\frac{3}{16}$	2 $2\frac{9}{16}$	5 $4\frac{1}{2}$	83·4	5 $6\frac{1}{8}$
1892	6 $3\frac{15}{16}$	2 $3\frac{7}{8}$	5 $6\frac{3}{4}$	83·3	4 $12\frac{1}{8}$
1893	6 $6\frac{3}{16}$	2 $2\frac{11}{16}$	5 $8\frac{3}{4}$	94·6	5 $12\frac{1}{2}$
1894	6 $6\frac{9}{16}$	2 $2\frac{5}{8}$	5 $7\frac{3}{8}$	81·6	5 $5\frac{1}{4}$
1895	6 $4\frac{9}{16}$	2 5	5 $6\frac{1}{4}$	79·3	5 $0\frac{1}{8}$
1896	6 14	2 $5\frac{3}{8}$	5 $14\frac{1}{8}$	78·0	5 $14\frac{15}{16}$
1897	6 $7\frac{7}{16}$	2 $1\frac{5}{16}$	5 $11\frac{3}{8}$	76·8	6 $0\frac{7}{8}$
1898	6 $2\frac{7}{16}$	2 $5\frac{1}{4}$	5 $8\frac{1}{2}$	80·7	5 $9\frac{5}{16}$

Sex and age of sheep.

1437. In the same returns particulars were in many cases also furnished of the sexes and ages of sheep, which have been collated with the following results :—

SEX AND AGE OF SHEEP ON CERTAIN STATIONS IN VICTORIA AT THE END OF 1898.

Age.	Numbers.			Proportions per Cent.		
	Number of Males.	Number of Females.	Total.	Males.	Females.	Total.
Lambs... ...	28,294	30,753	59,047	8·4	9·2	17·6
2-tooth ...	26,226	29,558	55,784	7·8	8·8	16·6
4-tooth ...	32,391	39,647	72,038	9·7	11·8	21·5
6-tooth ...	25,318	39,704	65,022	7·6	11·8	19·4
8-tooth ...	15,804	28,667	44,471	4·7	8·6	13·3
Aged	3,660	35,441	39,101	1·1	10·5	11·6
Total ...	131,693	203,770	335,463	39·3	60·7	100·0

Stock per square mile.

1438. At the census of 1891 there were in Victoria 5 horses, 20 head of cattle, 144 sheep, and 3 pigs, to the square mile.* Since then, there is reason to believe that cattle and pigs have largely increased, but that sheep have, if anything, shown a slight falling off.

Live stock in Australasian Colonies.

1439. The following is a statement of the number of horses, cattle, sheep, and pigs in the various Australasian Colonies, according to the returns of 1898–9 :—

LIVE STOCK IN AUSTRALASIAN COLONIES, 1898–9.†

Colony.	Horses.	Cattle.	Sheep.	Pigs.
Victoria	431,547	1,833,900	12,300,000	425,000
New South Wales ...	491,553	2,029,516	41,241,004	247,061
Queensland	480,469	5,571,292	17,552,608	127,081
South Australia‡ ...	177,180	613,894	5,076,696	61,842
Western Australia ...	62,442	245,907	2,244,880	39,284
Total	1,643,191	10,294,509	78,415,188	900,268
Tasmania	29,797	148,558	1,493,638	45,274
New Zealand	258,115	1,203,024	19,348,506	193,512
Grand Total ...	1,931,103	11,646,091	99,257,332	1,139,054

* For live stock at various periods since 1851, see issue of this work for 1893, Vol. II., paragraphs 405 to 409.

† The numbers of live stock for Victoria relate to estimates for the year 1895, except in the case of sheep and pigs, which have been roughly estimated.

‡ Including the Northern Territory, which contained 15,406 horses, 353,551 head of cattle, 64,076 sheep, and 1,710 pigs.

Equivalent of live stock in sheep in each colony.

1440. Assuming that one horse or one head of cattle consumes as much grass as ten sheep,* and reducing the stock of these kinds to a common standard so far as their food-consuming capabilities are concerned, the following numbers are obtained for the different colonies:—

	Live Stock reduced to their equivalent in Sheep.
1. Queensland	78,070,218
2. New South Wales	66,451,694
3. Victoria	34,954,470
4. New Zealand	33,959,896
5. South Australia	12,987,436
6. Western Australia	5,328,370
7. Tasmania	3,277,188

Density of live stock in each colony.

1441. Comparing the equivalent numbers with the area of each colony, the following results are arrived at :—

1. Victoria had to the square mile the equivalent of 398 sheep.
2. New Zealand " " " 325 "
3. New South Wales " " " 215 "
4. Tasmania " " " 124 "
5. Queensland " " " 117 "
6. South Australia " " " 14 "
7. Western Australia " " " 5 "

Victoria the most heavily stocked colony.

1442. The figures show Victoria to be much more heavily stocked than any of the other Australasian Colonies, and that both it and New Zealand contain more stock to the square mile than New South Wales ; also that over the immense territories of South Australia, and especially Western Australia, the proportion of live stock is very small indeed.

Live stock per head in each colony.

1443. If the equivalent numbers should be compared with the populations of the respective colonies, the results would be as follow:—

1. Queensland had to each person living the equivalent of 158 sheep.
2. New South Wales " " " 49 "
3. New Zealand " " " 45 "
4. South Australia " " " 36 "
5. Western Australia " " " 31 "
6. Victoria " " " 30 "
7. Tasmania " " " 18 "

Live stock in Australia and Australasia.

1444. Taking the sum of the numbers of live stock in all the colonies in the Australian Continent, and adding thereto the numbers in Tasmania and New Zealand, the results are as follow:—

LIVE STOCK IN AUSTRALIA AND AUSTRALASIA, 1898–9.

—	Live Stock reduced to their equivalent in Sheep.		
	Total Number.	Number to the Square Mile.	Number to each Person living.
Australian Continent	197,792,188	67	56
Australia, Tasmania, and New Zealand	235,029,272	76	53

* Strictly speaking, it is believed that six sheep consume as much as one head of cattle, and ten sheep as much as one horse.

Live stock in British Possessions.

1445. The number of live stock in the United Kingdom and any British Possessions, respecting which the information is available, is officially stated to have been as follows in the years named :—

LIVE STOCK IN BRITISH POSSESSIONS.

Possessions.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
The United Kingdom	1898	2,040,330*	11,749,212	31,102,359	3,719,219
Malta	1897	7,941	7,905	15,961	...
Cyprus	1897–8	58,159	48,335	291,147	...
India†	1896–7	1,120,194	47,348,343	16,875,724	...
Ceylon	1897	4,007	1,289,536	86,627	79,524
Mauritius ...	1884	12,000	15,000	30,000	30,000
Cape of Good Hope	1897	357,960	2,231,370	14,049,076	240,643
Natal	1897	49,361	241,933	716,991	41,015
Canada	1881–91	1,226,295	4,097,915	3,473,093	1,710,758
Newfoundland ...	1891	6,138	23,822	60,840	32,011
Jamaica	1897	47,126	102,966	15,000	...
Falkland Islands ...	1897	2,758	7,343	732,010	200
Australasia‡ ...	1898–9	1,931,103	11,646,091	99,257,332	1,051,642
Fiji	1897	1,832	15,136	4,716	1,185

Live stock in Foreign countries.

1446. The following table contains a statement of the number of horses, cattle, sheep, and pigs in the principal Foreign countries. The information has been derived entirely from official documents :—

LIVE STOCK IN FOREIGN COUNTRIES.

(000's omitted.)

Country.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
EUROPE.					
Austria	1890	1,548,	8,644,	3,187,	3,550,
Belgium	1895	272,	1,421,	236,	1,163,
Bulgaria	1893	344,	1,768,	6,868,	462,
Denmark	1893	411,	1,696,	1,247,	829,
France	1897	2,899,	13,487,	21,445,	6,283,
Germany	1897	4,038,	18,491,	10,867,	14,275,
Greece	1892	100,	360,	2,900,	...
Holland	1896	269,	1,583,	700,	657,
Hungary	1896	2,308,	6,738,	8,123,	7,330,
Italy	1890	720,	5,000,	6,900,	1,800,
Norway	1890	151,	1,006,	1,418,	121,
Portugal	1870	...	625,	2,977,	971,
Roumania	1897	671,	2,138,	6,848,	1,079,
Russia (European) ...	1888	19,663,	24,609,	44,465,	9,243,
Servia	1895	170,	915,	3,094,	904,
Spain	1895	383,	2,071,	16,469,	1,910,
Sweden	1896	512,	2,555,	1,299,	789,
Switzerland	1896	109,	1,307,	272,	567,

Including only unbroken horses, and horses used solely for agriculture and breeding.

There are also in India 12 million buffaloes, and nearly 1 million mules. Goats are included with the sheep, as given above.

‡ For particulars relating to each colony, see third folding sheet and Appendix C.

Live Stock in Foreign Countries—*continued.*

Country.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
Asia.					
Japan	1895	1,531,	1,136,	...	...
Java and Madura ...	1895	486,	2,572,	...	...
Russia in Asia ...	1874–83	1,070,	3,716,	10,612,	...
Africa.					
Algeria	1896	213,	1,104,	7,435,	84,
Egypt	1887	21,	462,	958,	...
Orange Free State ...	1890	249,	895,	6,620,	...
America.					
Argentine Republic ...	1895	4,447,	21,702,	74,380,	...
Brazil	...	...	...	30,000,	...
Costa Rica	1892	77,	346,	3,	...
Guadaloupe	1887	7,	20,	10,	18,
Guatemala	1885	118,	494,	460,	195,
Nicaragua	1884	...	400,	...	...
Paraguay	1896	2,103,	215,	130,	40,
United States	1897	13,961,	45,105,	37,657,	39,760,
Uruguay	1896	392,	5,881,	16,397,	32,
Venezuela	1888	388,	8,476,	5,728,	1,930,

1447. In proportion to population, Australasia has a larger number of sheep than any of the other countries shown in the table, and also a larger number of cattle and horses than in any countries except Uruguay and Argentine Republic. The following are the proportions in some of the chief grazing countries of the world :— Live stock per head in various countries.

Live Stock in Proportion to Population in Various Countries.

Country.	Year.	Per 100 Inhabitants.		
		Sheep.	Cattle.	Horses.
Australasia	1898	2,217	260	43
Uruguay	1896	2,002	718	48
Argentine Republic ...	1895	1,876	547	112
Spain	1895	90	11	2
Great Britain	1898	75	19	4
United States	1897	52	62	19
France	1896	55	35	7
Germany	1897	21	35	8
Italy	1890	22	16	2

Live stock of the world.

1448. The following summary of the live stock of the world was published in February, 1893, by Mr. J. R. Dodge, Statistician to the Department of Agriculture of the United States :—

LIVE STOCK OF THE WORLD.

(000's omitted.)

Countries.	Horses.	Cattle.	Sheep.	Pigs.	Mules and Asses.	Goats.
Europe	36,483,	104,430,	187,144,	49,164,	3,155,	18,941,
Asia	4,279,	60,847,	39,922,	489,	1,080,	1,647,
Africa	1,239,	6,095,	35,589,	547,	390,	12,567,
North America ...	17,717,	57,887,	51,293,	48,059,	2,392,	45,
South America ...	5,486,	57,610,	96,242,	2,724,	1,666,	2,696,
Australasia (1898–9)*	1,933,	11,662,	99,262,	1,053,	...	116,
Oceania	4,	132,	13,	33,	...	13,
Total ...	67,141,	298,663,	509,465,	102,069,	8,683,	36,025,

Live stock slaughtered.

1449. The numbers of live stock slaughtered in Victoria are furnished by the local bodies, but it is probable the returns do not in every case include the animals slaughtered by private persons, and on farms and stations, and, therefore, that more were really slaughtered than the figures show. The following were the numbers returned from 1894 to 1898 :—

LIVE STOCK SLAUGHTERED, 1894 TO 1898.

Year.	Cattle and Calves.	Sheep and Lambs.	Pigs.
1894	229,421	2,125,149	181,834
1895	236,317	2,326,002	201,256
1896	245,477	2,559,088	185,026
1897	240,958	2,434,519	168,050
1898	244,319	2,352,694	164,505

* Corrected according to colonial returns. Fiji is included.

1450. The purposes for which the carcasses of the slaughtered animals were appropriated in the years 1887 to 1898 were returned as follow:— Purposes for which stock was slaughtered.

PURPOSES FOR WHICH LIVE STOCK WAS SLAUGHTERED, 1887 TO 1898.

Year.	For Butcher, &c.			For Freezing and Salting and Preserving.				For Boiling Down.		
				Sheep.						
	Sheep.	Cattle.	Pigs.	For Freezing.	For Salting, &c.	Cattle.*	Pigs.*	Sheep.	Cattle.	Pigs.
1887	2,217,178	215,895	58,292	130		450	64,731	17,422	...	...
1888	2,353,281	249,095	74,160	6,446		380	70,368	6,798	...	...
1889	2,357,162	250,254	74,935	25,518		548	70,789	1,266	20	...
1890	2,187,365	266,819	85,668	26,525		740	77,694	1,986	134	...
1891	2,255,243	262,488	93,626	27,600		799	68,378	2,165	27	...
1892	2,358,520	244,450	95,165	10,300		1,315	82,930	70,206	154	23
1893	2,213,492	226,353	89,974	91,170		480	85,880	187,205	210	80
1894	1,864,447	228,360	92,306	159,528	14,331	774	89,180	86,846	287	348
1895	1,978,934	235,877	97,440	239,087	2,913	256	103,716	105,068	184	...
1896	2,190,498	244,505	85,318	199,376	31,619	493	99,708	137,595	479	...
1897	2,117,820	240,164	85,325	263,275	17,837	722	82,525	35,587	72	200
1898	2,102,654	243,213	77,596	215,639	22,520	729	86,904	11,881	377	5

NOTE.—In 1896 about one-tenth, in 1897 about one-seventh, and in 1898 one-sixth of the sheep slaughtered were lambs; of the cattle about 59 per cent. were bullocks, 26 per cent. cows, and 15 per cent. calves in 1896, 62, 27, and 11 per cent. respectively in 1897, and 54, 33, and 13 per cent. respectively in 1898.

1451. In the five years ended with 1893, the returns show the average number slaughtered annually for preserving and salting to have been 776 of cattle, 36,223 of sheep and lambs, and 77,134 of pigs; but in the last five years a large increase occurred under the head of sheep, owing to the opening of a large export trade in frozen mutton, the average annual number being 595 of cattle, 233,222 of sheep and lambs, and 92,407 of pigs. Stock slaughtered for preserving.

1452. The colony does not produce enough beef and mutton for its own consumption, and, consequently, has to import large numbers of cattle and sheep from the neighbouring colonies. Such importation Net imports of cattle and sheep 1887--93.

* Including the following since 1893 for freezing, viz., cattle, 4 in 1895 and 141 in 1898; pigs, 156 in 1895, 510 in 1896, and 1,020 in 1898.

has, however, been considerably reduced since the 7th June, 1892, by the raising of the import duty on cattle from 5s. to 30s. per head, and that on sheep from 6d. to 2s.; the result being that whereas formerly it was not unusual to import 100,000 head of cattle, and 2,000,000 sheep, now an importation of about 20,000 head of cattle, and 300,000 sheep is, as a rule, ample to supply all requirements. The following is a statement of the net imports (*i.e.*, excess of imports over exports) of cattle, sheep, and meat—the latter being reduced to its equivalent in animals—in each of the last twelve years. For the conversion of meat into animals it has been assumed that 600 lbs. of beef is equivalent to one head of cattle, and 50 lbs. of mutton to one sheep:—

NET IMPORTS* OF CATTLE AND SHEEP OR BEEF AND MUTTON, 1887 to 1898.

Year.	Number of Cattle.			Number of Sheep.		
	Live.	Dead.†	Total.	Live.	Dead.†	Total.
1887 ...	82,537	182	82,719	519,906	-6,748	513,158
1888 ...	113,854	500	114,354	2,127,921	-9,134	2,118,787
1889 ...	53,010	18	53,028	403,575	-7,975	395,600
1890 ...	129,416	103	129,519	2,028,576	-12,125	2,016,451
1891 ...	97,927	1,039	98,966	1,577,451	-9,700	1,567,751
1892 ...	53,621	83	53,704	985,244	-58,261	926,983
1893 ...	26,403	-237	26,166	490,936	-119,901	371,035
1894 ...	21,253	-337	20,916	635,183	-270,784	364,399
1895 ...	20,037	-399	19,638	524,348	-241,852	282,496
1896 ...	19,047	-45	19,002	443,915	-260,196	183,719
1897 ...	21,450	-933	20,517	478,637	-180,564	298,073
1898 ...	32,746	-1,492	31,254	780,969	-167,552	613,417

Consumption of sheep and cattle for food.

1453. Adding the net numbers imported, as shown in the preceding table, to the numbers of cattle and sheep slaughtered in the colony for food, the total numbers consumed in the colony are arrived at. Reducing the consumption to a population basis, it will be found that, prior to the raising of the stock tax, the average annual consumption per head was equivalent to nearly a quarter of a head of cattle, and over two sheep, but it has since fallen to an average of one-fifth of a head of cattle, and one and three-quarters sheep. It is probable, however, that a portion of this falling-off was due to a reduction in the purchasing power of the people owing to the advent of hard times, as well as to a large number

* The minus sign (-) indicates a net export.

† Prior to 1895, beef and mutton were not separately distinguished, and consequently the proportions of each have been estimated.

of adult meat eaters having emigrated to the gold-fields of Western Australia. The following are the figures for each of the last twelve years :—

CATTLE AND SHEEP CONSUMED IN VICTORIA, 1887 TO 1898.

Year.	Number Slaughtered in the colony for food.		Dead Meat Imported (Net)*; equivalent in—		Total number Consumed of—		Average per Head of Population.	
	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.
1887	216,345	2,217,308	182	-6,748	216,527	2,210,560	·21	2·17
1888	249,475	2,359,727	500	-9,134	249,975	2,350,593	·24	2·23
1889	250,822	2,382,680	18	-7,975	250,840	2,374,705	·23	2·18
1890	267,693	2,213,890	103	-12,125	267,796	2,201,765	·24	1·97
1891	263,287	2,282,843	1,039	-9,700	264,326	2,273,143	·23	1·98
1892	245,765	2,368,820	83	-58,261	245,848	2,310,559	·21	1·99
1893	226,833	2,304,662	-237	-119,901	226,596	2,184,761	·19	1·87
1894	229,134	2,038,303	-337	-270,784	228,797	1,767,519	·19	1·50
1895	236,133	2,220,934	-399	-241,852	235,734	1,979,082	·20	1·68
1896	244,998	2,421,493	-45	-260,196	244,953	2,161,297	·21	1·84
1897	240,886	2,398,932	-933	-180,564	239,953	2,218,368	·20	1·89
1898	243,942	2,340,813	-1,492	-167,552	242,450	2,173,261	·21	1·86

Consumption of meat per head.

1454. Reducing the average consumption of cattle and sheep shown in the last two columns of the preceding table to beef and mutton, it appears that the meat consumed varied in the last twelve years from 253 lbs. per head in 1888, when the colony was at the height of a a period of inflation and apparent prosperity, to only 192 lbs. in 1894, which was the year following the great financial crisis. Comparing the average of the first four years of the period with that of the last four, it will be found that the consumption has fallen from 245 lbs. to 214 lbs. per head, or by 31 lbs. The following are the averages for each of the twelve years :—

AVERAGE CONSUMPTION OF BEEF AND MUTTON PER HEAD, 1887 TO 1898.

Year.	Beef.	Mutton.	Total.
	lbs.	lbs.	lbs.
1887	128	109	237
1888	142	111	253
1889	138	109	247
1890	144	99	243
1891	124	99	223
1892	127	99	226
1893	116	93	209
1894	117	75	192
1895	120	84	204
1896	125	92	217
1897	123	95	218
1898	124	93	217

* The minus sign (-) indicates a net export.

Sources of meat supply

1455. Comparing the six years which have elapsed since 1892, when the stock tax was increased, with a period of five years prior to that year, it will be found that the colony has increased her annual supply of cattle for food from an average of 154,200 to 213,500, or by nearly 40 per cent., and her annual supply of sheep from 960,000 to 1,729,000, or by 80 per cent. The following is a distribution of the supplies of cattle and sheep used for food between Victoria and the neighbouring colonies in the same years:—

SOURCES OF SUPPLY OF CATTLE AND SHEEP CONSUMED IN VICTORIA, 1887 TO 1898.

Year.	Requirements supplied by—				Total Consumption.	
	Victoria.		Other Colonies.			
	Cattle.	Sheep.	Cattle.	Sheep.	Cattle.	Sheep.
1887 ...	133,808	1,697,402	82,719	513,158	216,527	2,210,560
1888 ...	135,621	231,806	114,354	2,118,787	249,975	2,350,593
1889 ...	197,812	1,979,105	53,028	395,600	250,840	2,374,705
1890 ...	138,277	185,314	129,519	2,016,451	267,796	2,201,765
1891 ...	165,360	705,392	98,966	1,567,751	264,326	2,273,143
1892 ...	192,144	1,383,576	53,704	926,983	245,848	2,310,559
1893 ...	200,430	1,813,726	26,166	371,035	226,596	2,184,761
1894 ...	207,881	1,403,120	20,916	364,399	228,797	1,767,519
1895 ...	216,096	1,696,586	19,638	282,496	235,734	1,979,082
1896 ...	225,951	1,977,578	19,002	183,719	244,953	2,161,297
1897 ...	219,436	1,920,295	20,517	298,073	239,953	2,218,368
1898 ...	211,196	1,560,944	31,254	613,417	242,450	2,174,361

Net exports of meats.

1456. In 1898 the value of the net exports (*i.e.*, excess of exports over imports) of beef and mutton amounted to £88,246, and that of ham, bacon, and pork to over £30,115; whereas, prior to 1892, there was but a small export of beef and mutton, and a net import of pig products. This was chiefly owing to a large export trade in frozen meat having sprung up since 1890, and a stimulus having been given to the bacon and pork trade in 1893. Moreover, although fresh meats and hams were largely imported in the four years ended with 1892, there was a small balance of the former exported, and the latter was imported only to a slight extent in 1893, and in all the years since there has been a large export of both. On the other hand, the

export of preserved and salted meats fell off since 1894. A further marked development of the trade may be looked for—more especially in frozen and preserved meats, ham, bacon, and pork, and poultry and game—the last of which as yet finds no place in the returns, except in the case of rabbits and hares since 1894, and of these there has been a large export in each of the last four years. The following are the net exports of each of the last six years :—

Net Exports of Meats from Victoria for Six Years Ended 1898.*

Year.	Beef and Mutton (Centals).				Salted Chiefly (Beef).
	Fresh.		Frozen.		
	Beef.	Mutton.	Beef.	Mutton.	
	Centals.	Centals.	Centals.	Centals.	Centals.
1893 ...	13		54,031		637
1894 ...	1,115		59	111,715	118
1895 ...	866	943	932	114,446	592
1896 ...	127	−38	10	125,421	13
1897 ...	512	56	4,845	87,856	173
1898 ...	299	58	7,983	83,718	221

Year.	Rabits and Hares.		Pig Products.			Preserved Meats (Mixed).
	Frozen.	Preserved.	Ham.	Bacon.	Pork—Salt, Fresh, and Frozen.	
	Pairs.	lbs.	lbs.	lbs.	Centals.	lbs.
1893 ...	...	...	−3,164	242,722	906	676,719
1894 ...	...	...	23,515	523,014	439	2,333,778
1895 ...	215,858	2,359,616	50,096	859,573	137	553,724
1896 ...	680,180	3,870,097	93,012	1,604,329	411	472,428
1897 ...	1,014,637	5,101,302	98,181	1,365,911	167	248,176
1898 ...	1,110,588	2,589,945	52,553	774,380	1,246	242,481

Year.	Value †				
	Beef and Mutton.	Pig Products.	Rabbits and Hares.	Preserved Meats (Mixed).	Total.
	£	£	£	£	£
1893 ...	75,701	8,471	...	10,422	94,594
1894 ...	129,162	15,775	...	39,552	184,489
1895 ...	148,469	23,283	45,724	5,730	223,206
1896 ...	129,420	50,230	95,372	11,798	286,820
1897 ...	89,080	42,845	126,621	6,901	265,447
1898 ...	88,246	30,115	89,054	−626	206,789

* By net exports is meant the excess of exports over imports. The reverse of this, or a net import, is indicated wherever a minus (−) sign appears.

† As ascertained by deducting the value of imports from that of exports.

Poultry.

1457. The following is a statement of the numbers of the different kinds of poultry kept according to the returns of the censuses of 1881 and 1891 :—

POULTRY, 1881 AND 1891.

Year of Census.	Number of Owners of Poultry.	Geese.	Ducks.	Fowls.	Turkeys.	Pea Fowls.	Guinea Fowls.
1881 ...	97,152	92,654	181,698	2,328,521	153,078	1,701	2,307
1891 ...	142,797	89,145	303,520	3,476,751	216,440	3,423	7,815
Increase ...	45,645	...	121,822	1,148,230	63,362	1,722	5,508
Decrease ...	...	3,509	...	...	...	...	...

Exports of poultry.

1458. It may be mentioned that the surplus of imports over exports of poultry in 1898 amounted to 1,008 head, but the value of those exported exceeded those imported by £13. There appears to be an opening for the development of a large export trade in poultry and eggs to the United Kingdom, and shipments on a small scale have been already made.

Poultry in Australasian Colonies.

1459. Besides Victoria, the only Australasian Colonies in which returns of poultry were obtained at the census of 1891 were New South Wales, Western Australia, and New Zealand; in the last named the total number only being returned without reference to kinds. The following is a statement of the numbers in the four colonies referred to :—

POULTRY IN FOUR AUSTRALASIAN COLONIES, 1891.

Colony.	Turkeys.	Fowls.	Geese.	Ducks.	Total.
Victoria	216,440	3,476,751	89,145	303,520	4,085,856
New South Wales*...	198,083	2,061,555	70,876	270,837	2,601,351
Western Australia...	2,774	145,682	972	10,585	160,013
New Zealand ...	...	...	...	...	1,790,070

Poultry at the Cape of Good Hope.

1460. At the census of the Cape of Good Hope, returns were obtained of 67,913 turkeys, 145,630 geese, 2,452,312 fowls and ducks, and 154,880 ostriches.

Wool season in Victoria.

1461. The general lambing season in Victoria extends from April to June for merinos, and from July to September for crossbreds ; in ordinary seasons shearing commences in the early districts in the beginning of September, and continues to the end of the year, the bulk of the wool being shorn in October and November. By the first week in October the new season's clip is arriving freely in Melbourne and Geelong ; the wool sales then begin, and are held almost daily until within about a couple of days of Christmas. They are usually resumed during the second week in January, and continued until about the end of February. From March to September inclusive, small sales of oddments are held intermittently.

* The Government Statistician of New South Wales says too much reliance must not be placed upon the figures relating to that colony.

Lambing season in Australasia.

1462. In Queensland the lambing on different stations, on account of climatic influences and other circumstances, is nearly all the year round, but the major portion occurs from about December to June. In New South Wales, South Australia, and Western Australia, the lambing season is from April to June, and the same in the northern part of Victoria for merino sheep ; and for crossbreds, July to September. In New Zealand and Tasmania the seasons are the same as those in Victoria, except in the southern part of the Middle Island of New Zealand, where the lambing season for crossbreds extends to November.

Shearing seasons in Australasia.

1463. The shearing season in Australasia is, from the varied climate and other contingencies, nearly all the year round. In Queensland it is principally from March to September, especially in the first two and last two months of that period, when 31 and 61 per cent. respectively of the sheep are shorn, 6 per cent. being shorn in the intervening three months, and the remainder in January, February, and October. In the northern parts of South Australia and New South Wales it is from June to August ; and in the southern and eastern parts of the two last-named colonies from September to November ; in Victoria from September to December ; in Tasmania and New Zealand about the same, with the exception of the southern portion of the latter, where it is fully six weeks later.

Weight of greasy fleeces.

1464. The estimated average weight of a fleece of greasy wool grown in Victoria is generally considered to be $5\frac{1}{4}$ lbs. for merino, and 6 lbs. for crossbred and longwool ; the former varying from a maximum of $9\frac{1}{2}$ lbs. (which was averaged by a flock of 11,000) to a minimum of $3\frac{1}{2}$ lbs.; and the latter from a maximum of 9 lbs. to a minimum of $4\frac{1}{2}$ lbs. According to returns received from a number of sheep stations in Victoria for the years 1891 to 1898, the average weight of fleece per sheep was nearly $6\frac{3}{8}$ lbs.—varying in different years from 6lbs. $2\frac{1}{4}$ozs. to 6lbs. 14ozs.; for lambs, the average was a little over $2\frac{1}{4}$ lbs. ; and for sheep and lambs together, $5\frac{2}{3}$ lbs.—varying in different years from 5lbs. $4\frac{1}{2}$ozs. to 5lbs. $14\frac{1}{8}$ozs.*

Loss of weight in scouring.

1465. The estimated loss in weight of Victorian grown wool (sheep and lambs) in scouring clean, fit for the manufacturer, is about 55 per cent. (yield 45 per cent.) on merino, about 45 per cent. (yield 55 per cent.) on crossbred, and about 30 per cent. (yield 70 per cent.) on Lincolns and other longwools. The difference in the loss in weight between a bad and a good season is estimated at from 2 to 4 per cent. About half the Victorian washed and scoured wool is washed clean, fit for the manufacturer, but the remainder contains more or less grease. Taking it as a whole, such wool is assumed on the average to have lost 47 per cent. of the original weight, whereas it would have lost 52 per cent if washed clean. On this basis, a bale of ordinary washed and scoured wool is equivalent to 1·88 bales of greasy wool.

Proportion of washed and scoured wool exported

1466. In 1895-6, less than 17 per cent. of the Victorian wool exported was washed or scoured, and since then there has been a growing tendency to send away a still larger proportion in its natural

* See table following paragraph 1436 *ante*.

state—the proportion of washed and scoured having fallen to 7 per cent. in 1899–00 as will be observed by the following figures :—

PROPORTION OF WASHED AND SCOURED VICTORIAN WOOL EXPORTED, 1895–6 TO 1899–00.

	Percentage by— Weight (lbs.)	Bales.		Percentage of— Weight (lbs.)	Bales.
1895–6 ...	16·4	21·5	1898–9 ...	12·5	15·4
1896–7 ...	12·8	16·7	1899–00 ...	7·1	10·3
1897–8 ...	14·1	18·4			

Proportion of washed and scoured wool in Australasian Colonies.

1467. Amongst the other colonies, the highest proportion of washed and scoured wool of home production exported in 1898 was 34·8 per cent. in Queensland, then 17·4 per cent. in New South Wales, and 12·2 per cent. in New Zealand; whilst the average for all these colonies with Victoria was 17·6 per cent.

Export season for wool in Victoria.

1468. Wool is exported from Victoria chiefly from October to March, the great bulk being sent away before the end of December. Thus, in the four seasons ended with 1896–7, the proportion exported during the six months ended 31st December varied from 60 to 75 per cent., and averaged 69 per cent; whilst that exported in the six months ended 30th June varied from 25 to 40 per cent., and averaged 31 per cent.

Class of sheep produced in Australasia.

1469. Since the development of an export trade in frozen meat, the breed of sheep produced, particularly in New Zealand and Victoria, has been greatly changed to meet the requirements of the foreign demand; and, as the trade expands, the increase in the numbers of crossbred sheep will, on account of the profitable returns from fat lambs, become still more general where the country is suitable. The proportions of crossbred and merino sheep in the different colonies, which have been estimated from the most authentic data available, are shown in the following statement, and may be accepted as sufficiently reliable for all statistical purposes :—

BREED OF SHEEP IN AUSTRALASIAN COLONIES, 1898.

Colony.	Crossbred and Longwools.	Merino.
	per cent.	per cent.
New Zealand...	87	13
Victoria	35	65
South Australia	9	91
New South Wales	8½	91½
Queensland	5	95
Average (without New Zealand)	12	88
,, Australasia ...	25½	74½

Wool produced, 1894 to 1899.

1470. On the basis followed in previous issues of this work, the quantity of wool produced in Victoria in any year is found by adding to the excess of exports over imports the quantity used in Victorian woollen mills. In the year 1899 the quantity so determined was 61,678,353 lbs. of greasy and washed and scoured wool, equivalent to

67,921,260 lbs. in the grease, valued by the Customs returns at £3,493,745. The quantity (in the grease) was over 7 million lbs. less than in 1898, and about $6\frac{3}{4}$ million lbs. below the average of the previous five years; but the value, owing to a rise in price, was $1\frac{1}{6}$ millions sterling higher than in 1898, and over a million higher than the average of the quinquennial period. The following are the figures for the last six years:—

WOOL PRODUCTION, 1894 TO 1899.

Year.	Quantity in lbs.				Customs Value.
	Greasy.	Washed and Scoured.	Total.		
			Greasy and Washed.	Equivalent in Grease.	
					£
1894 ...	50,542,178	11,821,811	62,363,989	72,767,183	2,281,836
1895 ...	67,098,521	11,880,881	78,979,402	89,434,577	2,854,545
1896 ...	55,695,223	9,877,076	65,572,299	74,264,126	2,759,762
1897 ...	47,796,320	7,656,178	55,452,498	62,189,935	2,139,095
1898 ...	61,927,153	6,982,815	68,909,968	75,054,845	2,329,193
1899 ...	54,584,141	7,094,212	61,678,353	67,921,260	3,493,745

NOTE.—No allowance has been made in this table for wool on the backs of sheep imported, nor for wool on skins exported.

1471. No allowance has been made in the last table for wool on the backs of sheep imported, nor of that on sheepskins (with wool) exported. If this were taken into account, the wool production would have been very slightly lower than that shown for 1894, but higher for all the other years, the net quantity so exported having gradually increased from 760,000 lbs. in 1895 to $2\frac{1}{3}$ million lbs. in 1899, as will be seen by the following figures :—

Wool on sheep and skins exported not taken into consideration.

NET EXPORT OF WOOL ON SHEEP AND SHEEPSKINS, 1894 TO 1899.

Year.	Net Import of Wool on Sheep's backs.	Net Export of Wool on Skins.	Total quantity. (Net)	Estimated Value.	
				Price per lb. (assumed).	Total.
	lbs.	lbs.	lbs.	d.	£
1894	1,905,549	1,525,029	−380,520*	9	−14,270*
1895	1,573,044	2,332,338	759,294	9	28,473
1896	1,331,745	1,937,682	605,937	9	22,723
1897	1,435,911	2,625,951	1,190,040	9	44,626
1898	2,345,907	3,789,339	1,443,432	9	54,129
1899	2,355,639	4,685,610	2,329,971	12	116,498
Total	10,947,795	16,895,949	5,948,154	...	252,179

NOTE.—It is assumed that each sheep or sheepskin (with wool) carries on it an average of 3 lbs. of wool, or about half a fleece.

* The minus sign (−) indicates net import.

Wool produced in Australasian Colonies, 1893 to 1898.

1472. The following is a statement of the quantity and value of wool produced in the various Australasian Colonies in 1898 and the five preceding years. The estimate for each of the other colonies has been made upon the same principle as that for Victoria, viz., by substituting the difference between the imports and the exports for the entry made at the Customs as to the origin of the wool, to which has been added an estimate for the quantity used for manufacturing purposes during each of the years :—

WOOL PRODUCED IN THE AUSTRALASIAN COLONIES, 1893 TO 1898.*

Colony.	1893.	1894.	1895.	1896.	1897.	1898.
QUANTITY.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Victoria	64,722,420	62,363,989	78,979,402	65,572,299	55,452,498	68,909,968
New South Wales ..	319,070,617	332,450,117	298,365,844	273,793,507	259,168,772	249,788,303
Queensland ..	90,289,923	82,940,290	85,538,493	88,678,234	76,537,313	87,078,960
South Australia ..	50,817,599	44,023,877	56,322,860	44,938,592	34,448,370	33,839,592
Western Australia ..	10,742,348	9,432,876	8,290,805	10,995,659	12,374,881	10,126,306
Tasmania	8,842,524	9,313,335	7,375,809	9,055,583	8,500,333	8,426,976
New Zealand ..	112,334,306	146,752,569	119,298,609	133,130,820	139,118,758	153,140,716
Total ..	656,819,737	687,277,053	654,171,822	626,164,694	585,600,925	611,310,821
DECLARED VALUE.	£	£	£	£	£	£
Victoria	2,593,107	2,281,836	2,854,545	2,759,762	2,139,095	2,329,193
New South Wales ..	9,657,989	9,066,112	9,042,206	8,865,500	8,052,463	8,396,062
Queensland ..	3,572,917	2,918,572	2,996,739	2,983,959	2,518,162	3,027,946
South Australia ..	1,461,208	1,216,927	1,508,152	1,200,994	964,193	922,977
Western Australia ..	244,972	232,201	183,510	267,506	295,646	287,731
Tasmania	300,717	268,541	208,061	300,317	278,257	278,735
New Zealand ..	3,864,233	4,919,382	3,785,433	4,541,197	4,566,463	4,786,686
Total ..	21,695,143	20,903,571	20,578,646	20,919,235	18,814,279	20,029,330

Wool produced in each colony.

1473. It appears by the figures that Victoria, in 1898, produced little more than a fourth as much wool as New South Wales, less than half as much as New Zealand, and four-fifths of the clip of Queensland. She, however, produced more than twice as much as South Australia. Western Australia, notwithstanding the immense extent of her territory, did not produce much more than the small island of Tasmania. The quantity in 1898—judging from the net exports in the same year—was much larger than in 1897 in Victoria, Queensland, and New Zealand; but smaller in the other colonies, especially in New South Wales and Western Australia.

Wool production 1898 compared with previous years.

1474. Comparing 1898 with the five previous years, the figures also show that the wool production of New Zealand attained a maximum in 1898, whilst that of Victoria in the same year was exceeded only once (in 1895), and that of Queensland only twice previously (in 1893 and 1896); whilst that of New South Wales and of South Australia was absolutely the lowest in 1898—having fallen off in the former by 22 per cent. since 1893—that of Tasmania the lowest with one exception, and that of Western Australia with three exceptions. Taking the

* For later figures see Table XLIII. in Appendix C.

colonies as a whole, the quantity in 1898 was less than in any of the previous years except 1897, and about 76 millions lbs. lower than the maximum in 1894; whilst the value was also lower than in any year except 1897, and nearly £1,700,000 lower than the maximum in 1893.

Wool produced in each season, 1894-5 to 1899-00 (bales).

1475. The period (calendar year) hitherto adopted in official returns for estimating the wool production is an unsatisfactory one, as thereby the halves of two distinct seasons are made to appear as one, but such practice was followed owing to the lack of the requisite data in the customs returns to make up the returns by seasons. Another feature objected to by wool experts, is the use of *lb.* instead of bale as the unit of quantity in the official returns; for, although there is a material difference in weight between a bale of greasy and one of washed wool, there is locally but little difference in the value, as the major part of the scoured wool is comprised of inferior kinds. The customs values of wool, moreover, are not regarded as reliable. In recent customs statistics, bales, as well as lbs., are now distinguished; but the particulars are not shown separately for each half-year, which is also most desirable. From information extracted from manuscript returns, however, and by converting lbs. into bales (when the particulars were not available, viz., for seasons prior to 1898–9), on the assumption that a bale of Victorian greasy wool weighs 340 lbs. and one of washed or scoured 250 lbs., the following statement showing the number of bales produced in the colony in each of the last six seasons has been compiled, together with an independent valuation of the same—computed from records of sales in Melbourne and London—as given by leading authorities. It will be observed that the quantity (reckoned as greasy) fell off from an average of 258,500 bales in the three seasons ended with 1896–7, to an average of 203,000 in the last three seasons, owing chiefly to the drought; and that the value fell from an average in the first three seasons of over $2\frac{1}{2}$ millions to about 2 millions in 1897–8 and 1898–9, but rose—owing to the exceptionally high price realized—to over $3\frac{1}{4}$ millions sterling in 1899–00:—

Wool Production in Bales 1894–5 to 1899–00.
(By Seasons.)

Season.	Number of Bales.				Estimated Value in Melbourne.	
	Greasy.	Washed and Scoured.	Total.		Per Bale (as Exported).	Total.
			Greasy and Washed.	Equivalent in Grease.		
					£ s. d.	£
1894–5	172,366	49,214	221,580	264,890	10 2 0	2,675,390
1895–6	165,531	43,647	209,178	247,578	9 10 0	2,351,990
1896–7	193,286	37,095	230,381	263,025	10 8 0	2,735,460
1897–8	144,786	30,683	175,469	202,470	9 18 0	2,004,450
1898–9	147,610	25,341	172,951	195,251	10 0 0	1,952,510
1899–00	175,191	19,177	194,368	211,244	15 10 0	3,274,280

Note.—Exclusive of wool exported on sheep's backs and on sheepskins. See table following paragraph 1471, *ante*.

Wool produced in seasons 1894–5 to 1899–00 (in lbs.)

1476. For the purpose of comparing the wool produced by seasons with that for calendar years—already given, the following table showing the quantity in lbs. for each of the six seasons is also published :—

WOOL PRODUCTION IN LBS., 1894–5 TO 1899–00 (BY SEASONS).

Season.	Quantity in lbs.				Estimated Value in Melbourne.
	Greasy.	Washed and Scoured.	Total.		
			Greasy and Washed.	Equivalent in Grease.	
					£
1894–5	58,525,952	12,303,408	70,829,360	81,656,359	2,675,390
1895–6	56,162,184	10,911,634	67,073,818	76,676,056	2,351,990
1896–7	65,717,632	9,273,919	74,991,551	83,152,600	2,735,460
1897–8	49,227,496	7,670,715	56,898,211	63,648,440	2,004,450
1898–9	48,748,598	6,522,564	55,271,162	61,011,018	1,952,510
1899–00 ...	62,858,206	4,562,935	67,421,141	71,436,524	3,274,280

NOTE.—Exclusive of wool exported on live sheep and on sheepskins. See table following paragraph 1471, *ante*.

Australasian wool clip in seasons.

1477. The following is an estimate of the Australasian wool clip in bales for the last four seasons, together with a valuation made independently of customs values. The largest wool clip on record was about 1,985,000 bales in 1894–5, valued at £12 per bale :—

AUSTRALASIAN WOOL CLIP, 1896–7 to 1899–00.

Season.	Number of Bales.*	Average Price per Bale in Australasia.†	Estimated Value of Clip.
		£ s.	£
1896–7	1,873,000	11 0†	20,603,000
1897–8	1,744,000	11 15†	20,492,000
1898–9	1,690,000	10 18	18,421,000
1899–00	1,618,000	16 15	27,101,000

Exports of Australasian wool, 1894 to 1898.

1478. According to the Customs returns of the various colonies over 604 million lbs. of wool were exported from the Australasian Colonies direct to other countries during the year 1898, and of this nearly four-fifths was sent from the Australian Continent. The

* Net exports according to Dalgety and Co.'s circular, plus an allowance of 25,000 bales for home consumption.

† Prices in first two years, based on London prices, less 20s. per bale for freight and extra charges; that for the second two years on the prices realized at auction in Australia. Twenty shillings per bale is believed to equalize the difference, other things being equal, between the price at auction in London and Melbourne.

following are the quantities from each colony given in lbs. for 1898 and the previous four years :—

EXPORTS OF WOOL FROM AUSTRALASIAN COLONIES, 1894 TO 1898.

(000's omitted.)

Colony.	1894.	1895.	1896.	1897.	1898.
	lbs.	lbs.	lbs.	lbs.	lbs.
Victoria	152,934,	160,997,	145,308,	122,321,	130,195,
New South Wales ...	260,305,	251,164,	221,791,	220,888,	225,412,
Queensland ...	47,657,	45,171,	52,718,	40,673,	49,134,
South Australia ...	52,935,	59,575,	56,127,	40,656,	35,431,
Western Australia ...	9,107,	8,076,	10,853,	11,927,	9,844,
Tasmania	4,909,	4,268,	4,091,	4,768,	5,067,
New Zealand ...	144,015,	115,691,	128,637,	135,361,	149,102,
Total	671,862,	644,942,	619,525,	576,594,	604,185,

Destination of Australasian wool, 1894 to 1898.

1479. According to the same returns 73 per cent. of Australasian wool in 1898 was sent to London, 26½ per cent. to the continent of Europe—chiefly France, Germany, and Belgium—and 1 per cent. to America and Japan. As compared with 1894, the proportion sent to the United Kingdom has fallen off by 1 per cent., whilst that to Europe has increased by 1¾ per cent. The following are the figures :—

DESTINATION OF AUSTRALASIAN WOOL, 1894 TO 1898.

Country.	Weight in lbs. (000's omitted.)				
	1894.	1895.	1896.	1897.	1898.
United Kingdom ...	496,270,	474,304,	469,590,	424,847,	437,664,
France...	56,939,	55,026,	62,973,	67,727,	74,693,
Belgium	57,739,	38,856,	34,468,	26,789,	30,151,
Germany	51,396,	59,039,	38,152,	43,183,	51,362,
Italy	181,	353,	174,	1,661,	4,147,
United States of America	6,863,	14,996,	12,457,	9,673,	4,775,
Singapore	1,791,	508,	807,	1,659	8,
Japan	220,	1,532,	783,	1,018,	1,283,
Other Countries	463,	328,	121,	37,	102,
Total	671,862,	644,942,	619,525,	576,594,	604,185,
	Proportion per cent.				
United Kingdom ...	73·86	73·54	75·80	73·68	72·44
France	8·48	8·53	10·16	11·74	12·36
Belgium	8·59	6·03	5·56	4·64	4·99
Germany	7·65	9·15	6·16	7·49	8·50
Italy	·03	·05	·03	·29	·69
United States of America	1·02	2·33	2·01	1·68	·79
Singapore	·27	·08	·13	·29	...
Japan	·03	·24	·13	·18	·21
Other Countries ...	·07	·05	·02	·01	·02
Total	100·00	100·00	100·00	100·00	100·00

Victorian wool markets.

1480. In Victoria there are two important centres for the sale of wool, viz., Melbourne and Geelong. Although the sales negotiated in the former are three times as large as those in the latter, yet the Geelong market commands the well-conditioned clips from the Western District, which are so famed for their high qualities and uniform character, and, consequently, the average price realized in that wool centre is somewhat higher than that in the Melbourne market.

Periods for marketing wool in Australasia.

1481. The wool sales start first in Adelaide, generally late in the month of September; and at the several wool-selling centres in the other parts of the Australian Continent they commence in October and conclude, practically speaking, at the end of January. In the colder parts of Australasia—New Zealand and Tasmania—they open about six weeks later.

Wool markets in Australasia.

1482. The chief markets in the Australasian Colonies where regular public sales are held during the wool seasons for the disposal of wool are Melbourne and Geelong, in Victoria; Sydney, in New South Wales; Adelaide, in South Australia; Wellington, Auckland, and Napier, in the North Island, and Christchurch, Dunedin, and Invercargill, in the Middle Island of New Zealand; Hobart and Launceston, in Tasmania; and since the years 1894–5 public wool sales have been held at Brisbane, in Queensland. Since the opening up—in the year 1881—of the direct exportation of wool to the Continent of Europe the wool sales in the local markets have reached very large dimensions, being well attended by buyers, who are afforded every facility for inspecting the samples of wool offered.

Proportions of wool sold to that exported.

1483. The following table, derived from various trade circulars, shows the number of bales exported abroad in 1899–00 from each colony; also the percentage of wool sold in each colony to that exported in various seasons from 1890–1 to 1899–00 to places beyond the Australasian Colonies; and the proportion of wool produced in each colony sold in Australasia in 1899–00 :—

PROPORTION OF WOOL SOLD TO QUANTITY EXPORTED ABROAD, IN EACH AUSTRALASIAN COLONY, 1890–1, 1895–6, AND 1899–00.

Colony.	Bales Exported Abroad in 1899–00.		Percentage of Wool Sold in each Colony to Quantity Exported Abroad.			Proportion of the Wool Produced in each Colony Sold in Australasia, 1899–00.
	Number.	Per Cent.	1890–1.	1895–6.	1899–00.	
						Per Cent.
Victoria ...	401,437	25·2	59·3	73·5	75	86
New South Wales	552,472	34·7	43·2	71·2	72	74
South Australia	120,104	7·5	26·4	49·0	59	74
Queensland ...	87,356	5·5	...	1·2	31	37
Western Australia	25,804	1·6	...	...	...	1
Tasmania ...	8,349	·5	17·9	33·8	...	47
New Zealand ...	397,283	25·0	25·9	30·0	27	27
Total ...	1,592,805	100·0	38·6	56·7	57½	57½

1484. It will be observed that over one-third of the wool produced in Australasia is exported abroad from New South Wales, and about a fourth each from Victoria and New Zealand; that in 1899–00 nearly three-fifths of Australasian wool was sold in the colonies before exportation, as compared with less than two-fifths in 1890–1, nine years previously, the proportion being as high as 75 per cent. in Victoria, and 72 per cent. in New South Wales; and that of the wool produced in Victoria 86 per cent. in 1899–00 was sold in Australasia before exportation, and of that in New South Wales and South Australia 74 per cent.

Proportion of Australasian wool sold in local markets.

1485. The average price per lb. of Victorian wool in 1899—based upon its value before leaving this colony, according to the statements of exporters, as furnished to the Customs authorities, was 10⅜d. for greasy wool, and 13¾d. for scoured and washed—whilst the average for the whole was 11¼d. The following are the averages for each of the last sixteen years* :—

Export price of wool.

EXPORT PRICE PER LB. OF VICTORIAN WOOL, 1884 TO 1899.

	Greasy.	Washed and Scoured.
	d.	*d.*
1884	11⅜ ...	18¼
1885	10 ...	16⅝
1886	9⅞ ...	15⅝
1887	9¼ ...	15⅜
1888	9⅛ ...	14½
1889	9⅝ ...	14⅞
1890	10 ...	14⅞
1891	9¾ ...	14¼
1892	9 ...	14⅛
1893	7½ ...	12½
1894	6¾ ...	12
1895	7 ...	11
1896	7⅝ ...	12
1897	7½ ...	11⅞
1898	7⅝ ...	12⅛
1899	10⅜ ...	13¾

1486. In the foregoing statement, the prices quoted are the averages, according to the statements of exporters, for all descriptions of greasy or washed wool included in the one total, but it is possible that a variation in the quality in different years may to a certain extent have occurred which would vitiate the comparison between different years. The variation in the price of wools of like quality will, however, be readily recognised by means of the figures in the following table, which have been kindly supplied for this work by Messrs. Goldsbrough, Mort, and Co. Limited, Melbourne. These figures cannot be taken as more than an approximate indication of the values of wool, especially in the grease. For instance, the average value of 1893–4 is quoted slightly below that of 1892–3, but, allowing for the fact that

Price of wool in Melbourne.

* See also table following paragraph 741 in Part "Interchange" *ante*, where the price level of wool is dealt with.

the 1893 clip was heavier in yolk than its predecessor, the basis of the market—*i.e.*, the value per lb. of clean wool—was in the season 1893–4 slightly higher.

AVERAGE PRICE PER LB. OF WOOL (FLEECE) IN MELBOURNE, 1884–5 TO 1899–00.*

Season.	Greasy.		Clean.†	
	Merino.	Crossbred.	Fleece Washed.	Scoured.
	d.	*d.*	*d.*	*d.*
1884–5	10½	9	20	19
1885–6	8½	8	16	15
1886–7	10½	9	17	18
1887–8	9½	8	15½	16
1888–9	10½	10	18	17½
1889–90	11½	11	18½	19½
1890–1	10	9	15	16½
1891–2	9	8¾	13½	15
1892–3	8¾	8½	13	14½
1893–4	8½	8¾	13	14½
1894–5	7¾	7	10	12½
1895–6	9¼	8¼	13½	14¾
1896–7	8¾	8	13¼	14¼
1897–8	9¼	8¾	13½	14¾
1898–9	9½	8½	13¾	15¼
1899–00	14¾	11	...	26

Price of good average merino fleece in Melbourne.

1487. The following prices are also quoted by Messrs. Dalgety and Co., of Melbourne, for merino fleece of good average quality:—

APPROXIMATE PRICES OF MERINO FLEECE OF GOOD AVERAGE QUALITY, 1888–9 TO 1899–1900.

Season.	Greasy.	Scoured.	Season.	Greasy.	Scoured.
	per lb.	per lb.		per lb.	per lb.
1888–9 ...	10d.	19½d.	1894–5 ...	7½d.	14d.
1889–90 ...	12½d.	21d.	1895–6 ...	8½d.	15d.
1890–1 ...	9½d.	19d.	1896–7 ...	9d.	16d.
1891–2 ...	8½d.	17d.	1897–8 ...	9½d.	16½d.
1892–3 ...	8½d.	15½d.	1898–9 ...	9½d.	16d.
1893–4 ...	8d.	14½d.	1899–00 ...	14½d.	26d.

* For note see footnote (*) on preceding page.

† Comprising both merino and crossbred.

1488. Reducing the quotations by the two respective authorities for greasy merino fleece to price index numbers, assuming 100 to be equivalent to 10d., they are more readily compared with one another in the following table. There are some slight discrepancies between the two statements, but they agree generally in showing a downward course of prices to a minimum in 1894–5, and a marked recovery after that depressed season, and an extraordinary rise in 1899–00.

Price level of merino woo', 1888-9 to 1899-1900.

INDEX PRICE OF GREASY MERINO FLEECE IN MELBOURNE, 1888–9 TO 1899–00.

Season.	Authority.		Season.	Authority.	
	Goldsbrough, Mort, and Co.	Dalgety and Co.		Goldsbrough, Mort, and Co.	Dalgety and Co.
1888–9	105	100	1894–5	77	75
1889–90	115	125	1895–6	92	85
1890–1	100	95	1896–7	87	90
1891–2	90	85	1897–8	92	95
1892–3	87	85	1898–9	95	95
1893–4	85	80	1899–00	147	145

1489. The average price in 1898 of Australian greasy wool in London, as officially computed from the returns of imports by the Agricultural Department of the Privy Council, was the same as the average for the previous five years; but was lower than in any other previous year. The following are the results obtained for the 30 years ended with 1898 :—

Price of Australian greasy wool in London.

AVERAGE PRICE OF AUSTRALIAN WOOL IN LONDON, 1869 TO 1898.

	per lb.			per lb.	
	s.	*d.*		*s.*	*d.*
1869	1	3	1884	1	$0\frac{1}{2}$
1870	1	$3\frac{1}{4}$	1885	0	$10\frac{1}{2}$
1871	1	$2\frac{1}{4}$	1886	0	$9\frac{1}{4}$
1872	1	3	1887	0	$10\frac{1}{2}$
1873	1	$3\frac{1}{4}$	1888	0	$10\frac{1}{4}$
1874	1	$2\frac{3}{4}$	1889	0	$10\frac{1}{4}$
1875	1	$4\frac{1}{2}$	1890	0	11
1876	1	$3\frac{1}{4}$	1891	0	$9\frac{3}{4}$
1877	1	3	1892	0	9
1878	1	$2\frac{1}{2}$	1893	0	$8\frac{3}{4}$
1879	1	$2\frac{1}{2}$	1894	0	$8\frac{1}{2}$
1880	1	$2\frac{3}{4}$	1895	0	8
1881	1	$2\frac{1}{2}$	1896	0	$8\frac{3}{4}$
1882	1	$0\frac{1}{2}$	1897	0	$8\frac{1}{2}$
1883	1	$0\frac{1}{2}$	1898	0	$8\frac{1}{2}$

Wool freights.

1490. The following is a statement of the ruling rates of freights from Victorian ports to the United Kingdom for five years ended 1898–9. The bulk of the wool is now carried by steamers :—

AVERAGE RATES OF FREIGHT PER LB. ON WOOL EXPORTED FROM VICTORIA TO THE UNITED KINGDOM.*

Class of Vessel.	1894–5.		1895–6.		1896–7.		1897–8.		1898–9.	
	Greasy.	Washed.	Greasy.	Washed.	Greasy.	Washed.	Greasy.	Washed.	Greasy.	Washed.
	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
Steamer	½	⅝	½	⅝	7/16	9/16	7/16	9/16	⅝	¾
Sailer...	⅜	½	⅜	½	5/16	7/16	5/16	7/16	⅜	½

Freight and charges on sale of wool.

1491. The following statement of the freight and other charges incident to the transport and sale of a bale of Victorian wool—distinguishing greasy from washed and scoured—in London and Melbourne respectively for each of the last five seasons, has been compiled from information kindly furnished by some of the leading wool merchants in Melbourne. A few charges, such as cartage, are not taken into account :—

CHARGES OF REALIZATION ON A BALE OF VICTORIAN WOOL.—

(*a*) IN LONDON.

Charges.	Wool sold in London.									
	1895–6.		1896–7.		1897–8.		1898–9.		1899–00.	
GREASY.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Railway freight	6	2	6	6	6	4	6	2	6	4
Oversea freight	11	0	10	8	10	7	11	9	18	3
Commission and brokerage ...	5	3	5	4	5	4	5	10	6	4
All other charges	9	0	9	5	8	10	9	6	10	4
Total	31	5	31	11	31	1	33	3	41	3
WASHED AND SCOURED.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Railway freight	6	0	5	10	5	10	5	9	6	5
Oversea freight	10	6	10	8	10	7	11	1	15	8
Commission and brokerage ...	6	3	6	5	7	3	7	3	7	0
All other charges	8	3	8	4	8	9	8	0	10	1
Total	31	0	31	3	32	5	32	1	39	2
Total all kinds†... ..	31	4	31	10	31	3	33	1	41	1

* From information kindly furnished by wool brokers and others.

† Allowing for the varying proportions of greasy to washed wool. In the case of wool sold in London the proportions were 5 to 1 in 1895-6, 6 to 1 in the next three years, and 10 to 1 in the last.

(*b*) In Melbourne.

Charges.	Wool sold in Melbourne.									
	1895–6.		1896–7.		1897–8.		1898–9.		1899–00.	
Greasy.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Railway freight	6	2	6	6	6	4	6	2	6	4
Commission and brokerage ...	2	8	2	11	2	9	2	11	2	11
All other charges	3	8	3	8	3	8	3	8	3	8
Total	12	6	13	1	12	9	12	9	12	11
Washed and Scoured.	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Railway freight	6	0	5	10	5	10	5	9	6	5
Commission and brokerage ...	3	2	3	3	3	8	3	8	3	8
All other charges	3	0	3	0	3	0	3	0	3	0
Total	12	2	12	1	12	6	12	5	13	1
Total all kinds*	12	6	13	0	12	9	12	9	12	11

1492. It will be observed that the charges incident to the realization of a bale of wool (of all kinds) in Melbourne varied from 12s. 6d. to 13s., and in London from 31s. 3d. to 41s. 1d. The difference between the two varies from 18s. 6d. to 28s. 2d., which represents the extra cost of realizing on a bale of wool in the London market. Cost of realization on wool in London and Melbourne respectively.

1493. Deducting the Melbourne charges from the average price realized on a bale of wool in Melbourne, the balance will show approximately the net return to the Victorian wool-grower, which will be found to have varied in the last five seasons from £8 17s. 6d. in 1895–6 to £14 17s. 1d. in 1899–00, and to have averaged £10 8s. 5d. over the whole period, as will be seen by the following figures :— Net return to wool-grower.

Net Return per Bale of Victorian Wool sold in Melbourne, 1895–6 to 1899–00.

Season.	Average Price at Auction in Melbourne.			Railway Freight, Selling, and other Charges.†		Net Return to Grower.		
	£	*s.*	*d.*	*s*	*d.*	£	*s.*	*d.*
1895–6	9	10	0	12	6	8	17	6
1896–7	10	8	0	13	1	9	14	11
1897–8	9	18	0	12	9	9	5	3
1898–9	10	0	0	12	9	9	7	3
1899–00 ...	15	10	0	12	11	14	17	1

1494. The following statement is interesting as showing the growth of the Australasian wool trade since 1860. It will be noticed that the volume at first steadily increased from 187,000 bales in 1860 to over 2,000,000 bales in 1895, but has since fallen off to under 1,650,000 Wool production of Australasia 1860 to 1899.

* For note see footnote (†) on preceding page.
† A few minor charges, such as cartage, are not taken into account.

bales in 1899; but the value per bale has gradually fallen off almost without intermission from £26 per bale in 1860 to less than half that amount in the majority of recent years :—

AUSTRALASIAN WOOL IMPORTED INTO EUROPE AND AMERICA IN VARIOUS YEARS FROM 1860 TO 1899.*

Year of Importation.	Number of Bales (000's omitted).	Average Value per Bale.	Total Value (000's omitted).
		£	£
1860	187,	26	4,862,
1865	334,	24	5,016,
1870	546,	17	9,282,
1875	720,	22½	16,200,
1880	869,	20½	17,814,
1885	1,094,	14¼	15,590,
1890	1,411,	15	21,165,
1891	1,683,	13¾	23,141,
1892	1,835,	12¼	22,479,
1893	1,775,	12¾	22,631,
1894	1,896,	11¾	22.278,
1895	2,001,	11¼	22,511,
1896	1,846,	12¼	22,614,
1897	1,834,	11¾	21,500,
1898	1,703,	12½	21,288,
1899	1,641,	14¾	24,205,

Wool production and distribution of the world, 1891.

1495. The following is a return of the wool production of the principal countries of the world in 1891, and the net import or export in 1890–91 :—

WOOL PRODUCTION AND DISTRIBUTION OF THE WORLD.

(000's omitted.)

Countries.	Wool Produced, 1891.	Net Surplus Exported (+), or Net Deficiency Imported (−) 1890–91.
EUROPE.	lbs.	lbs.
United Kingdom	147 475,	−319,183,
France	124,803,	−298,396,
Germany	54,894,	−263,670,
Belgium	4,409,	−71,222,
Austria-Hungary	54,301,	−35,578,
Italy	21,385,	−14,900,
All other European Countries ...	8,818,	−10,645,
Portugal	10,362,	−7,253,
Sweden	3,307,	−5,087,
Spain	66,138,	+7,088,
Russia and Poland	291,500,	+53,603,
Total Europe	787,392,	−965,243,

* The information in this table has been taken from a statement published by Messrs. Helmutz, Schwartze, and Co., of London; but the price therein given for Australian and Cape bales has been uniformly increased 5s., to allow for the better quality of Australian wool. The wool imported chiefly relates to wool produced in Australasia in the preceding seasons, thus the importations of 1891 relate chiefly to the wool clip of 1890–1.

WOOL PRODUCTION AND DISTRIBUTION OF THE WORLD—*continued.*

Countries.	Wool Produced, 1891.	Net Surplus Exported (+), or Net Deficiency Imported (−) 1890–91.
	lbs.	lbs.
Australasia	661,164,	+654,876,
Argentine Republic	376,700,*	+261,037,
Cape Colony and Natal	128,682,	+92,436,
Uruguay	42,000,	+48,368,
East Indies	72,000,	+33,172,
Russia (Asiatic)	66,000,	†
Mesopotamia	31,555,	†
Turkey (Asiatic), Persia, Afghanistan, Beluchistan, and Thibet	20,500,	†
Peru	6,700,	†
Persia	3,470,	†
Egypt	2,800,	†
Brazil	1,875,	†
British North American Provinces	12,000,	−6,717,
United States	307,100,	−126,666,
All other Countries	48,000,	+15,868,
Total out of Europe ...	1,780,546,	+972,374,†
Grand Total	2,567,938,	+7,131,†

NOTE.—The figures for this table, excepting those for Australasia, have been compiled from information contained in a report issued by the Department of Agriculture, Washington, United States, 1893.

Chief wool-producing and wool-consuming countries.

1496. According to this table the annual wool production of the world in 1891 amounted to nearly 2,600 million lbs., of which about 30 per cent. was grown in Europe, more especially in Russia, the United Kingdom, and France; 70 per cent. was grown in other countries, but chiefly Australasia (26 per cent.), Argentine (15 per cent.), the United States (12 per cent.), and Cape Colony (5 per cent.). Moreover, the annual requirements of Europe, in addition to its own natural supply, amounted to nearly 1,000 million pounds weight, the three greatest consumers being the United Kingdom, France, and Germany, and next—but much below these—Belgium and Austria-Hungary. Fully two-thirds of the total requirements were supplied by Australasia, a little over a fourth by the Argentine Republic, and less than a tenth by Cape Colony and Natal. The United States had to import 126⅔ million lbs.

Wool production of world, 1897 to 1899

1497. The following table shows for the three latest years the visible wool production of the world. From this it will be seen that in

* In 1892, the production was 340 million lbs., valued at £8,865,000; and in 1893, 271 million lbs., valued at £5,001,000.

† Information not available or incomplete.

the year 1897, out of a total production of 5⅓ million bales, Australasia produced 1⅘ millions, or nearly 34 per cent.; in 1898, 33 per cent.; and in 1899, 31⅓ per cent. The Argentine Republic, which was the next largest wool-producing country, in 1897 produced 27 per cent. of the whole; in 1898 and 1899, 28 per cent. It will be further noticed that the production of wool in Australasia has diminished considerably since 1897, whilst the production of the Argentine Republic has remained about stationary:—

VISIBLE WOOL PRODUCTION OF THE WORLD, 1897 to 1899.

Where Produced.	1897. Bales.	1898. Bales.	1899. Bales.
Australasian	1,834,000	1,703,000	1,641,000
Cape of Good Hope	274,000	279,000	267,000
Argentine	1,447,000	1,460,000	1,447,000
United States of America ...	682,000	702,000	702,000
United Kingdom	555,000	555,000	558,000
Other Countries	542,000	494,000	491,000
Total	5,334,000	5,193,000	5,106,000

NOTE.—The quantities given for the United States and the United Kingdom relate to the total wool production; but those for the other countries only to the imports into Europe and America. The bales of Argentine and United States wool, which weigh 1,000 lbs. and 400 lbs. respectively, have been converted into the equivalent of Australasian bales of 380 lbs. each. The weight of British wool has also been similarly converted into bales of clean wool of 250 lbs. each.

Dairy farms and cattle, &c.

1498. There were 31,132 dairy farmers in the colony in 1899–00, of whom all but 2,050 were also cultivators. The total number of cultivators being about 40,000, it thus follows that nearly three-fourths of them were also interested in the dairying industry. Each dairy farmer had on an average 15 cows, 8 calves, and 7 pigs, and obtained 4,735 gallons of milk, or an average of 317 per cow; whilst 1 in every 9 had a cream separator. In some parts of the colony cream separators were in almost universal use; for instance there were 1,165 used in Buln Buln, 261 in Gunbower, and 429 in Mornington, thus accounting for nearly two-thirds of the total number on all farms in the colony. About 1 in every 2 dairymen in the two first-named, and 1 in every 3 in the last, had a cream separator. The average yield per cow has steadily increased from 236 gallons in 1895–6 to 317 gallons in 1899–00, whilst the total milk yield in 1899 was 27 per cent. larger than in 1896, which was the next largest during the last five years. In connexion with the average yield per cow, it should be specially noted that this is based on the total number of cows in the dairy herd (*i.e.*,

wet and dry cows), at the time of the collectors' visits in January or February, which is believed to closely correspond to the actual number of cows milked per season. The following are the particulars respecting dairy farms in each of the last five years :—

DAIRY CATTLE, PIGS, AND MILK, 1895-6 TO 1899-00.

Year.	Number of Cow-keepers.	Number of—			Milk Yield in last Calendar Year.		Number of Cream Separators in use.
		Dairy Cows (Wet and Dry).	Calves under Twelve Months.	Pigs.	Average per Cow (Wet and Dry).	Total Quantity (000's omitted).	
					gallons.	gallons.	
1895-6 ...	26,920	462,578	217,930	...	236·0	109,200,	...
1896-7 ...	27,088	457,924	167,615	...	253·7	116,166,	...
1897-8 ...	25,790	345,317	153,042	...	301·0	103,980,	2,125
1898-9 ...	29,633	357,078	179,207	143,666	301·0	107,535,	2,799
1899-00 ...	31,132	465,469	243,593	227,309	316·6	147,367,	3,446

Yield of milk per cow in different districts.

1499. The annual yield of milk per cow (wet and dry) varies considerably in different parts of the colony. The quantity as well as the richness of milk depends not only on the amount and quality of the feed or pasture, but also on the breed of the cattle. In 1899–00 the highest average was 377 gallons in the Western District, whilst the Wimmera came next with nearly 300 gallons, and the North-Eastern and Gippsland Districts next with about 282 gallons ; whereas the lowest yields, under 250 gallons, prevailed in the Northern and Central Districts. Taking the average by counties, the highest average yields were 455 gallons in Grenville, 415 in Hampden, 395 in Polwarth, and 384 in Villiers—all in the Western District. Much higher averages have been experienced on individual farms ; thus the average yield of a certain Victorian herd of 32 cows in 1897 (as compiled by the Victorian Dairy Expert) was 520 gallons, whilst the best cow gave 790, the 10 best 665, the 10 worst 380, and the worst of the herd gave 296 gallons for the year. According to the agricultural statistics several in 1899 showed averages of over 500 gallons, one of the highest (for a herd of 95 cows) being 629 gallons. On a farm at Camperdown, which was awarded first prize in competition for the *Leader* Dairy Prizes in 1899, an average yield was obtained from 70 or 80 cows varying in different seasons from 1895 to 1898 from 478 to 572 gallons, containing the high proportion of over 4·2 per cent. of butter fat, whilst the average value realized per cow for milk in 1898 was £9 11s. 4d.*; the second prize-taker (in Gippsland) obtained from 40 cows in 1898–9 an average yield per cow of 634 gallons, realizing £8 17s. 6d.; and the third, at Port Fairy, obtained from a herd of 25 cows, in 1899, an average yield per cow of 680 gallons, which was sold for £12 11s. 5d., whilst the two best cows

* In this case, however, an unusually high price was received for the milk, viz., 10¼d. per lb. of butter produced

gave 364 and 361 lbs. butter respectively, equivalent to about 740 gallons each. On a private farm at Leongatha (Gippsland) the dairy herd of 63 cows gave an average of 261 lbs. of butter—equivalent to about 550 gallons of milk. Again, in England, where the pastures are good, stall feeding largely resorted to, and much attention paid to the herd, it is reckoned as 500 gallons. An improvement in the yield of milk can only be effected through careful and methodical observation, by proper and adequate feeding (especially stall feeding in winter), by culling, and by breeding the future dairy herd from cows yielding the largest quantity of butter per season. The following is a list of the principal dairying counties and districts, and the number of cows and the average milk yield per cow in each, in the year 1899–00 :—

AVERAGE YIELD OF MILK PER COW IN DIFFERENT DISTRICTS, 1899–00.

County and District.	Number of Dairy Cows. (Wet and Dry.†)	Average Yield of Milk per Cow.	County and District.	Number of Dairy Cows. (Wet and Dry.†)	Average Yield of Milk per Cow.
County.*		gals.	County.*		gals.
Grenville (W.) ...	9,169	455	Gunbower (N.) ...	10,356	271
Hampden (W.) ...	24,079	415	Buln Buln (G.)...	55,708	269
Polwarth (W.) ...	13,686	395	Rodney (N.) ...	12,895	262
Villiers (W.) ...	19,568	384	Anglesey (N.-C.)	12,245	262
Heytesbury (W.) ...	20,856	342	Tatchera (M.) ...	5,170	258
Delatite (N.-E.) ...	26,331	320	Bogong (N.-E.)	15,385	257
Bourke (C.) ...	33,757	306	Borung (Wim.)	7,756	255
Kara Kara (Wim.)	5,804	305	Bendigo (N.) ...	10,203	245
Dalhousie (N.-C.)	15,175	303	Normanby (W.)	6,332	243
Tanjil (G.) ...	19,430	300	Moira (N.) ...	46,597	239
Grant (C.) ...	16,846	291	Benambra (N.-E.)	6,331	222
Evelyn (C.) ...	7,879	277	Talbot (N.-C.) ...	15,311	221
Mornington (C.) ...	25,560	277	Gladstone (N.) ...	5,949	217
Summary by Districts.					
		gals.			gals.
Western (W.) ...	98,081	377	Mallee (M.) ...	5,971	258
Wimmera (Wim.) ...	17,631	295	Northern (N.) ...	85,930	247
North-Eastern (N.-E.)	49,528	283	Central (C.) ...	84,042	244
Gippsland (G.) ...	81,555	281			
North-Central (N.-E.)	42,731	260	Colony ...	465,469	317

Labour colony dairy farm at Leongatha.

1500. From the following interesting and complete return furnished for the year 1899–00 for the Leongatha Labour Colony (Gippsland), which contains one of the best dairy herds in the colony, some valuable results are obtained. The total herd consists of about 68 cows, of which 11 are pure Jerseys, and the remainder carefully selected cows, chiefly Jersey and Ayrshire crossbreds. The depasturing area is about 244

* Only counties containing over 5,000 milch cows specified.

† At the time of the collectors' visits in February.

acres, valued at £12 per acre, on which a number of cattle are also fattened for portion of the year—equivalent to an average of 40 for the whole year; whilst the dairy, with a complete modern equipment, is valued at £323. Based on the average number in the whole herd (wet and dry), the milk yield for the year (including 920 gallons, or nearly 3 per cent. of the whole, fed to calves) was 479 gallons, and the butter yield 206 lbs., returning £6 11s. for each cow. It required $2\frac{1}{4}$ gallons of milk to produce 1 lb. butter, and the average price received for milk was 3·4d., equivalent to 7·58d. (over $7\frac{9}{16}$d.) per lb. for the butter produced therefrom. The profit on working (exclusive of interest on capital and return on calves) was £2 11s. 6d. per cow in herd. The weekly average quantity of milk obtained from each cow in milk was $13\frac{2}{3}$ gallons throughout the year, rising to 19 gallons or over in October and November, and falling to 8 gallons in June:—

Dairy Returns of Leongatha Labour Colony, 1899–00.

(*a*) Number of Cows.

—	Minimum.	Maximum.	Average.
Total in herd	65 to 67 (July–Feb.)	73 (March–June)	68
Average number milked daily	27 to 28 (July–Aug.)	52 to 55 (Dec.–May)	46

(*b*) Milk Products.

Milk.		Cream sent to Factory.	Result in Butter.	Cash Receipts.
How disposed of.	Gallons.			
Separated ...	31,527	24,595 lbs.	13,990 lbs.	£442
Sold	130	...	...	6
Fed to calves ...	920	...	...	...
Total ...	32,577	24,595 lbs.	13,990 lbs.	£448

(*c*) Calves Born.

Sex.	Gross Number.	Died or Destroyed.	Net Number.	Value.
Bull	41	13	28	£157
Heifer ...	32	2	30	
Total ...	73	15	58	157

Note.—The gross increase was one calf per cow, based on the maximum number in herd at any time during the year; whilst $20\frac{1}{2}$ per cent. of the calves died or were destroyed, nearly all of which were bull calves.

(*d*) Profit on Working (Exclusive of Rent and Interest on Capital).

		Total.	Average per cow in herd (wet and dry).
Gross return for milk		£448	£6 11 10
„ „ calves (estimated value) ...		157	2 5 5
Gross profit		605	8 17 3
Cost of working—			
Wages and rations for dairyman and milkmen	£177		
Artificial food	82		
Sundry stores, cartage, &c.	14		
	——	273	4 0 4
Net profit		£332	£4 16 11

Note.—No allowance has been made for the capital invested, viz., £3,595 (£2,728 for 244 acres of land, £323 for dairy, and £544 for cows).

(*e*) Averages for the Season.

(1) Milk Yield per Dairy Cow*—

Total Milk Yield.	Butter Yield.	Value of Produce.
479·1 galls.	205·7 lbs.	£6 11 10

(2) Proportion of Total Milk fed to Calves ... 2·82 per cent.

(3) Gallons of Milk required to make 1 lb. of—

Cream.		Butter.
1·28	...	2·25

(4) Average price received—

For Milk	3·4d. per gallon.
As equivalent for Butter made ...	7·58d. per lb.

(5) Weekly Yield of Milk and Butter in Different Months.

Month.	Average Number of Cows Milking.	Weekly Average per Cow in Milk.	
		Milk.	Equivalent in Butter.
		galls.	lbs.
July	28	9·76	4·00
August	27	14·53	5·48
September	38	18 60	7·00
October	45	19·00	7·50
November	49	19·15	7·75
December	53	17·29	7·43
January	53	12 46	5·75
February	53	12·85	6·00
March	52	12·34	5·78
April	55	11·16	5·23
May	55	8·70	4·10
June	43	8·00	3·70
Total	46	13·65	5·81

* Based on the average number in herd (wet and dry).

1501. A considerable impetus was given to the butter industry in Victoria in its first stage by the bonuses granted by the Government, and the opening up of an extensive trade in that article—under the supervision of the Department of Agriculture—chiefly with the United Kingdom, and the exports in a short period of five years have advanced by leaps and bounds from 827,000 lbs., valued at £51,300, in 1889–90, to an annual average in the five years ended with 1898–9 of 21 million lbs., valued at £900,000, as will be seen by the following figures derived from the Report by the Dairy Expert on the Dairying Industry in Victoria for 1898–9 :— Exports of Victorian butter.

EXPORTS OF VICTORIAN BUTTER, 1889–90 TO 1898–9.

Season.	Weight in lbs. (000's omitted).	Value landed in London.
		£
1889–90	827,	51,300
1890–91	1,701,	91,200
1891–2	4,792,	225,000
1892–3	8,094,	404,432
1893–4	17,141,	761,273
1894–5	25,950,	1,081,243
1895–6	21,025,	901,000
1896–7	22,166,	942,247
1897–8	16,072,	670,000
1898–9	19,891,	888,000

NOTE.—In 1899–00 the quantity exported was 38,319,680 lbs., valued at £1,604,600. Of the 8,880 tons of butter exported during the season 1898-9, 7,103 tons, valued at £718,300, were consigned to London ; 1,000 tons, valued at £100,000, were consigned to Western Australia ; and 697 tons, valued at £69,700, were consigned to Cape Colony.

1502. Besides butter, several other food products were shipped through the refrigerating depôt in 1898–9 to the value of £124,725, making, with butter, a total of £1,012,725. The most important of the minor articles were rabbits and hares ; next fresh meat, fruit, and concentrated milk and cream ; and, to a small extent, tobacco, mixed poultry, and eggs. The freight amounted to £91,154, or about 10 per cent. of the net value ; the freight on butter alone being £62,160, or at the rate of $\frac{3}{4}$d. per lb. as against $\frac{7}{8}$d. in 1894–5 and 1d. in 1893–4. The rate is still considered much too high, and efforts are being made to have it reduced to $\frac{1}{2}$d. per lb. The exportation of fresh fruit and tobacco was only recently started by the stimulus of bounties. There is a fair and reasonable prospect—with the favorable soil and climate—for a profitable trade in the former article, and also in the latter if the Exports of food products.

tobacco disease can be overcome. The following are the figures taken from the same report :—

SHIPMENTS THROUGH THE REFRIGERATING DEPÔT IN MELBOURNE, 1898-9.

Produce.	Quantity.	Freight.	Value landed in London. (Estimated).
		£	£
Butter	19,891,200 lbs. ...	62,160	888,000
Eggs	11,540 dozen ...	97	577
Concentrated Milk and Cream	261,350 lbs. ...	700	3,136
Poultry, Mixed ...	2,900 pairs ...	120	800
Mutton and Lamb ...	2,092,800 lbs. ...	6,540	21,798
Beef	8,960 „ ...	10	76
Veal	48,000 „ ...	150	1,200
Rabbits and Hares ...	1,211,179 pairs ...	20,227	90,968
Fruit	8,451 cases ...	1,080	5,070
Tobacco	65,948 lbs. ...	70	1,100
Total	... ...	£91,154	£1,012,725

Export of dairy produce in Australasian Colonies.

1503. Victoria, New South Wales, and New Zealand are the only Australasian Colonies which export butter on a large scale, the export trade of the two former being of more recent growth ; whilst New Zealand is by far the largest exporter of cheese, the only other colony which has so far developed an export trade in that article being Victoria. In 1898, the net export of butter in Victoria was $17\frac{1}{2}$ million lbs., in New South Wales $7\frac{3}{4}$ million lbs., and in New Zealand $10\frac{3}{4}$ million lbs.; and the net export of cheese from New Zealand was nearly $7\frac{3}{4}$ million lbs., and from Victoria 52,000 lbs. The whole of these quantities, however, was not available for countries outside of Australasia, as the other colonies required a large proportion of both butter and cheese, there having been a net import of butter in Western Australia of over 4 million lbs., and in Tasmania of 860,000 lbs.; also a net import of cheese in New South Wales of $1\frac{2}{3}$ million lbs., in Western Australia of over a million lbs., in Tasmania of 130,000 lbs., in South Australia of 71,000 lbs., and in Queensland of 58,000 lbs. The net export of Australasia beyond the colonies in 1898—chiefly to the United Kingdom—was 32 million lbs. of butter and over $4\frac{3}{4}$ million lbs. of cheese. In the five years ended 1898 the largest export of butter in any year was $25\frac{2}{3}$ million lbs. from Victoria in 1895, 11 million lbs. from New Zealand in 1897, and $7\frac{3}{4}$ million lbs. from New South Wales in 1898 ; whilst the largest export of cheese from New Zealand was over $8\frac{1}{2}$ million lbs. in 1895 and 1897, and over $1\frac{1}{2}$ million lbs. from Victoria in 1895. During the same period, the exports of butter beyond Australasia varied between 27 and 35 million lbs. per annum, and that of cheese from nearly 5 to over 9 million lbs. The

following figures show the net exports of butter and cheese for each colony and for the whole of Australasia in each of the years referred to :—

NET EXPORTS OF BUTTER AND CHEESE FROM AUSTRALASIAN COLONIES, 1894 TO 1898.

(000's omitted.)

Colony.	1894.	1895.	1896.	1897.	1898.
Butter.	lbs.	lbs.	lbs.	lbs.	lbs.
Victoria...	23,676,	25,620,	22,164,	21,990,	17,415,
New South Wales ...	4,178,	– 52,	593,	3,771,	7,759,
Queensland	– 215,	– 1,001,	– 990,	188,	943,
South Australia	1,505,	1,731,	337,	– 373,	301,
Western Australia ...	– 1,270,	– 1,905,	– 3,191,	– 3,876,	– 4,102,
Tasmania	62,	19,	– 101,	– 401,	– 859,
New Zealand	6,805,	6,458,	7,991,	11,086,	10,757,
Total	34,741,	30,870,	26,803,	32,385,	32,214,
Cheese.					
Victoria...	886,	1,529,	367,	403,	52,
New South Wales ...	162,	– 65,	– 950,	– 182,	– 1,671,
Queensland	– 63,	– 194,	– 69,	– 15,	– 58,
South Australia	– 5,	38,	– 25,	– 24,	– 71,
Western Australia ...	– 335,	– 525,	– 886,	– 970,	– 1,002,
Tasmania	– 1,	– 3,	– 21,	– 12,	– 130,
New Zealand	6,230,	8,593,	7,986,	8,694,	7,694,
Total	6,874,	9,373,	6,402,	7,894,	4,814,

1504. The average price of Victorian butter in London for seven months of the last five seasons is given in the following table:— Average price of Victorian butter in London

AVERAGE PRICE OF VICTORIAN BUTTER IN LONDON,* 1894–5 TO 1898–9.

Month.	Season. 1894–5.	1895–6.	1896–7.†	1897–8.†	1898–9.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
October	0 11¼	1 1½	1 0¼	0 10½	0 11¾
November	0 11¾	1 0½	0 11½	0 11	0 11¼
December	0 11½	0 11½	0 11½	0 11	1 0
January	0 11½	0 11¾	0 11½	0 10¼	0 10¾
February	0 10½	0 11	0 10¾	0 10½	0 11
March	0 10	0 11¼	0 10¼	0 11¼	0 10½
April	0 9¼	0 10¼	0 10	0 10½	0 10½
Average	0 10¾	0 11¾	0 11	0 10¾	0 11

* These quotations have been kindly furnished by Mr. E. Meadows, resident representative of Messrs. H. Trengrouse and Coy., provision brokers, London.

† The price for September in 1896–7 was 11d., and in 1897–8, 11½d.

Fluctuations in price of Victorian butter.

1505. The average price for the five years was slightly over 11d. per lb.—the lowest realized being 10¾d. in 1894–5 and 1897–8, and the highest, 11¾d., in 1895–6. The price is usually highest in October and November—although once the maximum occurred in September and once in December; whilst it is usually lowest in April—although once the minimum occurred as early as January, and once in March. During the first three seasons referred to in the table, the average price obtained in the period October to January was about 1½d. higher than in the period February to April; but during the last two seasons the average price in the period from October to December was only ½d. and 1d. respectively higher than that from January to April.

Cost of selling Victorian butter in London.

1506. The details of the cost of realizing upon one pound of Victorian-made butter in the London market are shown in the following table. In order to estimate the cost of land carriage in Victoria, the average distance from the butter factories to Port Melbourne has been assumed to be 130 miles, whilst the selling price of the butter in London has been taken at 11d. per lb. (or 102s. 8d. per cwt.):—

COST OF REALIZATION IN LONDON OF 1 LB. OF VICTORIAN FACTORY BUTTER.

Particulars of Charges.	Per lb.
	d.
Rail charges from butter factory to Port Melbourne	·198
Freezing charges, 2d.* per box	·036
Freight from Port Melbourne to London	·75
Selling commission, say at 4½ per cent.	·497
Marine insurance	·045
Sundries	·105
Trade discount for cash	·073
Total	1·704

Net return to dairyman and farmer for butter.

1507. It will be observed that the aggregate charges between the place of production and that of final destination in connexion with the transport, storage, and sale of Victorian butter in London averaged close on 1¾d. per lb.—made up of ¾d. for oversea freight to London, about ½d. for selling commission, and nearly another ½d. for all other sundry charges; and, assuming the price realized in London to be 11d. per lb. (or 102s. 8d. per cwt.), it follows that the net return would be a little over 9¼d. per lb. to the dairyman at his local butter factory. On this principle, the net return has been computed in the following table for each of the last five years, first to the dairyman and secondly to the dairy-farmer—allowing in the latter case for cost of manufacture at the factory at 1½d. per lb. Allowance had also to be made for the reduction of freight to London in 1896–7 from ⅞d. to ¾d. per lb. It will be observed that the net return per lb. to the dairyman varied from

* Increased to 3d. for season 1899–00.

9d. to 10d., and to the farmer from 7½d. to 8½d.—the maximum being reached in 1895–6 :—

PRICE REALIZED BY THE FARMER ON EXPORTED BUTTER TO LONDON.

Season.	Average Price in London per lb.	Expenses per lb.		Net Price Realized per lb.	
		Freight to London.	All Other Charges.	At Factory.	By Farmer as equivalent for Milk, allowing 1½d. per lb. for Manufacturing.
1894–5 ...	10¾d.	⅞d. = ·88	·95d.	9d.	7½d.
1895–6 ...	11¾d.	⅞d. = ·88	·95d.	10d.	8½d.
1896–7 ...	11d.	⅝d. = ·75	·95d.	9¼d.	7¾d.
1897–8 ...	10¾d.	⅝d. = ·75	·95d.	9d.	7½d.
1898–9 ...	11d.	⅝d. = ·75	·95d.	9¼d.	7¾d.

Value of milk produced on farms.

1508. Applying the average prices shown in the last column of the previous table to the equivalent in butter of the total milk yield of each year already given, the estimated amount received by dairy farmers for milk, as well as the average per cow, in each of the four years ended with 1898 will be arrived at as shown in the subjoined table :—

VALUE OF MILK PRODUCED ON FARMS, 1895 TO 1898.

Year.	Gallons of Milk Produced on Farms.* (000's omitted.)	Equivalent in Butter.† (000's omitted.)	Value.	
			Amount.	Average per Cow.
		lbs.	£	£ s. d.
1895	109,200,	45,500,	1,564,062	3 7 7
1896	116,166,	48,401,	1,563,110	3 8 3
1897	103,980,	43,325,	1,353,906	3 18 5
1898	107,535,	44,806,	1,446,860	4 1 0

NOTE.—In 1899 the number of cows was 465,469, the average quantity per cow 316·6 gallons, the equivalent in butter 61½ million lbs., and the value about £2,400,000, or an average of £5 2s. per cow.

Average value of milk per cow.

1509. It will be observed that in 1895–6 and 1896–7 the value of milk produced exceeded 1½ millions sterling annually, but in the two subsequent years it fell off owing to the drought. The average value per cow has, however, steadily advanced from £3 7s. 7d. in 1895–6 to £4 1s. in 1898–9. On some farms in the colony a return of £9 and £10 per cow for milk alone is not uncommon. Thus the average obtained one season at a farm at Leongatha from 63 cows milked was £9 14s. 10d. (the butter yield being 261 lbs.) ; and in 1899, a herd of 25 cows at Port Fairy returned an average of £12 11s. 5d. per cow, the realized

* See paragraph 1498, *ante*.

† Assuming 2·4 gallons of milk to 1 lb. butter.

butter yield being 330 lbs., at 8$\frac{7}{10}$d.,* in 1898, one of 80 cows at Camperdown returned an average of £9 11s. 4d., the butter yield being 224 lbs. at 10$\frac{1}{4}$d.; and in 1898–9, one of 40 cows at Trafalgar (West Gippsland) an average of £8 17s. 6d., from 286 lbs. of butter at 7$\frac{7}{16}$d.

Value of dairy products in United States.

1510. The values shown in the last table would be increased, if allowance were made for the higher price obtained for milk required for consumption in its natural state. In the United States such a distinction is made—butter, cheese, and "milk" cows each being separately stated. The first-mentioned class returns on the average £4 17s. 6d., the second £5 12s. 6d., and the third £6 6s. 8d.—the average of the whole being £5 7s. 5d., as set forth in the following statement, taken from the *Year-Book* of the Department of Agriculture :—

VALUE OF MANUFACTURED DAIRY PRODUCTS IN UNITED STATES.

Cows Producing.	Millions of Milch Cows.	Products.		Value.		
		Per Cow.	Total (in Millions).	Rate.	Amount (000's omitted).	Average per Cow.
				d.	£	£ s. d.
Butter	11	130 lbs.	1,430, lbs.	9 per lb.	53,600,	4 17 6
Cheese	1	300 "	300, "	4½ "	5,600,	5 12 0
Milk for ordinary use	5½	380 gals.	2,090, gals.	4 per gal.	34,800,	6 6 6
Total ...	17½	...	...	...	94,000,	5 7 5

Capital value of dairy farms.

1511. In 1899, there were about 465,500 dairy cows in the colony, and allowing £50 per cow as the capital value of land, sheds, and appliances (including piggery), and the stock, it would appear that the capital invested in dairy farms is about £23,275,000, made up as follows :—

APPROXIMATE CAPITAL INVESTED IN DAIRY FARMS.

	Average per Cow.	Total Capital.
Land	£40 ...	£18,620,000
Sheds, appliances, piggery, &c.†	4 ...	1,862,000
Cows	6 ...	2,793,000
Total	£50 ...	£23,275,000

Interest on capital invested in dairy farms.

1512. Allowing 5 per cent. as interest for the value of the land, 10 per cent. for improvements, and 12 per cent. (with depreciation) for live stock, the annual interest on the capital shown in the above statement would amount to £1,452,360, or an average of £3 2s. 5d. per cow.

Profits of dairy farming.

1513. Assuming a gross return of £8 per cow for milk, £1 5s. for the calf, and £1 7s. for pigs produced on a dairy farm, or a total of £10 12s. per cow ; and allowing £2 3s. 9d. per cow for expenses of working (viz., 30s. for labour, 10s. for artificial feed—say 5 cwt. hay

* In addition, an extra 1d. a gallon was obtained in this case for the skim milk contained in half the total milk which was sent to a concentrating factory. As a rule, skim milk is returned, free of charge, to the farmer. Two cows on this farm gave milk producing an average throughout the year of close on 1 lb. of butter daily.

† Exclusive of dwellings.

or its equivalent—and 3s. 9d. for food for pigs, apart from skim milk), the net return—without taking into account interest on capital—would be £8 8s. 3d. per cow. Applying these averages to the total number of cows in the colony, the gross annual return would amount to £4,934,300, and the net return (without allowing for interest) £3,916,018. This is a return that might, with proper care and management and with stall feeding, be readily obtained in normal seasons. As a matter of fact, however, the gross average return for milk in 1899 (see note to table following paragraph 1508 *ante*), was only £5 2s. per cow, whilst lower averages prevailed in previous years. On a basis of £5 2s. for milk, the gross return would be only £2,374,000, and the net £1,443,000.

Dairy produce.

1514. In Victoria the yield of butter-fat usually varies from 3½ to 4 per cent., which is equivalent to from 2·6 to 1¾ gallons of milk to every lb. of butter;* whilst the average is about 3·8 per cent., or 2⅓ gallons per cent., or 25·15 lbs. of milk to the lb. of butter. Practically, at the present day, all milk used for butter-making is skimmed by separator, as it is universally recognised that by this process more of the butter-fat can be secured than by any other method. The following is an estimate of the quantity and value of the dairy produce of the colony for each of the five years, 1894 to 1898, based on returns furnished and on the estimated yield of milk :—

QUANTITY AND VALUE OF DAIRY PRODUCE OF VICTORIA, 1894 TO 1898.

—	1894.	1895.	1896.	1897.	1898.
I.—YIELD OF MILK.	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Consumed in natural state† ..	26,798,665	26,919,845	26,859,995	26,754,135	26,757,785
Made into butter	86,388,300	96,335,000	90,895,000	85,883,000	82,257,769
Made into cheese	4,186,911	5,092,113	4,800,027	4,386,422	4,431,625
Made into cream only	..	..	..	73,400	392,770
Made into concentrated milk ..	..	216,286	317,921	542,710	670,570
Total	117,373,876	128,563,244	122,872,943	117,639,667	114,510,519
II.—QUANTITY OF PRODUCTS MADE.					
Butter‡ .. .. lbs.	36,467,890	40,667,425	37,873,282	35,136,421	34,799,655
Cheese .. .. lbs.	4,153,131	5,052,782	4,742,566	4,312,507	4,397,369
Cream only .. .. gallons	..	..		20,940	39,277
Concentrated milk .. gallons	..	54,070	79,480	122,349	164,817
III.—ESTIMATED VALUE OF PRODUCTS.	£	£	£	£	£
Milk consumed in natural state, at 5½d.§ per gallon	614,136	616,913	615,041	613,115	613,200
Butter made ‖	1,367,546	1,652,114	1,459,700	1,317,616	1,341,237
Cheese made, at 4d. per lb. ..	69,219	84,213	79,043	73,102	73,289
Cream (not for butter) ..	..	..	..	5,235	9,819
Concentrated milk	..	9,462	13,909	21,411	24,722
Total	2,050,901	2,362,702	2,167,693	2,030,479	2,062,267

NOTE.—In 1899, the estimated value was £2,756,233.

* The butter generally referred to in this paragraph is factory butter, which is composed of 84 per cent. of butter-fat, 12 per cent. of water, ·75 per cent. of casein (or curd), and 2·75 per cent. of added salt.

† Assumed to be one-half of a pint per head per diem.

‡ An allowance has been added to the returns furnished by farmers of 10 per cent. for butter, on small farms, &c., which were not visited by the collectors of statistics.

§ Wholesale price to vendors

‖ Based on price at the factory, estimated from London sales, viz., 9d. per lb. in 1894, 9¾d. in 1895, 9¼d. in 1896, 9d. in 1897, and 9¼d. in 1898.

Experiments on the value of skim milk as food for animals in United States.

1515. Skim milk, containing as it does nearly all the casein of the whole milk, is well known to be rich in muscle and bone forming constituents, but, being too nitrogenous a food by itself, it requires the addition of fats and other carbonaceous substances to obtain the best results for feeding animals. According to numerous careful experiments in the United States and elsewhere,* it has been ascertained that, as food for pigs, 6 lbs. of skim milk is equivalent to 1 lb. of barley or rye, 8 lbs. of mangel beets, or $1\frac{1}{5}$ to $1\frac{2}{3}$ lbs. of corn meal. It may be so used as to be worth $2\frac{1}{2}$d. per gallon for feeding chickens, 1d. to $1\frac{1}{2}$d. for feeding pigs, and $1\frac{7}{8}$d. for feeding calves. It should be used fresh (warm from separator, if possible) for calves, but it is no drawback to be a little sour for pigs, and may be used quite thick for poultry. Experiments in chicken feeding showed that, allowing $1\frac{1}{4}$d. per gallon for skim milk and other food in proportion, the cost of producing 1 lb. live weight was less than 3d. up to the time the bird weighed 3 lbs. Skim milk is also the best food for heifers intended for dairy purposes up to the age of twelve months, wheat, bran, and middlings being added as soon as the calves will eat them; but calves for veal may be started on whole milk, which is gradually displaced by skim milk, and finally finished with whole milk for a week or ten days to improve their appearance and sale. For calves the mixture recommended to yield the greatest gain at least cost is 1 lb. of corn meal and flax meal (mixed in the proportion of 9 to 1) and 18 or 20 lbs. of skim milk per day—the meal being gradually increased to double the proportion. Started on such a diet, and the milk being gradually withdrawn after the first 100 days, grade shorthorn calves are asserted to have reached an average weight of 760 lbs. (*sic*) when one year old—equivalent to a gain of 660 lbs. in 365 days. For pig feeding, it should be borne in mind that 10 lbs. of skim milk fed to young pigs is equivalent to 15 lbs. fed to maturing swine. The quantities of corn meal recommended to be added to a quart of skim milk for pigs of various sizes are as follow:—For animals weighing 20 to 70 lbs., 2 ozs. (*i.e.*, 5 per cent.); 70 to 130 lbs., 4 ozs. (10 per cent.); 130 to 200 lbs., 6 ozs. (15 per cent.); over 200 lbs., up to 26 ozs. (65 per cent.). The value of skim milk, when judiciously used, for feeding different animals is shown by the following ratios:—

RESULTS OF FEEDING WITH SKIM MILK IN UNITED STATES.

Animals Fed.	Assumed Price per 1 lb. Live Weight.	Gallons of Milk to produce 1 lb. Live Weight.	Food Value of Milk per Gallon.	Cost of Producing 1lb. of Live Weight.
	d.		*d.*	*d.*
Chickens † ...	...	...	$2\frac{1}{2}$	3‡ (nearly)
Pigs	2	1 to $1\frac{1}{3}$	1 to $1\frac{1}{2}$	...
Calves ...	$2\frac{1}{4}$	1 to $1\frac{2}{3}$	$1\frac{7}{8}$	$\frac{1}{2}$ to 1 §

* See *Year-Book* of the United States Department of Agriculture, 1897, page 516, *et seq.*
† Poultry and turkeys.
‡ Allowing $1\frac{1}{4}$d. per gallon for the milk.
§ Allowing $\frac{3}{4}$d. per gallon for the milk.

Experiments in pig and calf feeding in Victoria.

1516. According to experiments in pig feeding carried out in 1895 by Mr. T. K. Dow, at the Longerenong Agricultural College, for a period of 92 days, it was found that, with animals weighing 200 lbs. at the start, fed on a daily allowance of 6 lbs. of wheat with water, the average daily gain in weight was 1¼ lbs.; that, with the same quantity of wheat, but 2 gallons of skim milk in lieu of water, the gain was 1½ lbs.; and with wheat and oats (in equal proportions) in lieu of wheat, added to the milk, the gain was nearly the same as with wheat and milk. When wheat alone was used with skim milk—allowing 2d. per lb. as the price per lb. of live weight, but nothing for the milk—the feeding value of the wheat was 2s. 6d. per bushel; but when wheat and oats were used together, allowing 10d. per bushel for the oats, the value of the wheat was 3s. 5½d. per bushel. The skim milk, when used with wheat, was found to be worth ¼d. per gallon—every 8 gallons used adding 1 lb. to the live weight. To produce 1 lb. of live weight it was found that 8 gallons of milk were equivalent to 4·8 lbs. of wheat, or to 3·8 lbs. of oats. Judging from the American experiments, it would seem that if corn meal, instead of oats and wheat, had been used better results would have been obtained. Experiments in calf feeding for 94 days showed that a diet of 1½ gallons per day of skim milk only produced an average daily gain of ·92 lbs. in live weight; but with margarine fat added (viz., 4 ozs. to the gallon, at a cost of ⅘d.) the daily increase was 1¼ lbs., the cost of margarine being equivalent to nearly 1d. per lb. on the whole gain in live weight, or 3⅔d. per lb. on the additional weight gained; but by using linseed meal instead of margarine, nearly the same result was obtained as with the latter, but at a cost for the meal of only $\frac{5}{16}$d. per lb. on the total live weight, or 1¼d. per lb. on the extra weight gained. The result was therefore greatly in favour of linseed meal.

Expenditure on agriculture and other bonuses.

1517. Bonuses for the promotion of the agricultural, dairying, and other industries were provided by the Government, and, up to the end of June, 1898, the sum of £313,370 had been expended out of the general revenue, as shown in a previous portion of this work.* In 1898–9 there was a further expenditure of £27,333, and in 1899–00 of £29,750, making a total up to the end of June, 1900, of £370,453. The balance available for expenditure on 1st July of the last-named year was £14,915, which was made up as follows, viz.:—£9,180 for bonuses to growers of grapes, fruits, &c.; £2,187 for the importation of new varieties of seeds and plants; £2,302 for publishing agricultural reports in connexion with educational work; and £1,246 for other miscellaneous votes. In addition to the above expenditure, there was a sum of £35,000 authorized under the *Treasury Bonds Act* 1896, £100,000 authorized under Act 62 Vict. No. 1566, and £100,000 under Act 60 Vict. No. 1451. Of the £35,000 above referred to, the sum of £25,328 had been spent up to the 30th June, 1900, leaving a balance available on that date of £9,672. The amounts authorized out of that sum (£35,000) for green fruits exported; raisins, currants, and figs made; assistance to wineries and for viticultural education have been

* See table following paragraph 241, *ante*.

practically exhausted ; but there still remains £7,272 to promote the growth of general vegetable products, and the full amount of £1,500 as bonuses for the production of vegetable oils. Of the £100,000 authorized under Act No. 1566, the expenditure up to the 30th June, 1900, amounted to £17,157, and of that under Act No. 1451 to £62,000. Particulars appear in the following table in respect to all bonuses granted under various Loan Acts :—

Expenditure for Bonuses on Agricultural Products authorized under various Loan Acts.

(For expenditure from revenue, see paragraph 241, *ante*.)

Subject of Bonus.	Period during which Bonus operated.	Rate of Bonus.	Amount Authorized.	Expenditure to 30.6.1900.
Under Treasury Bonds Act 1896.			£	£
Green fruit exported	prior to 24.7.96	2s. per case	3,500	3,406
	after 6.11.96	1s. ,,		
Honey exported	prior to 9.11.95	1d. per lb.	225	61
Raisins, currants, and figs made	1895	£5 per ton	2,205	2,134
Vegetable oil manufactured...	...	1s. per gall.	1,500	...
Flax and hemp fibre produced	...	£5 per ton	1,000	169
General vegetable products grown	1895	£2 per acre	10,000	3,559*
Wineries (assistance in building machinery and appliance producing 60,000 gallons of wine in three years) ...	...	£2,000 each	8,000	8,000
Viticultural education ...	...	...	8,000	7,999
Unapportioned	...	...	570	...
Total	...	...	35,000	25,328
Under Act 62 Vict. No. 1566.			£	£
District Co-operative Wineries and Viticulture Industry			20,000	2,854
Dairy Schools, Experimental Stations, purchase of Live Stock, Machinery, Implements and other Appliances, and Technical Agricultural Education			30,000	10,574
Development of the Export trade			32,500	1,079
Bonuses for the encouragement of the Cultivation, Manufacture, and Export of Fruit, Tobacco, Flax, Hemp, Silk, and of other Rural Industries			17,500	2,650
		Total ...	100,000	17,157†
To Beet Sugar Factory under Act No. 1451		Total ...	100,000	62,000
		Grand Total...	235,000	104,485

* Including £826 for Fruit Pulp exported.

† This amount represents the total of loan authorized and raised to date for this purpose under Loan Act 1564 ; but the total authorized expenditure under regulations to be approved of by the Governor in Council under Act No. 1566 is £100,000.

1518. The following are the vegetable products for which bonuses* are payable by the Agricultural Department, under certain regulations approved by the Governor in Council, if successfully harvested in Victoria prior to a certain date; also to factories for the fabrication or manufacture of articles—the produce of the colony—of proper marketable qualities :— Agricultural bonuses.

Bonuses for General Vegetable Products.

Sowing or planting and cultivating the following, to be used for manufacturing purposes (not less than 1 acre in the case of sugar plants, than ½ acre of fibre plants, nor less than ¼ acre of the others):—

Products for which Bonuses are granted.	Bonus not exceeding—	Maximum to one Person or Company—
Fibre Plants.		
Agave (sisal hemp)		
Boehmeria (ramee)		
Broom millet		
Cannabis (hemp)		
Corchorus (jute)		
Fourcroya		
Linum (flax)		
Phormium (New Zealand flax)		
Paper Plants, including Stipa (esparto).		
Oil Plants.		
Arachis (earth nut)		
Brassica (mustard)		
Cyperus (ground almond)		
Helianthus (sunflower)		
Ricinus (castor oil)		
Sesamum (gingili)		
Sugar Plants.		
Andropogon (sorghum)		
Beta (beet)		
Tannin Plants.		
Cæsalpinia		
Cytisus (broom brush)		
Duvaua		
Elephanthorrhiza		
Osris		
Prosopis (algarobylla bark)		
Rhus (sumach)		
Rumex (canaigre)		
Drug Plants.		
Aletris (colic root)		
Aloe		
Anthemis (camomile)		
Aristolochia (putchuk)		
Arnica		
Artemisia		
Barosma (bucco)		
Cassia (senna)		
Cucumis (colocynth)		
Convolvulus (scammony)		
Digitalis (foxglove)		
Erythroxylon		
Ferula (asafœtida)		
Gentiana (gentian)		
Glycyrrhiza (liquorice)		
Hedeoma (pennyroyal)		
Hyoscyamus (henbane)		
Ipomœa (jalap)		
Lippia		
Matricaria (camomile)		
Mentha (peppermint, pennyroyal)		
Nepeta (ground ivy)		
Papaver (opium poppy)		
Pilocarpus		
Pimpinella (aniseed)		
Ruta (rue)		
Rheum (rhubarb)		
Smilax (sarsaparilla)		
Tanacetum (tansy)		
Taraxacum (dandelion)		
Urginea (squills)		
Colchicum (meadow saffron)		
Podophyllum (mandrake)	£2 per acre.	£100

* For particulars of the expenditure from the grants up to 30th June, 1898, see table following paragraph 241 *ante*. The grants are rapidly being exhausted

Bonuses for General Vegetable Products—*continued.*

Products for which Bonuses are granted.	Bonus not exceeding—	Maximum to one Person or Company—
Dye Plants.		
Alkanna, Cæsalpinia, Carthamus (safflower), Crocus (saffron), Crozophora, Heterothalamus, Indigofera (indigo), Isatis (dyers' wood), Lyperia, Maharanga, Onosma, Polygonum, Reseda (weld), Rhamnus, Rubia (madder), Spartium	£2 per acre.	£10
Scent Plants.		
Aloysia (scented verbena), Boronia, Cedronella, Dracocephalum, Jasminum (jasmine), Lavandula (lavender), Lippia, Melissa (balm herb), Narcissus, Origanum (marjoram), Osmanthus, Pelargonium, Pittosporum, Pogostemon, Polianthes (tuberose), Pycnanthemum, Rosa (rose), Rosmarinus (rosemary), Teucrium, Thymus (thyme), Triphasia, Viola (violet)	£2 per acre.	£10
Insecticide Plants.		
Artemisia, Chrysanthemum (pyrethrum), Schkuhria	£2 per acre.	£10
VEGETABLE OIL FACTORIES.		
Vegetable oils as follow :— Almond, Castor, Colza, Earth nut, Linseed, Olive, Sesame, Brassica, Sunflower	1s. per gallon.	£500
FLAX AND HEMP FACTORIES.		
Fibre manufactured from flax or hemp	£5 per ton	£500
IMPORTATION OF NEW VARIETIES OF SEEDS AND PLANTS.		
Any new variety of plant introduced and approved by the Minister of Agriculture (1,000 approved scions or plants thereof to be supplied, if necessary, at a price not exceeding 6d. each)	£20	..

BONUSES FOR GENERAL VEGETABLE PRODUCTS, ETC.—*continued.*

FOREST TREES OF AN ECONOMIC CHARACTER.

	At expiration of—	Per acre.
For planting and maintaining in a vigorous and healthy condition not less than one nor more than 50 acres, and not cut nor injured for five years, trees of any of the following kinds :—	1 year	15s.
	2 years	7s. 6d.
	3 „	5s.
	4 „	2s. 6d.
	5 „	10s.

Acacia (blackwood)
Acer (maple)
Alantus
Alnus (alder)
Argania (argan-tree)
Betula (birch)
Carya (hickory)
Catalpa
Cedrela (cedar)
Cedrus (deodar)
Ceratonia (carob)
Cinchona
Cinnamomum (camphor-tree)
Cupressus (cyprus)
Dacrydium (pine)
Dammara (pine)
Eucalyptus (gum and ironbark)
Fagus (beech)
Flindersia (Australian ash)
Fraxinus (ash)
Grevillea (silky oak)
Juglans (walnut)
Juniperus (juniper)
Libocedrus (cedar)
Nageia or Podocarpus
Pinus (pine)
Pistacia
Platanus (plane)
Populus (poplar)
Prosopis (algeroba)
Quercus (oak)
Salix (willow)
Sequoia (redwood)
Thuya (cedar)
Tilia (linden or lime)
Ulmus (elm)

Value of cattle production, 1894-8.

1519. The increase of cattle production in Victoria may be fairly ascertained by a calculation made up of two elements—(1) the value of Victorian cattle slaughtered during the year ; (2) the value of the net increase in the herds of milch cows and other cattle. The value of Victorian cattle slaughtered, together with an estimate for the net increase in herds, is supposed to fairly represent the increased value in the year of all the growing cattle of both sexes and at different ages—the Victorian cattle slaughtered being estimated from the total numbers slaughtered as recorded, by adding 7 per cent. for deficient returns, and deducting the net imports of cattle (assumed to be bullocks) from the neighbouring colonies. In earlier years a third element was also taken into account, viz., the value of fattening imported store cattle on Victorian pastures, which the small import duty of 5s. per head up to June, 1892, allowed of to a large extent; but since that date the imposition of a duty of 30s. per head upon all imported cattle has put an end to that practice. The increased duty has, moreover, tended to restrict importation, and to increase the supply of Victorian meat. Thus, although the consumption of cattle for meat in Victoria fell off from an average of 258,200 head per annum in the four years prior to 1892 to 226,600 in 1893, followed by a gradual recovery to 242,500 in 1898, and 246,200 in 1899, the colony increased her own supply for the butcher from an average of 159,000 head in the first four years mentioned to 200,400 in 1893, and further to an average of 220,000 in the last five years (1895–9) ; whereas the importations fell off from 99,000 per annum in the four years to 26,000 in 1893, and further to an average of only 21,000 in the last five years. Hence it appears that the colony can supply, under present conditions, 220,000 head of cattle annually for food, but that any demand beyond

that has to be met by importations. In 1891, when an accurate return of live stock was last obtained, the number of cattle of all kinds in the colony was 1,783,000, of which on the average (taking the years 1888–91) 159,200, or about 1 in every 11, was slaughtered annually for food. If the same ratio held good now, there would be 2,420,000 cattle in the colony in order to supply the 220,000 actually slaughtered. This, however, is mere conjecture, and the correct number will not be known until after the census of 1901 has been taken. An estimate of the increase and its value for recent years will, therefore, have to be left out of account. It is well known, however, that cattle rearing purely for beef production only has of late years been considerably diminished, mainly on account of the great development of the more remunerative dairying industry. Cattle-owners in the richest parts of the colony have, to a large extent, given up fattening, and are devoting their rich pastures to dairying, which is, in many instances, worked on joint account with the dairy farms, the former providing the land and appliances, and the latter with his family the necessary labour. On dairy farms, according to the annual agricultural statistics, only about one-half the calves produced are retained, and of the balance some are destroyed, and the remainder sold to graziers and others for fattening.* The following is an estimate of the value of the cattle production in each of the five years ended with 1898, the method by which the prices have been arrived at being shown in subsequent paragraphs :—

Value of Cattle Produced, 1894–8.

—	Numbers.				
	1894.	1895.	1896.	1897.	1898.
Victorian cattle slaughtered ...	224,226	232,626	243,101	236,298	228,272
Increase†—Milch cows	33,427	– 2,811	– 4,654	– 112,607	11,761
—	Estimated Value.‡				
	£	£	£	£	£
Victorian cattle slaughtered ...	1,111,787	1,061,356	1,215,505	1,439,449	1,416,238
Increase†—Milch cows	215,604	– 16,866	– 30,949	– 689,718	80,856
Total	1,327,391	1,044,490	1,184,556	749,731	1,497,094

NOTE.—No allowance is made for the increase or decrease of cattle other than milch cows, as the necessary data are not available.

Average price of fat stock and milch cows, town and country.

1520. The average price of fat stock and milch cows at the Melbourne sale-yards, for the years 1894 to 1898, has been compiled from quotations furnished by Mr. P. C. Blom, secretary to the Associated Stock

* According to returns furnished by a number of pastoralists in 1899 (the aggregate of whose herds numbered nearly 6,000), only 8 per cent. of all the cattle were calves, although there were nearly 18 per cent. one year old; so that, unless considerable purchases were effected from dairymen and others, the necessary supply of cattle could not be maintained.

† The minus (–) sign indicates decrease.

‡ The average prices taken for computing the value of cattle will be found in the statement following paragraph 1522; and for that of milch cows (the values in the country districts being adopted) in the table following paragraph 1520 *post*.

and Station Agents, Melbourne, and other reliable sources. An estimate is also made for country districts, based on the quotations in Melbourne, it being assumed that the price of bullocks and cows is 7 per cent. lower than those in Melbourne; calves 33 per cent., crossbred sheep 14 per cent., merino sheep 14 per cent., and lambs 12½ per cent. lower; but that milch cows were 5s. per head dearer.

AVERAGE PRICE OF FAT STOCK AND MILCH COWS AT THE MELBOURNE SALE-YARDS AND IN COUNTRY DISTRICTS, 1894 TO 1898.

Class of Stock.	1894.	1895.	1896	1897.	1898.
IN MELBOURNE.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Fat bullocks ...	6 6 0	6 0 0	6 14 0	7 18 0	8 13 0
,, cows	4 3 0	4 0 0	4 10 0	5 6 0	5 15 0
Milch cows	6 4 0	5 15 0	6 8 0	5 17 6	6 12 6
Fat calves	1 14 6	1 13 0	1 16 8	2 5 1	2 3 10
Crossbred wethers ...	0 9 6	0 9 4	0 9 6	0 11 8	0 12 10
,, ewes ...	0 8 3	0 8 0	0 8 2	0 9 4	0 11 2
Merino wethers ...	0 7 9	0 7 8	0 7 10	0 10 0	0 10 5
,, ewes ...	0 5 8	0 5 9	0 5 4	0 8 0	0 7 2
Lambs, mixed ...	0 5 6	0 5 9	0 5 4	0 8 0	0 8 0
IN COUNTRY.					
Fat bullocks ...	5 16 9	5 11 7	6 4 7	7 6 11	8 0 6
,, cows	3 17 2	3 14 5	4 3 8	4 18 7	5 7 6
Milch cows	6 9 0	6 0 0	6 13 0	6 2 6	6 17 6
Fat calves	1 3 0	1 2 0	1 4 5	1 10 1	1 8 10
Crossbred wethers ...	0 8 2	0 8 1	0 8 2	0 10 0	0 11 0
,, ewes ...	0 7 1	0 6 10	0 7 0	0 8 0	0 9 7
Merino wethers ...	0 6 8	0 6 7	0 6 9	0 8 7	0 8 11
,, ewes ...	0 4 10	0 4 11	0 4 7	0 6 11	0 6 2
Lambs, mixed ...	0 4 10	0 5 0	0 4 8	0 7 0	0 7 0

Method of estimating average price of cattle.

1521. From the data given in this table, together with information as to the proportion of each class slaughtered in Melbourne and in the country respectively, and as to the proportion of each class slaughtered in the colony to the total number of cattle slaughtered—as published in the Annual Agricultural Statistics—an average for each class of cattle has been arrived at, as will be seen from the following example for the year 1898 :—

AVERAGE PRICE OF FAT CATTLE IN THE COLONY, 1898.

Class.	Average Prices in—		Percentage Slaughtered in—		Average Price for the Colony.	Percentage of each Class of Victorian Cattle Slaughtered.
	Melbourne.	Country.	Melbourne.	Country.		
	£ s. d.	£ s. d.			£ s. d.	
Bullocks ...	8 13 0	8 0 6	42	58	8 5 9	47
Cows ...	5 15 0	5 7 6	17	83	5 8 11	38
Calves ...	2 3 10	1 8 10	22	78	1 12 3	15
Average for Victorian cattle slaughtered ...					6 4 1	100

Average price of cattle slaughtered, o 1898.

1522. By this means the following average prices of cattle slaughtered have been computed for each of the five years ended with 1898 :—

AVERAGE PRICE OF CATTLE SLAUGHTERED, 1894 TO 1898.

Year.	Bullocks.	Cows.	Calves.	Average Victorian Cattle Slaughtered.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1894 ...	6 0 8	3 18 2	1 5 4	4 19 2
1895 ...	5 15 2	3 15 5	1 4 5	4 11 3
1896 ...	6 8 6	4 4 9	1 7 1	5 0 0
1897 ...	7 11 7	4 19 10	1 13 4	6 1 10
1898 ...	8 5 9	5 8 9	1 12 2	6 4 1

Average price of Victorian sheep slaughtered.

1523. In a somewhat similar manner the average price of Victorian sheep slaughtered has been computed as follows for each of the same years ; it being assumed that equal numbers were slaughtered in Melbourne and in the country, that two-fifths of the sheep were cross-breds and three-fifths merinos, that two-thirds of them were wethers and one-third ewes, and that on the average each sheep and lamb carried half-a-year's growth of wool on its back—estimated at 2 lbs., worth 1s. 6d.—which has been deducted :—

AVERAGE PRICE OF VICTORIAN SHEEP SLAUGHTERED (WITHOUT WOOL), 1894 TO 1898.

	Average Price. s. d.		Average Price. s. d.
1894 ...	5 6	1897 ...	7 6
1895 ...	5 5	1898 ...	7 11
1896 ...	5 5		

Value of pastoral and dairy produce.

1524. The following is an estimate of the gross value of pastoral and dairy produce raised on holdings of all descriptions from 1894 to 1898—the average prices of live stock per head having been carefully revised since the last publication :—

VALUE OF PASTORAL AND DAIRY PRODUCE, 1894 TO 1898.

Nature of Products.	Number in—				
	1894.	1895.	1896.	1897.	1898.
Estimated number of stock produced—	No.	No.	No.	No.	No.
Sheep, without wool	3,280,222	3,806,752	3,475,373	2,339,535	1,864,108
Pigs, (slaughtered and exported)	183,596	202,898	190,083	171,281	163.825
Horses * ...	21,577	21,577	21,577	21,577	21,577
	lbs.	lbs.	lbs.	lbs.	lbs.
Wool exported (net)† ...	60,850,616	77,075,577	63,682,851	52,677,194	66 223,605
Wool manufactured in colony	1,513,373	1,901,533	1,889,448	2,775,324	2,685,803

* In the absence of information the figures for 1894 have been used in all cases.
† Including allowance for wool on sheepskins—estimated.

VALUE OF PASTORAL AND DAIRY PRODUCE, 1894 TO 1898—*continued.*

Nature of Products.	Value.*				
	1894.	1895.	1896.	1897.	1898.
	£	£	£	£	£
Milk, butter, and cheese†	2,050,901	2,362,702	2,167,693	2,030,479	2,062,267
Estimated value of stock produced—					
Cattle†	1,327,391	1,044,490	1,184,556	749,731	1,497,094
Sheep, without wool	902,061	1,030,995	941,247	877,326	737,876
Pigs, slaughtered and exported	293,754	325,037	304,133	274,050	262,120
Horses ‡	151,039	151,039	151.039	151,039	151,039
Wool exported (net), Customs value §	2,276,370	2,921,826	2,829,063	2,175,961	2,406,585
Wool manufactured in colony	56,751	71,307	70,854	104,075	100,718
Total ...	7,058,267	7,907,396	7,648,585	6,362,661	7,217,699

NOTE.—The principle on which the numbers of sheep and horses produced have been estimated is as follows:- The increase of sheep has been reckoned at 25 per cent. on the total number of both sexes over six months old in the colony, that being the proportionate increase ascertained by Mr. A. J. Skene, the late Surveyor-General of Victoria (except in an extreme abnormal season, when the average has fallen to as low as 15 per cent.), to have taken place during a series of years on nearly 3¾ millions of sheep on 34 stations situated in various parts of the colony. The increase of horses has been arbitrarily estimated at 5 per cent. upon the total numbers of such stock. The value per head set down for the different kinds of stock is intended to represent the average value per head of all the stock of each kind in the colony, young and old; for although the stock born in the year would be only six months old, on the average, when the year terminated, and would, consequently, not be of so high a value as the figures indicate, yet all the growing or fattening stock may be considered to have become more valuable during the year, and the increase of bulk, and consequently of value, of such stock may fairly be set down as part of the year's produce as much as the stock actually born therein, the numbers of the latter being taken as a basis whereto such values may be applied. The quantity of wool manufactured in Victoria has been ascertained from the various woollen mills. No estimate has been made of the value of meat, tallow, lard, hides, skins, horns, hoofs, bones, &c., as this is supposed to be included in the value of stock produced.

Value of pastoral produce in New South Wales.

1525. In New South Wales in 1898, one-fifth of the cattle were breeding cattle, whilst the calves branded averaged 72 per cent. of these; and the cattle (including calves) slaughtered exceeded in numbers one-sixth of the calves branded. (Such information is not collected in Victoria.) Of the total numbers slaughtered in 1898, about 61¼ per cent. were bullocks, 32¾ per cent. cows, and 6 per cent. calves. According to the Government Statistician of New South Wales the value of dairy produce during 1897 was £1,960,000; of cattle, £819,000; of sheep, £8,921,700; and of horses, £414,000; making a total of £12,114,700.

Australasian fresh meat in London.

1526. Australian-killed fresh meat was delivered in London for the first time in the year 1880. New Zealand fresh meat was first delivered in 1882. The development of this industry in Victoria is of more recent date. The following, according to the Agricultural Department of the Privy Council,‖ are the quantities delivered from Australasia

* The price assumed for pigs in each year is £1 12s. per head, for horses £7 per head, and for wool manufactured in the colony, 9d. per lb.; for sheep, see paragraph 1523, *ante*.

† As per statements on pages 913 and 920, *ante*.

‡ In the absence of information the figures for 1894 have been used in all cases.

§ Including allowance for wool on sheepskins—estimated.

‖ Report for 1898, page 104.

in the eighteen years ended with 1898, by which it will be seen that a large increase took place during the four years ended with 1898.

AUSTRALIAN AND NEW ZEALAND KILLED FRESH MEAT DELIVERED IN LONDON, 1881 TO 1898.

	Cwt.		Cwt.		Cwt.
1881 ...	11,300	1887 ...	302,140	1893 ...	963,200
1882 ...	34,540	1888 ...	398,960	1894 ...	998,160
1883 ...	93,420	1889 ...	533,680	1895 ...	1,334,380
1884 ...	222,560	1890 ...	695,180	1896 ...	1,323,720
1885 ...	230,400	1891 ...	813,720	1897 ...	1,590,000
1886 ...	294,220	1892 ...	756,380	1898 ...	1,676,620

Price of meat in London.

1527. The average prices of beef and mutton in London, by the carcass, are quoted as follow, by the same Department, for the eleven years ended with 1898*:—

AVERAGE WHOLESALE PRICE OF BEEF AND MUTTON IN LONDON, 1888 TO 1898.

Year.	Beef per lb.	Mutton per lb.
1888	3½d. to 7⅜d.	4¾d. to 8¾d.
1889	3½d. „ 7¼d.	5⅝d. „ 9½d.
1890	3½d. „ 7¼d.	6¾d. „ 9⅜d.
1891	4⅛d. „ 7⅜d.	5⅛d. „ 8¾d.
1892	4⅜d. „ 7⅛d.	5⅝d. „ 8⅜d.
1893	4¼d. „ 7⅛d.	5½d. „ 8⅛d.
1894	3⅝d. „ 6¾d.	5⅜d. „ 8¾d.
1895	4d. „ 6¾d.	5⅞d. „ 8⅞d.
1896	3½d. „ 6⅝d.	4⅞d. „ 8⅛d.
1897	3⅝d. „ 6¾d.	5½d. „ 8½d.
1898	3½d. „ 6⅜d.	4¾d. „ 8¼d.

NOTE.—These amounts include expenditure on labour, inspectors' salaries, material, cartage, &c., and for working unoccupied Crown lands.

State expenditure on rabbit destruction.

1528. Active operations for the destruction of rabbits on Crown lands were first undertaken by the Government in 1880, and from that date to the middle of 1899 sums amounting to £351,601 had been expended with that object.† The following are the amounts spent in each year :—

STATE EXPENDITURE ON RABBIT EXTERMINATION, 1880 TO 1899.

	£		£
1879–80	1,280	1889–90	24,860
1880–81	2,600	1890–91	37,913
1881–2	12,890	1891–2	39,535
1882–3	9,883	1892–3	30,595
1883–4	10,063	1893–4	12,514
1884–5	22,177	1894–5	8,909
1885–6	24,833	1895–6	11,831
1886–7	21,065	1896–7	13,425
1887–8	20,551	1897–8	14,303
1888–9	17,621	1898–9	14,753

* Report for 1898, pages 138 and 139.

† For an account of the efforts made to exterminate, see issue of this work for 1891, Vol. II., paragraph 566.

1529. The area more or less infested with rabbits and other vermin throughout the colony is estimated by the Chief Inspector at 37,750,000 acres, of which 1,250,000 acres were unoccupied Crown lands.* The inspector reports that 116 convictions under penal clauses of the Act were obtained in 1898 and 52 in 1899, and fines and costs awarded amounting to £461 in 1898 and £153 in 1899. From the 1st July, 1879, to the 30th June, 1899, a sum of £351,600 was expended by the Government in the destruction of vermin, including salaries of inspectors, wages of men employed on Crown lands, poison, material, &c., and subsidy to shires on foxes and wild dogs purchased by them. In addition to this a loan of £150,000 was allocated to shires in 1890 for the purchase of wire netting to advance to landholders, repayable in ten years, and in 1896 a loan of £50,000 was advanced on similar terms except that 3 per cent. interest was added. The expenditure for 1898–9 was £14,753, portion of which represented the salaries of twenty rabbit inspectors at £186 per annum, and one at £150, also allowances to 90 police rabbit inspectors at £12 per annum; the remainder has been expended in wages of men (about 50) employed on Crown lands, subsidy on foxes and wild dogs, poison, material, &c. Rabbit extermination.

1530. In the twenty-two years ended with 1898 there have been exported from the colony over 113 millions of rabbit skins, valued at £599,026, of which over 45½ millions, valued at £197,000, have been exported in the last five years. In addition to these, many have been used in the colony by hat manufacturers† and others, and large numbers have doubtless been destroyed or allowed to decay. The following are the exports of rabbit skins in the period referred to :— Exports of rabbit skins.

EXPORTS OF RABBIT SKINS, 1877 TO 1898.

Year.	Rabbit Skins Exported.		Year.	Rabbit Skins Exported.	
	Number.	Value.		Number.	Value.
		£			£
1877	700,565	5,790	1889	3,429,015	12,303
1878	711,844	6,206	1890	4,913,351	25,667
1879	1,036,372	7,322	1891	6,359,210	31,367
1880	3,309,408	21,674	1892	7,501,864	31,905
1881	4,473,108	32,217	1893	10,374,154	55,039
1882	4,929,432	37,538	1894	10,133,352	44,133
1883	4,245,596	30,364	1895	9,544 504	39,399
1884	4,963,371	37,243	1896	8,056,744	32,714
1885	3,424,259	23,548	1897	9,516,326	34,630
1886	910,609	6,800	1898	8,321,502	46,114
1887	2,663,314	16,294			
1888	3,967,533	20,759	Total ...	113,485,433	599,026

* For particulars of the provisions of the *Vermin Destruction Act* 1890 (54 Vict. No. 1153) see issue of this work for 1892, Vol. II., paragraph 565.

† Mr. E. Shaw, the manager of the Denton Mills Hat Factory, Abbotsford, reports that about 600 dozen rabbit skins weekly, or 374,400 yearly, are used in that establishment.

Rabbits and wildfowl sent to market in Melbourne.

1531. The number of couples of rabbits and brace of wildfowl received at the Melbourne fish market, the number sold, and the number condemned, during the last twelve years, were as follow :—

RABBITS AND WILDFOWL SENT TO MELBOURNE MARKET.

Year.	Number of Couples of Rabbits.			Brace of Teal and Duck.		
	Sold.	Condemned.	Total.	Sold.	Condemned.	Total.
1886–7 ...	346,856	4,460	351,316	13,572	...	13,572
1887–8 ...	418,618	2,272	420,890	98,737	365	99,102
1888–9 ...	474,384	13,458	487,842	40,936	349	41,285
1889–90 ...	606,568	11,567	618,135	54,314	1,375	55,689
1890–91 ...	676,796	5,955	682,751	87,728	82	87,810
1891–2 ...	572,426	17,977	590,403	159,437	541	159,978
1892–3 ...	617,773	19,275	637,048	68,770	125	68,895
1893–4 ...	589,700	12,479	602,179	57,889	346	58,235
1894–5 ...	592,965	21,096	614,061	123,426	497	123,923
1895–6 ...	427,994	27,751	400.568	71,237	418	71,655
1896–7 ...	310,983	19,379	330,362	88,505	555	89,060
1897–8 ...	373,452	23,209	396,661	35,372	209	35,581

NOTE.—In 1895-6 there were also 6,331 brace of hares, of which 130 brace were condemned, and the others sold. In addition to the above, the following passed through the Melbourne Council's refrigerating works during the twelve months ended 31st July, 1898, for export only: - 525,540 pairs of rabbits, 5,760 brace of hares, and 100 brace of game.

Persons engaged in manufactories, 1891.

1532. It is only at the time of a census that a complete return can be obtained of the number of persons engaged in manufacturing industries. The persons so returned at the census of 1891, including Chinese, but exclusive of Aborigines, numbered 91,710, viz., 63,147 males and 28,563 females. These include not only the individuals working in factories properly so called, but those employed in work-rooms, shops, and other establishments of a less important character than those which the persons who collect statistics from year to year are called upon to visit. The census figures, which are as follow, must therefore considerably exceed those representing the hands employed in factories, according to the annual returns, as given in subsequent tables :—

PERSONS ENGAGED IN MANUFACTURING INDUSTRIES, ACCORDING TO THE CENSUS OF VICTORIA, 1891.*

Working in—	Males.	Females.	Total.
Books and publications	4,228	507	4,735
Musical instruments	165	...	165
Prints, pictures, and art materials ...	316	14	330
Ornaments and minor art products ...	823	91	914
Equipment for sports and games ...	21	...	21

* Exclusive of Aborigine 1891, by H. H. Hayter, C.M.G. For details under the different heads see *General Report on the Census of* Brain, Melbourne, 1893.

Persons Engaged in Manufacturing Industries, according to the Census of Victoria, 1891*—*continued.*

Working in—	Males.	Females.	Total.
Types, designs, medals, and dies ...	293	57	350
Watches, clocks, and scientific instruments	768	11	779
Surgical instruments and appliances ...	16	3	19
Arms and explosives	66	21	87
Machinery, implements, and tools ...	4,845	2	4,847
Carriages and vehicles	3,693	13	3,706
Harness, saddlery, and leatherware ...	1,839	14	1,853
Ships, boats, and their equipment ...	588	...	588
House and shop fittings	396	1	397
Furniture	2,408	224	2,632
Chemicals and by-products	203	50	253
Textile fabrics	569	362	931
Dress	10,074	26,077	36,151
Fibrous materials and fabrics	298	59	357
Animal food	499	14	513
Vegetable food	4,656	302	4,958
Drinks, stimulants, and narcotics ...	2,033	113	2,146
Animal matters	1,562	12	1,574
Vegetable matters	4,504	49	4,553
Fodder (chaffcutter, &c.)	197	1	198
Paper	131	227	358
Stone, clay, earthenware, and glass † ...	3,105	18	3,123
Gold, silver, and precious stones ...	628	21	649
Metals other than gold and silver ...	10,620	25	10,645
Fuel, lights, and electric and hydraulic energy	1,020	2	1,022
Manufacturers undefined	2,583	273	2,856
Total	63,147	28,563	91,710

Hands employed in manufactories according to census and annual returns.

1533. The difference between the total number shown by this table, and that of "hands employed" in the manufactories as returned by the collectors of statistics about the same period, *i.e.*, in 1890–91, is 35,341. This is to be accounted for by the circumstance that the census returns embrace every individual blacksmith, tinsmith, saddler, cabinet-maker, tailor, dressmaker, baker, and such like; whereas the latter include, as already stated, only the workers employed in the principal establishments. The following are the numbers returned according to the different methods:—

Persons employed in Manufacturing Industries, according to the Census 1891, and the Annual Returns for 1890–91.

Enumerated in 1891	91,710
Hands employed in principal manufactories, 1890-91	56,369
Difference	35,341

* See footnote (*) previous page.

† Exclusive of quarries.

Manufacturers in Australasian Colonies.

1534. According to the census returns of the Australasian Colonies, the number of persons engaged in manufacturing in Victoria are more numerous, and bear a higher proportion to the population, than do the corresponding classes in any of the other colonies. Next to Victoria, the highest position is occupied by New Zealand, and the next by New South Wales, Tasmania being at the bottom of the list. The number and proportion in each colony were as follow :—

PERSONS ENGAGED IN MANUFACTURING* IN SIX AUSTRALASIAN COLONIES, 1891.

Colony.	Manufacturers.	
	Number.	Proportion to the Population.
		Per cent.
1. Victoria	91,710†	8·48
2. New Zealand	42,893	6·90
3. New South Wales ...	74,559	6·65
4. Western Australia ...	2,769	5·64
5. Queensland	21,795	5·56
6. Tasmania	7,460	5·10

Sexes of manufacturers in Victoria and New South Wales, 1891.

1535. Whilst the industrial workers of both sexes in Victoria exceeded those of New South Wales by 23 per cent., the excess was only 11½ per cent. in the case of males, but as much as 60 per cent. in the case of females, owing chiefly to the greater development of clothing and dress-making establishments in the former colony. The following are the figures :—

PERSONS ENGAGED IN MANUFACTURING IN VICTORIA AND NEW SOUTH WALES, 1891.

Sex.	Victoria.	New South Wales.
Males	63,147	56,786
Females	28,563	17,773
Total	91,710	74,559

* Exclusive of Aborigines.
† Including manufacturers undefined—formerly omitted.

Summary manufactories. 1893 to 1898.

1536. The following is a summary of the manufactories, works, &c., as returned for each of the years, 1893 to 1898. It should be borne in mind, however, that, owing to a revision of the definition of establishments to be included, made in 1895 and 1896, the figures for those and subsequent years are not quite comparable with previous ones :—

MANUFACTORIES, WORKS, ETC., 1893 TO 1898.*

—	1893.	1894.	1895.	1896.	1897.	1898.
Number of factories ...	2,677	2,632	2,804	2,810	2,760	2,869
Power employed—						
Steam ...	1,244	1,245	1,243	1,252	1,228	1,247
Gas	388	412	447	478	498	531
Electric ...	...	...	2	5	4	6
Water ...	20	18	22	19	18	19
Wind ...	2	4	5	6	5	3
Horse ...	92	69	72	86	69	91
Manual ...	931	884	1,013	964	938	972
Horse-power—						
Full capacity	28,518	30,552	36,496	38,543	38,803	39,956
Actually used			27,875	28,996	29,665	30,853
Hands employed— (Average No.)—						
Males ...	32,410	32,776	35,467	37,779	38,671	40,631
Females ...	7,063	8,224	10,628	12,669	14,030	14,147
Total ...	39,473	41,000	46,095	50,448	52,701	54,778
Approximate value of—	£	£	£	£	£	£
Machinery and plant ...	6,575,788	6,605,870	5,127,200	4,982,640	4,532,934	4,500,727
Lands ...	3,051,314	2,614,930	2,799,310	2,921,450	3,014,502	2,968,331
Buildings and improvements ...	3,830,070	3,623,740	4,362,920	4,375,560	4,460,610	4,408,227

Former definitions of a factory.

1537. Prior to 1894–5, the definition of a "factory" for use in the annual returns of Industrial Statistics was somewhat vague, but a distinct direction was given to return all manufacturing establishments where machinery worked by steam, gas, or water-power was used, but

* Prior to 1895 the returns were furnished as for the year ended March in the year following, but it is believed that practically he information related to the calendar years as indicated.

not to return retail clothing establishments employing less than ten, nor retail boot factories employing less than five hands, and to carefully exclude all persons connected with the commercial branch of a business. In 1894–5, an attempt was made to more clearly define what should be included, and a general rule was made excluding factories employing less than four hands, unless machinery worked by steam, gas, electric, water, wind, or horse power was used, or the industry was of an unusual character. This was continued until the adoption in 1896 of a new definition agreed to between Victoria and New South Wales.

Definition of of a factory as agreed to by Victoria and New South Wales.

1538. After a considerable amount of correspondence, a definition of the manufactories, which should be included in the annual returns, was finally arrived at in 1896, by the statisticians of New South Wales and Victoria, and on that basis the returns for 1896 and subsequent years have been compiled. The following is the definition referred to :—All establishments employing four hands or upwards in the manufacture of articles either for the trade or for stock or for individual orders must be returned; also all establishments with less than four hands, where machinery worked by steam, gas, electric, water, wind, or horse power is used; as well as all industries of an unusual or interesting character.

Changes effected by alteration of basis of classification in 1895 and 1896.

1539. The principal changes effected in 1895 were—(1) the inclusion of the particulars of creameries, except the number of establishments, they being considered merely as adjuncts to the butter factories; (2) the elimination of the hands, plant, land, and buildings, &c., appertaining to the sale and distribution of gas and electricity, as distinguished from their manufacture or production, and also the transposition of an amount from the value of machinery to that of buildings; (3) the definite inclusion of "home workers," chiefly in boot and clothing factories, which were probably included previously; (4) a reduction of the limit of the number of hands necessary to constitute a clothing establishment, from ten to four. The changes effected in 1896, conformably to the agreement with New South Wales, were—(5*a*) the addition of dressmaking and millinery and tailoring and underclothing establishments—formerly for the most part excluded altogether—employing four hands or upwards, railway repairing workshops and sundry others; and (5*b*) the omission of certain factories, which formerly employed four hands, but which, owing to the depression, reduced their hands below that number, consisting chiefly of brickworks. In 1897, an error of £410,000 in the value of the machinery and plant of gas companies—perpetuated in previous years—was also discovered and rectified. In 1898 the Royal Mint was excluded from the list, as it can hardly be considered to come within the category of manufactories. A summary

of the additions to (+) or deductions from (—) the returns for each year owing to these changes will be found in the following statement:—

FACTORY STATISTICS.—DIFFERENCES OWING TO CHANGES IN DEFINITION OF A FACTORY AND TO ERRORS.

(Fresh numbers added, +; deducted, –.)

Year of Change and kind of Factory.	Number of Factories.	Hands Employed.		Value of—		
		Males.	Females.	Machinery and Plant.	Lands.	Buildings.
1895.				£	£	£
1. Creameries	...	+289	+1	+75,350	+3,330	+25,180
3. Home Workers ...	...	(134)	(726)	...	...	...
4. Clothing, limit reduced from ten hands to four	+62	+63	+845	+2,450	+58,980	+17,740
1896.						
5. Agreement with New South Wales—						
+(*a*) New Factories—						
Dressmaking and Millinery	+51	+6	+830	+1,250	+18,420	+13,770
Tailoring, &c. ...	+68	+252	+794	+2,590	+37,960	+19,160
Boot	+4	+14	+2	+80	+1,240	+170
Railway Workshops	+8	+227	...	+12,200	...	+88,520
–(*b*) Factories in which the hands fell below four	–210	–509	–14	–23,900	–53,230	–39,570
1898.						
6. Royal Mint	–1	–58	...	–30,000	...	–38,000
Total	–18	+284	+2,458	+40,020	+66,700	+86,970
ERRORS CORRECTED.						
1895.						
2. Gas and Electric Light Works	...	–385	...	–1,054,600 –460,000	–20,000 ...	–60,000 +460,000
1897.						
7. Gas Companies ...	...	...	...	–410,000	...	...
Total	...	–385	...	–1,924,600	–20,000	+400,000
Totals—						
1895	+62	–333	+846	–1,436,800	+42,310	+442,920
1896	–79	–10	+1,612	–7,780	+4,390	+82,050
1897	...	...	...	–410,000	...	...
1898	–1	–58	...	–30,000	...	–38,000
Grand Total ...	–18	–101	+2,458	–1,884,580	+46,700	+486,970

Adjustment of returns of manufactories, 1890 to 1898.

1540. By means of the foregoing statement the following adjustment has been framed of the necessary additions (+) or subtractions (−) to be made to the returns of different years to bring the total results, respecting the number of factories, hands employed, and value of machinery and plant, land and buildings, for all the years from 1890 onwards, to a uniform basis for purposes of comparison :—

ADJUSTMENT.

Year.	Creameries.			Gas and Electricity Works.		Clothing Factories—Limit reduced from ten to four Hands.			
	Hands.		Value of Machinery and Plant, Land and Buildings.	Hands.	Value of Machinery and Plant, Land and Buildings.	Number of Factories.	Hands.		Value of Machinery and Plant, Land and Buildings.
	Males.	Females.		Males.			Males.	Females.	
			£		£				£
1890 ..	..	..	..	−373	−1,544,600	+62	+63	+845	+79,170
1891 ..	+ 93	+9	+11,255	−373	−1,544,600	+62	+63	+845	+79,170
1892 ..	+135	+6	+55,200	−378	−1,544,600	+62	+63	+845	+79,170
1893 ..	+175	..	+63,900	−378	−1,544,600	+62	+63	+845	+79,170
1894 ..	+245	..	+74,400	−385	−1,544,600	+62	+63	+845	+79,170
1895 ..	..	..	..	..	−410,000	..	..	..	..
1896 ..	..	..	..	..	−410,000	..	..	..	..
1897 ..	..	..	..	..	..	..	..	..	..

Year.	Agreement with New South Wales.				Royal Mint.			Total.			
	Number of Factories.	Hands.		Value of Machinery and Plant, Land and Buildings.	Number of Factories.	Hands—Males.	Value of Machinery and Plant, Land and Buildings.	Number of Factories.	Hands.		Value of Machinery and Plant, Land and Buildings,
		Males.	Females.						Males.	Females.	
				£			£				£
1890 ..	−79	−10	+1,612	+78,660	−1	−54	−68,000	−18	−374	+2,457	−1,454,770
1891 ..	−79	−10	+1,612	+78,660	−1	−51	−68,000	−18	−278	+2,466	−1,443,515
1892 ..	−79	−10	+1,612	+78,660	−1	−50	−68,000	−18	−240	+2,463	−1,399,570
1893 ..	−79	−10	+1,612	+78,660	−1	−51	−68,000	−18	−201	+2,457	−1,390,870
1894 ..	−79	−10	+1,612	+78,660	−1	−51	−68,000	−18	−138	+2,457	−1,380,370
1895 ..	−79	−10	+1,612	+78,660	−1	−51	−68,000	−80	−61	+1,612	−399,340
1896 ..	..	..	..	..	−1	−51	−68,000	−1	−51	..	−478,000
1897 ..	..	..	..	..	−1	−51	−68,000	−1	−51	..	−68,000

1541. The following is a summary for each year from 1890, of the number of factories, the hands employed, and the value of lands, buildings, machinery, and plant, after the adjustments referred to have been made :— Summary of manufactories on comparative basis, 1890 to 1898.

SUMMARY OF MANUFACTORIES, WORKS, ETC., ADJUSTED FOR COMPARATIVE PURPOSES, 1890 to 1898.

Year.	Number of Factories.	Hands employed.		Estimated value of—		
		Males.	Females.	Machinery and Plant.	Lands.	Buildings and Improvements.
				£	£	£
1890 ...	3,086	47,222	11,230	4,534,487	5,861,883	4,922,308
1891 ...	3,123	43,627	10,786	5,165,976	5,051,825	4,811,543
1892 ...	2,934	35,726	9,689	4,950,667	3,944,125	4,461,959
1893 ...	2,659	32,209	9,520	4,661,318	3,097,134	4,307,850
1894 ...	2,614	32,638	10,681	4,699,920	2,660,800	4,103,450
1895 ...	2,724	35,406	12,240	4,679,420	2,803,700	4,406,970
1896 ...	2,809	37,728	12,669	4,542,640	2,921,450	4,337,560
1897 ...	2,759	38,620	14,030	4,502,934	3,014,502	4,422,610
1898 ...	2,869	40,631	14,147	4,500,727	2,968,331	4,408,227

1542. For purposes of classification, the manufactories of Victoria are divided into two main divisions, viz., (A) Those converting natural products, usually by simple elementary processes, into secondary products, which often form the basis or material for treatment by more elaborate machinery, such as bone-mills, tanneries, fellmongeries, saw-mills, smelting and metallurgical works, &c.; and (B) those producing the finished articles in a state fit for finally entering into consumption. Each of these classes is again subdivided into fifteen orders, according, as far as possible, to the use for which the products manufactured were intended, such as for food, for dress, for furniture, for building purposes, for heat, light, and energy, &c.; but, in such cases where the ultimate purpose was indefinite or could not be ascertained, the orders relate to the materials operated on, such as animal or vegetable matters, oils and fats, metals, ceramics, &c. The following is the classification referred to :— Classification of manufactories.

CLASSIFICATION OF MANUFACTORIES.

Class A.—Partial or crude treatment of raw material.
Class B.—Production of finished articles for consumption.

Order.
1. Foods :
   (*a*) Animal.
   (*b*) Vegetable.
   (*c*) Mineral.
   (*d*) Drinks, Stimulants, and Narcotics.
2. Textiles and Dress :
   (*a*) Textiles.
   (*b*) Dress.
3. Furniture.
4. Building.
5. Apparatus for Transportation :
   (*a*) By road.
   (*b*) By rail.
   (*c*) By water.

Order.
6. Animal Matter (not otherwise classed).
7. Wood and other Vegetable Substances (not otherwise classed).
8. Oils and Fats (Animal and Vegetable).
9. Metals and Minerals :
   (*a*) Machines, Tools, and Implements.
   (*b*) Other Articles.
10. Gold, Silver, and Precious Stones.
11. Ceramics (not otherwise classed).
12. Production of Heat, Light, and Energy.
13. Explosives, Ammunition, &c.
14. Art, Science, and Letters.
15. Miscellaneous.

Names of manufactories.

1543. The manufacturing establishments of all kinds respecting which returns are obtained are named in the following table, arranged according to the classification already referred to, and their numbers, together with the value of their machinery, plant, lands, and buildings, are given for 1894 and 1898; also the number of hands employed in each of the five years ended with 1898.

MANUFACTORIES, WORKS, ETC., FROM 1894 TO 1898.

Order.	Description of Industry.	Number of Industries.		Hands Employed.					Approximate Value of Machinery, Plant, Land, and Buildings.	
		1894.	1898.	1894.	1895.	1896.	1897.	1898.	1894.	1898.
	CLASS A.								£	£
1	Malt-houses	17	13	102	121	119	114	110	121,450	121,696
6	Bone-mills and bone manure	14	18	113	126	130	122	137	38,300	89,515
"	Tanners, fellmongers, and woolwashing	103	102	1,639	1,858	1,993	1,891	1,766	246,590	248,579
7	Chaff-cutting and corn-crushing ...	187	169	754	874	813	810	789	169,010	165,016
"	Saw-mills (forest), including one timber-seasoning works	123	107	1,287	1,138	1,178	1,131	1,302	137,720	127,236
8	Boiling-down and tallow-rendering ...	17	17	120	127	118	83	79	26,960	14,650
9	Smelting	3	1							
"	Pyrites	1	1	102	129	69	63	71	32,950	20,950
"	Metallurgical	...	3							
	Other industries*	23	12	147	140	127	108	110	20,310	15,545
	Total Class A	488	443	4,264	4,513	4,547	4,322	4,364	793,290	803,187
	CLASS B.									
1A	Bacon and ham curing	26	23	161	194	207	204	205	37,170	42,930
"	Butter and cheese	155	194	824	853	887	826	876	289,700	314,950
"	Butterine	1	1							
"	Creameries	...	(351)	...	290	282	357	360	...	132,025

1A	Meat freezing and preserving works ...	5	9	285	238	426	399	416	18,550	187,575
1B	Arrowroot, maizena, oatmeal, and starch	6	7	183	283	329	247	304	116,820	128,020
"	Macaroni	1	1							
"	Biscuit	6	5	613	782	661	796	663	131,340	80,105
"	Confectionery	14	15	378	450	512	595	658	50,280	40,741
"	Flour-mills	76	75	705	694	667	664	765	520,890	541,170
"	Jam, pickles, sauce, and vinegar ...	15	21	506	544	752	806	1,177	38,370	71,855
"	Sugar, treacle, refineries	3	3	263	297	280	313	324	149,650	132,830
"	Beet sugar	...	1	...	...	...	...	268	...	72,000
1C	Salt	6	5	76	98	61	72	63	20,930	22,260
1D	Aerated waters, gingerbeer, liqueur, &c.	147	126	831	825	854	930	1,001	241,550	203,045
"	Breweries	61	51	1,007	1,122	1,092	1,121	1,088	1,043,340	906,535
"	Distilleries	8	10	155	172	126	136	138	177,170	154,990
"	Coffee, chicory, cocoa, chocolate, mustard, spice, &c.	10	11	140	174	199	218	219	56,090	70,440
"	Ice	8	9	56	42	57	56	45	197,820	30,220
"	Tobacco, cigars, snuff	14	14	772	720	650	767	764	125,080	154,950
2A	Woollen mills	7	8	690	731	772	809	813	203,430	219,515
"	Rope, twine, mats, bags, and sacks ...	8	9	300	442	426	407	459	73,720	83,835
2B	Clothing, tailoring, and corsets ...	87	195	4,781	7,302	6,352	7,184	6,538	183,200	402,115
"	Dressmaking, millinery	...	153	...	...	1,946	2,286	2,674	...	215,421
"	Underclothing, shirts	...	31	...	...	814	734	912	...	50,815
"	Hats, caps	17	17	574	552	640	653	667	54,980	47,545
"	Waterproof, oil-skin, clothing ...	7	8	197	200	293	332	243	11,650	26,610
"	Boots and shoes	90	89	3,735	3,921	4,188	4,223	4,019	191,300	179,945
3	Bedding, flock, upholstery	15	17	258	325	287	287	314	43,330	67,765
"	Bedsteads	...	1	...						
"	Cabinetmaking (including billiard tables)	45	56	513	699	1,033	935	820	87,140	114,845
"	Brushes, brooms	9	11	150	222	213	185	220	22,820	23,680
4	Cement	2	2	85	112	78	109	138	21,000	23,000
"	Bricks and pottery	116	94	964	1,018	1,122	943	1,105	322,580	212,580
"	Stone and marble sawing, polishing, and monuments	33	28	247	300	305	290	338	48,580	46,965
"	Filters (stone)	2	1							
5A	Coaches, carriages, waggons	192	169	1,475	1,534	1,567	1,518	1,686	202,270	199,785

* For details, see Part "Production" of *The Statistical Register of Victoria.*

Manufactories, Works, etc., from 1894 to 1898—*continued.*

Order.	Description of Industry.	Number of Industries.		Hands employed.					Approximate Value of Machinery, Plant, Land, and Buildings.	
		1894.	1898.	1894.	1895.	1896.	1897.	1898.	1894.	1898.
									£	£
	Class B—*continued.*									
5A	Cycles, Perambulators	...	6	...	...	110	133	156	...	19,240
〃	Saddles and harness	48	41	336	347	325	361	377	50,620	79,740
5B	Railway workshops	...	9	...	...	1,062*	1,283	1,641	...	423,950
5C	Graving docks, patent slips, &c. ...	7	6	99	92	113	115	120	428,970	423,650
7	Saw, moulding mills, joinery, &c. ...	59	53	1,092	1,199	1,252	1,249	1,363	334,860	338,325
〃	Paper, Strawboard	3	3	196	194	182	180	171	137,300	126,000
8	Soap and candle	32	22	438	538	443	487	425	254,990	215,670
9A	Agricultural implement	72	51	746	566	852	914	1,091	165,670	127,475
〃	Engines, machinery, and iron foundries	158	173	3,945	4,377	4,112	4,451	4,516	1,213,050	701,776
〃	Cutlery, tool	6	8	37	36	41	37	43	10,350	11,475
〃	Nail	5	6	63	88	103	127	125	27,370	27,550
9B	Sheet iron and tin	45	39	482	532	557	544	581	77,540	83,125
〃	Japanning	1	1							
〃	Oven-range	...	8	...	...	...	106	110	...	27,070
〃	Brass and copper works, including gasolier, &c.	21	23	225	264	293	354	402	49,640	48,465
	Lead, shot, pewter, and zinc	4	4	22	31	24	34	30	37,690	27,550
10	Goldsmiths, jewellers, gold-beaters, and electroplaters	19	37	185	377	377	420	434	52,760	105,730
〃	Royal Mint	1	...	51	51	51	51	...	68,000	...
〃	Glass	6	7	244	258	328	382	433	30,100	38,840
〃	Asbestos	...	1	...	...	...			...	
12	Electric Apparatus	2	2	159	140	182	178	168	247,170	213,580
〃	Electric Light	7	10							
〃	Gas and coke	40	46	932	503	505	668	680	2,714,280	1,230,663
〃	Hydraulic power	1	1	12	21	12	14	17	83,450	59,550

13	Dynamite, lithofacteur, &c.	6								
"	Ammunition	...	4	208	180	168	182	123	84,920	65,530
"	Fireworks	...								
"	Fuse	1								
14	Die-sinkers, engravers, metalists, trade-mark	7	7	59	77	77	83	83	14,050	22,055
"	Printing and lithographic, including one paper-bagmaker	183	197	3,526	3,682	3,891	3,844	4,053	732,830	893,082
"	Photolithographic	1								
"	Account-book, stationery, including indiarubber-stamp makers	11	11	807	961	763	842	882	224,630	182,780
15	Chemical	15	17	215	187	189	204	267	72,200	85,610
"	Gum refining	...	1							
"	Blacking, blue, washing-powder, &c. ...	3	9	104	108	146	188	205	8,820	36,410
	Other industries†	188	153	1,629	1,637	1,665	1,546	1,638	249,240	258,145
	Total Class B	2,144	2,426	36,736	41,630	45,901	48,379	50,414	12,051,250	11,074,098
	Grand Total	2,632	2,869‡	41,000	46,095	50,448	52,701	54,778‡	12,844,540	‡11,877,285

* In previous years the Railway Workshops were returned with Engine Machine Manufactories and Ironfoundries.
† For details, see Part "Production" of *The Statistical Register of Victoria.*
‡ Exclusive of Royal Mint, which was included in former years. In 1898, 58 hands—males—were employed in the Mint; the value of the machinery being £30,000, and buildings £38,000.

Grades of workers in factories.

1544. The following is a classification, according to grades, of the persons engaged in factories in the year 1898 :—

Grade.	Males.	Females.	Total.
Working proprietors, managers, and overseers	4,297	355	4,652
Accountants and clerks	1,665	112	1,777
Engine-drivers and firemen	1,238	...	1,238
Carters and messengers	1,902	...	1,902
Factory workers	28,233	13,278	41,511
	35*	383*	418
Labourers (unskilled)	2,701	...	2,701
Others	560	19	579
Total	40,631	14,147	54,778

Flour mills.

1545. In 1898 as compared with 1893 a decrease of 6 occurred in the total number of mills, and of 49 in the number of pairs of stones ; but there was an increase of 104 in the number of hands employed, and of 97 in the sets of rollers in use. The wheat operated upon was less by 976,046 bushels, the flour made by 28,752 tons,† and other grain operated upon by 172,040 bushels. A decrease of £20,040, moreover, took place in the estimated value of machinery, lands, and buildings :—

FLOUR MILLS, 1893 TO 1898.

Year.‡	Number of Mills.	Mills employing— Steam-power.	Mills employing— Water-power.	Amount of Horse-power of Machinery. Capacity.	Amount of Horse-power of Machinery. Used.	Number of Pairs of Stones.	Number of Sets of Rollers.
1893 ...	81	77	4	2,862		111	534
1894 ...	76	72	4	2,946		78	582
1895 ...	74	69	5	3,415	2,386	86	619
1896 ...	73	68	5	4,296	3,339	70	594
1897 ...	74	69	5	4,396	3,381	70	603
1898 ...	75	70	5	4,281	3,302	62	631

Year.‡	Number of Hands employed.	Grain operated upon. Wheat.	Grain operated upon. Other.	Flour made.	Approximate total Value of— Machinery and Plant.	Approximate total Value of— Lands.	Approximate total Value of— Buildings.
		bushels.	bushels.	tons.†	£	£	£
1893 ...	661	8,923,427	374,861	183,474	319,350	73,070	168,790
1894 ...	705	9,332,928	431,344	193,372	309,350	61,750	149,970
1895 ...	694	8,460,604	159,808	167,424	291,240	59,050	164,780
1896 ...	667	6,162,243	34,535	122,541	293,380	65,830	171,490
1897 ...	664	6,118,438	115,186	121,823	292,320	68,630	167,160
1898 ...	765	7,947,381	202,821	154,722	295,135	60,515	185,520

NOTE.—In 1899, the quantity of wheat operated on was 9,139,289 bushels, and the flour made 184,835 tons.

* Home workers.——† Of 2,000 lbs.——‡ Prior to 1895 the returns were furnished as for the year ended March in the year following; but it is believed that practically the information relates to the calendar year as indicated.

1546. The following was set down as the value of grain operated upon, and of flour, meal, &c., produced in flour mills in 1891, and in the previous census year, 1881 :— Value of materials used and produced.

FLOUR MILLS, 1881 AND 1891.

	1880–81.		1890–91.
Value of materials operated upon	£1,412,099	...	£1,620,125
,, articles produced ...	1,651,351	...	2,043,604
Increased value	£239,252, or 17 per cent.		£423,479, or 26 per cent.

1547. Most of the sugar consumed in the colony is imported in its raw state and refined in the colony. In 1898 the refineries employed engines worked at 427 horse-power, and 324 hands ; the quantity of raw sugar (all cane) treated was nearly 1,000,000 cwt., from which nearly 900,000 cwt. of refined sugar and 38,000 cwt. of treacle were obtained, whilst nearly 50,000 cwt. of purified molasses was also produced, chiefly from crude imported molasses. Their operations during the last four years, as set forth in the subjoined table, show a satisfactory improvement :— Sugar refineries.

SUGAR REFINERIES.—RETURN FOR FOUR YEARS.

Year.	Number of Refineries.	Horse-power of Steam-engines.		Average Number of Hands employed.	Raw Sugar treated.
		Full capacity.	Actually used.		
					cwt.
1895	3	396	384	297	760,540
1896	3	396	384	280	802,036
1897	3	406	394	313	795,090
1898	3	439	427	324	955,580

Year.	Refined Articles produced.			Approximate Value of—		
	Sugar.	Molasses.	Treacle.	Machinery and Plant.†	Lands.	Buildings.†
	cwt.	cwt.	cwt.	£	£	£
1895	710,475	37,735	29,280*	113,500	16,150	12,180
1896	743,252	39,910	30,970*	112,500	7,150	12,180
1897	730,610	46,850	36,360*	73,500	7,150	52,180
1898	890,880	49,360	38,304	73,500	7,150	52,180

1548. The operations of the Maffra Beet Sugar Factory, referred to in a previous portion of this work,‡ during the two sugar campaigns of 1898 and 1899 are shown in the following statement. The factory has Beet-sugar Factory

* Estimated.
† Prior to 1897 the division of the value between land and buildings was not correct.
‡ See paragraph 1370, *ante*.

steam-engines of a full capacity of 360 horse-power, of which, however, only 240 was used, and the capital invested was £72,000, viz., £44,000 in machinery and plant, £1,000 in land, and £27,000 in buildings.

Operations of Beet-Sugar Factory in Campaigns of 1898 and 1899.

	1898.	1899.
Hands employed—average No.	268 ...	240
Roots used—clean dressed—tons	8,878 ...	6,562
Sugar made (first quality) "	617 ...	348

Breweries.

1549. The number of breweries returned in 1898 was 11 less than in 1893, whilst the value placed upon lands, buildings, machinery, and plant was reduced by £210,600 ; but, nevertheless, those remaining—by increasing the machine power also the number of hands by 119—were able to produce over a million gallons more beer. The use of sugar largely increased and that of hops slightly, but less malt was used. The consumption of Victorian beer made exclusively from malt and hops gradually increased from 465,584 gallons in 1893 to 703,806 gallons in 1898.

Breweries, 1893 to 1898.

Year.*	Number of Breweries.	Breweries employing— Steam-power.	Breweries employing— Manual Labour only.	Amount of Horse-power of Machinery. Capacity.	Amount of Horse-power of Machinery. Used.	Number of Hands employed.	Materials used.‡ Sugar.	Malt.	Hops.
							lbs.	bushels.	lbs.
1893 ...	62	55	7	715		969	10,003,280	625,437	660,223
1894 ...	61	55	6	787		1,007	10,261,776	612,414	635,098
1895 ...	60	54	6	759	630	1,122	10,454,528	616,450	652,499
1896 ...	57	52	2	953	809	1 092	10,584,112	602,905	648,352
1897 ...	59	53	3†	957	817	1,121	11,313,680	605,581	676,628
1898 ...	51	49	†	941	780	1,088	12,303,536	606,503	713,230

Year.*	Victorian Beer— Made.‡	Victorian Beer— Consumed (Duty paid) 000's omitted.	Approximate Total Value of— Machinery and Plant.	Lands.	Buildings.
	gallons.	gallons.	£	£	£
1893 ...	14,208,547	12,714	186,690	579,890	350,660
1894 ...	14,162,649	12,521	175,630	551,010	316,700
1895 ...	14,380,791	12,741	181,030	545,780	300,120
1896 ...	14,224,203	12,955	177,530	557,960	305,070
1897 ...	14,724,390	13,031	184,250	500,450	332,220
1898 ...	15,400,017	13,646	177,265	447,185	282,085

* See footnote (‡) on page 938.

† In 1897 there were three additional breweries—one worked by gas, and two by horses—and in 1898 two—one worked by gas, and one by horses, but not any by manual labour.

‡ Including quantities in small establishments in 1897 and 1898, for which other particulars have not been returned since 1895.

1550. The values of the sugar, malt, and hops used, and of the beer made, were returned for the last two census years. The following are the figures given :— Value of materials used and produced.

BREWERIES, 1881 AND 1891.

	1880–81.		1890-91.
Value of materials used ...	£442,885	...	£491,932
„ beer made ...	780,501	...	971,489
Increased value ...	£337,616, or 76 per cent.		£479,557, or 97 per cent.

1551. The quantity of Victorian beer consumed (*i.e.*, paid excise duty) in the colony during 1898 amounted to 13,646,000 gallons; and the quantity of foreign beer imported—duty paid—504,000 gallons. These numbers give a total consumption of 14,150,000 gallons, or an average of 12 gallons per head. The consumption per head was as high as 20 gallons in 1888, but it gradually fell off to 11 gallons in 1894 and 1895, but has since increased by 1 gallon, as will be seen by the following figures :— Consumption of beer per head.

CONSUMPTION OF BEER PER HEAD.

	gallons.		gallons.
1888	20	1894	11
1889	19⅖	1895	11
1890	17⅖	1896	11½
1891	16⅓	1897	11½
1892	14½	1898	12
1893	11¼		

1552. The following is a statement of the quantity of beer brewed, the net quantity imported or exported, and the quantities consumed in some of the principal countries in the world. It appears that the largest consumption per head was over 41 gallons in Belgium, next 30 in the United Kingdom, 24 in Germany, whilst it was only ⅛ in Italy, between 1 and 2 gallons at the Cape of Good Hope and in Hungary, 3½ in Canada, 4¼ in Norway, and 5 in France :— Beer brewed and consumed in various countries.

BEER BREWED AND CONSUMED IN VARIOUS COUNTRIES, 1891–7.

(000's omitted.)

Country.*	Production.	Net Imports (+) Net Exports (−)	Consumption.	
			Total.	Per head.
	gallons.	gallons.	gallons.	gallons.
Belgium	260,307,	+1,865,	262,172,	41·39
United Kingdom... ...	1,188,311,	−20,101,	1,168,210,	30·00
Germany	1,238,672,	−4,482,	1,234,192,	24·10
Western Australia † ...	2,277,	+901,	3,178,	22·67
Denmark	45,349,	−1,710,	43,639,	19·00
United States	862,440,	+2,579,	865,019,	12·67

* In the Australasian Colonies, excepting Queensland and Western Australia, the quantity on which excise was paid is accepted as the consumption of local production, instead of the quantity produced.——† Figures for two year 1896–7.

BEER BREWED AND CONSUMED, ETC.—*continued.*

(000's omitted.)

Country.*	Production.	Net Imports (+) Net Exports (−)	Consumption.	
			Total.	Per head.
	gallons.	gallons.	gallons.	gallons.
Victoria	13,893,	+658,	14,551,	12·46
Switzerland	34,672,	+946,	35,618,	11·85
Queensland	4,154,	+499,	4,653,	10·50
New South Wales ...	10,210,	+1,863,	12,073,	9·83
South Australia † ...	3,031,	+151,	3,182,	9·01
Tasmania	1,201,	+50,	1,251,	7·97
New Zealand	5,028,	+199,	5,227,	7·71
Sweden	36,425,	+36,	36,461,	7·50
France	193,958,	+423,	194,381,	5·00
Norway	8,712,	−88,	8,624,	4·24
Canada	17,717,	+93,	17,810,	3·54
Hungary	29,804,	+3,394,	33,198,	1·87
Cape of Good Hope ...	1,909,	+657,	2,566,	1·50
Italy	2,467,	+1,336,	3,803	·12

NOTE.—The figures, except those for the Australasian Colonies, have been taken from a Return on Alcoholic Beverages to an Order of the House of Commons dated 21st February, 1899.

Distilleries.

1553. Ten distilleries were returned in 1898, or three more than in 1893. Although a decrease of twelve took place in the hands employed, and a slight depreciation in the value of lands, building, machinery, and plant, there was, owing to the greater capacity of machinery, an increase in the spirits distilled of 90,000 gallons. The following are the figures for the last six years, those relating to spirits distilled and manufactured being furnished by the Inspector of Distilleries :—

DISTILLERIES, 1893 TO 1898.

Year.‡	Number of Distilleries.	Amount of Horse-power of Machinery.		Number of Hands employed.	Spirits—		Approximate Value of—		
					Distilled.	Manufactured	Machinery and Plant.	Lands.	Buildings and Improvements.
					Proof gallons.	Proof gallons.	£	£	£
1893	7	225		150	307,597	404,399	84,170	27,575	65,500
1894	8	217		155	463,143	448,458	76,950	27,900	72,320
		Capa-city.	Used.						
1895	7	342	166	172	370,332	378,608	75,960	26,160	67,000
1896	7	330	160	126	409,981	373,752	76,150	26,060	67,200
1897	9	334	165	136	381,844	425,472	65,310	26,100	58,530
1898	10	356	170	138	398,577	445,626	67,930	25,540	61,520

NOTE.—As a set-off to the quantity distilled, 35,856 gallons were wasted in bond in 1898, and from 31,200 to 34,400 in other years. Spirits made by vine-growers for fortifying wine are not included, viz., 28,778 proof gallons by 42 vine growers in 1893, 23,794 gallons (including 1,455 of wine brandy) by 40 growers in 1894, 28,053 gallons by 40 growers in 1895, 30,275 gallons by 45 growers in 1896, 40,289 gallons by 48 growers in 1897, and 38,885 proof gallons by 49 vine-growers in 1898.

* See footnote (*) on previous page.——† Figures for three years, 1895–7.——‡ See footnote (‡) on page 938.

1554. The kinds of spirits manufactured for 1893 and the two last years are shown in the following statement :— Kinds of spirits manufactured.

KINDS OF SPIRITS MANUFACTURED IN VICTORIA.

(Gallons.)

Year.	Brandy.		Whisky.	Gin.	Rum.	Rectified Spirits.	Methylated Spirits.	Total.
	From Wine.	Other.						
1893 ...	9,874	152,354	78,739	30,497	41,332	35,874	55,729	404,399
1897 ...	24,230	172,670	60,094	15,667	56,489	39,371	56,951	425,472
1898 ...	30,439	153,253	84,753	14,350	49,791	43,724	69,316	445,626

1555. In practice, one gallon of proof spirit is obtained from 5 gallons of colonial wine, 20 lbs. of barley-malt, 25 lbs. of wheat, 20 lbs. of maize or rice, 14 lbs. of sugar, 18 lbs. of molasses, or 10 gallons of colonial beer ; although, theoretically, about a third more spirit ought to be obtained from the given quantities of wine, malt, and maize, and about a fifth more from those of wheat, rice, and sugar. The following is a statement of the different materials used in 1893, and in each of the last two years. It will be noticed that the quantity of wine has rapidly increased, but that the use of other materials, except sugar and to some extent malt, has almost entirely been discontinued :— Materials used in distilleries.

MATERIALS USED IN DISTILLERIES.

Year.	Wine.	Malt.	Wheat.	Maize.	Other Grain.	Sugar and Molasses.	Beer.
	gallons.	bushels.	bushels.	bushels.	bushels.	lbs.	gallons.
1893 ...	138,222	27,000	26,754	1,376	26,379	1,249,920	72,906
1897 ...	291,326	36,356	...	...	831	5,351,696	3,386
1898 ...	350,956	46,177	...	...	1,963	5,178,880	1,000

1556. The following are the quantities of Victorian spirits consumed (*i.e.*, duty paid) in the colony in each of the last twelve years :— Consumption of locally manufactured spirits.

VICTORIAN SPIRITS CONSUMED (DUTY PAID), PROOF GALLONS.

1887	...	...	127,151	1893	...	...	204,270
1888	...	...	160,551	1894	...	...	218,366
1889	...	...	215,338	1895	...	...	194,605
1890	...	...	228,112	1896	...	...	195,253
1891	...	...	268,347	1897	...	...	179,669
1892	...	...	249,006	1898	...	...	192,770

1557. According to the following figures, which have been obtained from official sources, the average consumption of spirits per head appears to be much the greatest in Denmark, and next in Austria-Hungary, Belgium, Holland, Germany, and France. Moreover, the average consumption in Victoria is less than half that in Western Australia, and is also less than in New South Wales and Queensland, but greater than in New Zealand, South Australia, or Tasmania, the Consumption of spirits in various countries.

latter two of which colonies stand below all the countries named in the list, except Italy and Portugal.

SPIRITS DISTILLED AND CONSUMED IN VARIOUS COUNTRIES, 1891–7.

(Gallons; 000's omitted.)

Country.	Production.		Net Imports (+). Net Exports (−).		Consumption. Total.		Consumption. Per head of Population.	
	1891–7.	1897.	1891–7.	1897.	1891–7.	1897.	1891-7.	1897.
Denmark ...	7,377,	7,474,	+128,	+81,	7,505,	7,555,	3·34	3·30
Austria-Hungary ...	102,979,	105,644,	−5,154,	−4,774,	97,825,	100,870,	2·31	2·20
Belgium ...	12,923,	13,046,	+233,	+198,	13,156,	13,244,	2·10	2·00
Holland ...	15,023,	15,092,	−5,862,	−5,918,	9,161,	9,174,	1·94	1·87
Germany ...	135,740,	136,400,	−5,544,	+44,	98,642,	100 364,	1·93	1·89
France ...	98,503,	97,152,	−6,795,	−7,568,	71,425,‡	71,896,§	1·87	1·89
Western Australia	...	...	+152,†	+281,†	152,	281,	1·66	1·80
Sweden ...	7,203,	8,096,	+148,	+66,	7,351,	8,162,	1·50	1·60
Switzerland	1,666,	2,156,	+2,388,	+2,046,	4,054,	4,202,	1·35	1·36
Cape of Good Hope ...	1,843,	1,916,	+180,	+277,	2,023,	2,193,	1·20	1·20
United States	70,549,	59,090,	+1,240,	+1,858,	71,789,	60,948,	1·06	·84
Russia ...	158,284,	166,433,	-31,246,	30,763,	127,038,	135,670,	1·05	1·08
United Kingdom ...	30,703,*	32,126,*	+8,127,†	+8,288,†	38,830,	40,414,	1·01	1·02
Queensland	57,*	53,*	+366,†	+360,†	423,	413,	·97	·86
New South Wales ...	20,*	7,*	+1,007,†	+917,†	1,027,	924,	·85	·70
Victoria ...	216,*	180,*	+678,†	+615,†	894,	795,	·77	·68
New Zealand	...	...	+452,	+478,	452,	478,	·67	·66
Norway ...	1,452,	1,672,	−41,	−660,	1,411,	1,012,	·70	·48
Canada ...	3,233,	2,280,	+367,	+1,590,	3,600,	3,870,	·72	·75
Spain(1891-6)	8,221,	...	+2,449,	...	10,670,	...	·63	...
South Australia ...	70,*	80*	+125,†	+105,†	195,	185,	·58	·52
Tasmania ...	...	...	+70,†	+65,†	70,	65,	·45	·38
Italy ...	8,360,	8,316,	−58,	...	8,302,	8,316,	·27	·26
Portugal ...	1,414,	1,364,	−946,	−946,	468,	418,	·10	·09

NOTE.—The figures in this table, except those for the Australasian Colonies, have been taken from a Return on Alcoholic Beverages laid before the House of Commons on the 21st February, 1899.

Tobacco manufactories.

1558. Although only one more tobacco manufactory was returned in 1898 than in 1893, a considerable increase took place in the horse-power of engines, an increase of 199 in the hands employed, of 54 per cent. in the number of cigars, and of nearly 200 per cent. in that of cigarettes, as against which the output of tobacco fell off slightly. The value of machinery and buildings increased by about £30,000, but that

* Subject to excise duty.
† Subject to Customs duty.
‡ Exclusive of 20,283 gallons not accounted for.
§ Exclusive of 17,688 gallons not accounted for.

of land depreciated by nearly £5,000. A growing preference is given in this class of factories to the employment of female labour, for whilst the male hands increased by only one-fifth the females increased by three- fifths, and whereas there were six females to every ten males in 1893, there were eight to every ten in 1898.

TOBACCO MANUFACTORIES, 1893 TO 1898.

Year. *	Number of Establishments.	Amount of Horse-power of Machinery.		Number of Hands employed.		Quantity Manufactured of—				Approximate Total Value of—		
		Capacity.	Used.	Males.	Females.	Tobacco.	Snuff.	Cigars.	Cigarettes.	Machinery and Plant.	Lands.	Buildings.
						lbs.	lbs.	No.	No.	£	£	£
1893	13	75		354	211	1,101,038	512	5,834,500	28,500,000	33,940	46,320	49,300
1894	14	55		463	309	951,610	545	5,467,180	42,368,000	39,080	43,080	42,920
1895	16	127	95	479	241	1,121,533	826	8,404,852	51,162,000	42,260	61,360	60,170
1896	12	130	97	424	226	985,811	1,500	8,217,223	66,896,773	42,410	52,350	61,800
1897	14	137	107	459	308	1,098,100	1,000	8,399,704	79,095,267	38,216	47,000	54,450
1898	14	137	99	428	336	1,066,003	1,300	8,963,737	84,149,770	39,880	41,470	73,600

NOTE.—In 1898, six of the establishments employed steam, two gas, and six manual labour.

1559. The consumption of locally-manufactured tobacco has increased from 1,100,000 lbs. in 1891 to nearly 1,300,000 lbs. in 1898, but that of imported manufactured tobacco has fallen off during the same period from 1,652,000 to 1,115,000 lbs., whilst the total consumption has fallen from 2,752,000 lbs., or 2·40 lbs. per head, in the former to 2,400,000 lbs., or 2·05 lbs. per head in the latter year. The following statement shows the materials of which Victorian-grown tobacco is composed, and the quantity of both kinds consumed, also the average per head of population, in each of the last eight years† :— Consumption of home-made and imported tobacco.

PRODUCTION AND CONSUMPTION OF TOBACCO, 1891 TO 1898.

Year.	Quantity, Duty Paid, manufactured in the colony from—		Total made in Colony (000's omitted).	Imported Manufactured Tobacco, duty paid (000's omitted).	Total Consumption.	
	Unmanufactured Imported Leaf.	Victorian Leaf and other Materials.			Quantity (000's omitted).	Average per Head.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1891 ...	675,429	423,867	1,100,	1,652,	2,752,	2·40
1892 ...	753,807	445,739	1,200,	1,533,	2,733,	2·35
1893 ...	489,383	822,964	1,312,	1,274,	2,586,	2·21
1894 ...	697,884	310,184	1,008,	1,258,	2,266,	1·93
1895 ...	950,757	371,071	1,322,	1,219,	2,541,	2·19
1896 ...	622,194	617,896	1,240,	1,188,	2,428,	2·06
1897 ...	891,661	406,293	1,298,	1,106,	2,404,	2·05
1898 ...	970,382	317,564	1,288,	1,115,	2,403,	2·05

NOTE.—The imported leaf is that imported duty paid, the balance required to make up the total paying excise duty being assumed to be Victorian leaf and foreign articles introduced during the process of manufacture. All manufactures of tobacco are included.

* See footnote (‡) on page 938.

† For consumption in Australia see paragraph 1366, *ante*.

Value of raw and manufactured materials.

1560. According to the returns of the last two censuses the value of the materials used and articles produced in tobacco manufactories was as follows in 1881 and 1891:—

	1880-81.	1890-91.
Value of materials used ...	£126,450	£118,070
„ articles produced ...	199,320	239,627
Increased value ...	£72,870, or 58 per cent.	£121,557, or 103 per cent.

Brickyards and potteries.

1561. Of all the industries seriously affected by the general stagnation in the building trades, which commenced in 1891, perhaps the most depressed were the brickyards and potteries. Thus the number of bricks made fell off from 276 millions in 1889 to 200 in 1891, to 80 in 1892, and to 40 millions—the lowest point—in 1894. In 1898, as compared with that year, the output of bricks increased by 24 millions,* and the value of pottery by £17,000, whilst the hands employed were more numerous by 140; although the number of brickyards fell off by 22 (notwithstanding an increase of three in those employing steam or gas), and the value of machinery, lands, and buildings depreciated by £110,000. The following are the comparative figures for the last six years :—

BRICKYARDS AND POTTERIES, 1893 TO 1898.

Year.†	Number of Brickyards and Potteries.	Number of Machines in use.		Brickyards employing—			Amount of Horse-power of Machinery.		Number of Hands employed.
		For tempering or crushing Clay.	For making Bricks or Pottery.	Machines worked by—		Manual Labour.			
				Steam.	Horses.				
1893 ...	138	158	85	29	55	54	1,384		897
1894 ...	116	140	91	26	51	39	1,651		964
							Capacity	Used.	
1895 ...	100	138	78	27	40	32	1,924	991	1,018
1896 ...	82	122	88	27	52	3	1,697	843	1,122
1897 ...	70	114	82	27	39	3	1,599	758	943
1898 ...	94	143	94	28	61	4	1,710	856	1,105

Year.†	Number of Bricks made.‡	Approximate Total Value of—			
		Pottery made.	Machinery and Plant.	Lands.§	Buildings.
		£	£	£	£
1893	48,467,490	39,349	125,900	131,130	124,710
1894	40,108,800	42,760	109,640	108,430	104,510
1895	64,204,846	56,550	114,870	92,810	103,230
1896	55,682,110	71,459	89,710	76,230	89,520
1897	51,048,200	45,559	75,570	53,820	75,490
1898	64,511,000	62,061	79,235	56,000	77,345

* In 1899 the bricks made show a further increase of over 18 millions—the number being larger than in any year since 1891.

† See footnote (‡) on page 938.

‡ Including bricks made in small brickyards not included in the regular list in the years 1896–7–8.

§ The figures in this column apply to purchased lands only. Twenty-three of the brickyards in 1893, twenty in 1894, sixteen in 1895, fourteen in 1896, eleven in 1897, and fourteen in 1898 were on Crown lands.

Tanneries, fellmongeries, &c.

1562. Tanning and wool-washing establishments were fewer by 6 in 1898 than in 1893, although the power of steam-engines was largely increased, 200 more hands employed, and 495 more tan-pits used; the output of hides tanned increased by 15 per cent., but that of skins tanned fell off by 6½ per cent.—although there is evidence of an increase in the more valuable calf-skins included therein, whilst the number of sheepskins stripped and the quantity of wool washed fell off by 38 and 15 per cent. respectively—a shrinkage probably due to the increased exportation of sheepskins in their natural state.* The returns also show a decrease of £27,900 in the value of plant and lands, but an increase of £9,400 in that of buildings connected with the industry. The following are the particulars for the six years :—

TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS, 1893 TO 1898.

Year.†	Number of Establishments.	Establishments employing—					Amount of Horse-power of Machinery.		Number of Hands employed.	Number of Tan-pits.	Bark used—Tons.
		Steam-power.	Wind-power.	Water-power.	Horse-power.	Manual Labour only.					
							Capacity.	Used.			
1893 ...	108	60	2	1	12	33	818		1,564	3,137	...
1894 ...	103	63	3	1	7	29	892		1,639	3,259	...
1895 ...	111	73	3	1	8	26	1,057	874	1,858	3,652	13,218
1896 ...	101	79‡	4	1	4	13	1,143	944	1,993	3,591	12,626
1897 ...	106	78‡	4	2	7	15	1,191	913	1,891	3,835	12,047
1898 ...	102	73‡	3	2	7	17	1,204	921	1,766	3,632	11,396

Year.†	Number Tanned of—			Number of Skins Stripped of Wool. (000's omitted.)	Other Wool Washed. (000's omitted.)	Approximate Total Value of—		
	Hides. §	Skins.				Machinery and Plant.	Lands.¶	Buildings.
		Calf. §	Sheep and other. ‖					
					lbs.	£	£	£
1893	348,172	1,548,398		2,360,	8,844,	98,890	65,710	102,445
1894	346,246	1,822,853		2,239,	9,616,	94,130	50,790	101,670
1895	410,703	135,356	1,889,123	2,181,	12,615,	101,360	64,160	125,230
1896	439,291	153,488	1,993,681	2,096,	10,276,	91,540	51,820	124,130
1897	463,374	199,571	1,875,756	1,946,	9,103,	91,940	57,420	130,290
1898	400,262	177,739	1,271,960	1,456,	7,545,	90,037	46,738	111,804

* See paragraph 1471, *ante*.
† See footnote (‡) on page 938.
‡ Including one gas engine.
§ Inclusive of hides and calf skins tanned in small tanneries not included in the regular list in 1896-7-8.
‖ Including 48,873 "other" skins in 1895, 193,089 in 1896, 162,793 in 1897, and 98,268 in 1898.
¶ The figures in this column apply to purchased land only. Two of the establishments in 1893, one in 1894, one in 1895, one in 1896, one in 1897, and two in 1898 were on Crown lands. In these cases no valuation of land is given.

Value of materials used and produced.

1563. An estimate of the value of the materials used and articles produced in tanneries, fellmongeries, and wool-washing establishments was obtained in the last two census years. The following are the figures:—

TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS, 1881 AND 1891.

	1880–81.	1890–91.
Value of materials used ...	£1,008,531	£793,679
„ articles produced	1,406,274	1,226,853
Increased value	£397,743, or 39 per cent.	£433,174, or 55 per cent.

Wattle cultivation.

1564. The provisions of the Wattles Act, referred to in previous issues of this work,* allowing of the selection of 1,000 acres under lease for 21 years for wattle cultivation, have not been largely availed of, chiefly, no doubt, owing to the difficulty in finding available Crown lands suitable for wattle cultivation. During the year 1898 one application for a lease over an area of 250 acres was received; and one lease for an area of 492 acres was granted during the year. It is estimated that at least 14,790 tons of Victorian bark, valued at £71,344, were produced in 1898; of which 11,396 tons, of an estimated value of £68,000, were used in tanneries; and 2,394 tons, valued at £14,364, were exported.

Forest saw-mills.

1565. The forest saw-mills were established for the purpose of cutting native timber at or near the place where it is grown. The following are the statistics of the industry referred to for the last four years, from which it will be seen that the quantity and value of the timber produced in 1898 exceeded that of the three previous years, whilst the horse-power used was 7 per cent. less than that employed in 1895. Although during the two intervening years—1896 and 1897—the business operations showed a considerable shrinkage—notably during the last-named year, when the yearly work was 23 per cent. less than two years previously—yet by 1898 the industry had thoroughly recovered to the level of 1895, although the production of timber is still little more than a third of what it was in 1890, when the building trade was at its height:—

FOREST SAW-MILLS, 1895 AND 1898.

——	1895.	1896.	1897.	1898.
Number of forest saw-mills† ...	100	102	96	107
Number using steam-power ...	96	98	91	102
Number using water-power ...	4	4	5	5
Horse-power of steam-engines {	1,807*f*	1,539*f*	1,387*f*	1,639*f*
	1,608*a*	1,350*a*	1,197*a*	1,492*a*
Hands employed	1,138	1,178	1,131	1,302
Superficial feet of timber produced	36,285,426	31,973,743	27,772,081	37,698,486
Value of timber produced ...	101,556	104,115	78,619	104,734
„ machinery and plant ...	95,670	82,600	75,420	89,420
„ lands‡	3,010	3,500	7,610	7,545
„ buildings	28,470	23,680	21,490	30,271

NOTE.—Letter (*f*) indicates full capacity, and (*a*) actually used

* See *Victorian Year-Book* for 1893, Vol. II., par. 469.

† Including one timber-seasoning works.

‡ In 1895, 52 of these mills, in 1896, 43, in 1897, 39, and in 1898, 45, were upon Crown lands. In these cases no valuation of the land is given.

Woollen mills.

1566. Although the number of woollen mills returned in 1898 was only one more than in 1893, a large increase took place under all the particulars relating to that industry, except the value of land. Whilst there was a marked increase in the number of spindles and the power of machinery, and an increase of 174 (viz., 105 males and 69 females) in the hands employed, there was also an increase of 823,000 yards, or 68 per cent., in the output of tweed, cloth, flannel, &c., of over 20,000 and 1,600 in the pairs of blankets and number of shawls respectively—the former having increased more than sixfold and the latter threefold, and the value of machinery and buildings by £19,500. There is no doubt that the satisfactory progress thus made in this important industry of recent years will be greatly accelerated under federation.

WOOLLEN MILLS, 1893 TO 1898.

Year ended March.*	Number of Woollen Mills.	Number of Spindles.	Horse-power of Machinery.		Quantity of Wool used.†	Goods manufactured: Quantity of—		
						Tweed, Cloth, Flannel, &c.	Blankets.	Shawls and Rugs.
					lbs.	yards.	pairs.	No.
1893...	7	20,418	601		1,123,542	1,196,832	3,761	752
1894...	7	22,338	611		1,513,373	1,579,379	4,240	664
			Capacity.	Used.				
1895...	7	21,238	785	640	1,901,533	1,836,485	7,626	1,040
1896...	7	22,044	795	675	1,889,448	2,180,704	9,519	1,030
					Greasy.			
1897...	8	22,860	835	730	2,775,324	2,432,223	12,519	1,204
1898...	8	23,065	1,065	770	2,685,803	2,019,981	23,872	2,375

Year.*	Hands employed.		Approximate Total Value of—		
	Males.	Females.	Machinery and Plant.	Lands.	Buildings.
			£	£	£
1893	321	318	140,277	6,680	54,320
1894	359	331	142,870	6,630	53,930
1895	384	347	137,270	6.630	54,810
1896	402	370	142,720	4,630	57,440
1897	424	385	149,290	5,390	59,020
1898	426	387	155,170	5,410	58,935

* See footnote (‡) on page 938.

† The equivalent in the grease was given for 1897 and 1898, previously some factories gave the quantity in clean wool, others in greasy.

Material used and goods made in woollen mills.

1567. The following more detailed particulars of the raw material used and of the goods manufactured in woollen mills have been supplied for the last four years :—

MATERIAL USED AND GOODS MANUFACTURED IN WOOLLEN MILLS, 1895 TO 1898.

Year.	Raw Material Used.		Goods Manufactured.							
			Tweed and Cloth.		Flannel, &c.		Blankets.		Shawls and Rugs.	
	Wool, Greasy.	Cotton.	Length.	Weight.	Length.	Weight.	No. of Pairs.	Weight.	No.	Weight
	lbs.	lbs.	yards.	lbs.	yards.	lbs.		lbs.		lbs.
1895	2,190,000*	142,141	964,536	724,255	871,949	290,324	7,626	64,991	1,040	4,160
1896	2,480,000*	154,582	1,090,326	786,205	1,090,378	362,395	9,519	75,512	1,030	4,120
1897	2,775,324	271,302	1,205,928	849,602	1,226,295	420,100	12,519	96,907	1,294	4,900
1898	2,685,803	188,000	988,067	721,567	1,031,914	351,254	23,872	165,248	2,375	9,546

Value of articles used and produced.

1568. The value of the raw material used in woollen mills, and of the articles produced, was returned in 1881 and 1891. The following are the figures :—

WOOLLEN MILLS, 1881 AND 1891.

	1880–81.	1890–91.
Value of materials used ...	£89,412	£94,932
,, articles produced ...	168,710	170,687
Increased value ...	£79,298, or 89 per cent.	£75,755, or 80 per cent

Boot factories.

1569. In 1898, 89 boot factories were returned, of which more than half used some motive power—mostly gas, and one used electricity. As compared with 1895, although the number of factories fell off by 6, the hands employed increased by 98, the horse-power of engines (actually used) by 68, and the number of pairs of boots by 208,000 ; the value of machinery and plant and buildings depreciated by nearly £20,000, but that of land remained about the same, as will be seen by the following figures :—

BOOT FACTORIES, 1895 TO 1898.

Year.	Number of Factories.	Number Employing—				Amount of Horse-power of Steam and Gas Engines.	
		Steam.	Gas.	Electricity.	Manual Labour only.	Full Capacity.	Actually used.
1895	95	3	35	...	57	297	214
1896	98	2	40	...	56	264	218
1897	97	2	42	...	53	302	247
1898	89	2	45	1	41	333	282

* Estimated.

BOOT FACTORIES, 1895 TO 1898—*continued.*

Year.	Average number of Hands employed.		Goods Manufactured.		Approximate Value of—		
	Males.	Females.	Boot and Shoe Uppers.	Boots and Shoes.	Machinery and Plant.	Lands.	Buildings.
			pairs.	pairs.	£	£	£
1895	2,907	1,014	...	2,403,019	77,920	43,820	78,780
1896	3,010	1,078	...	2,598,387	84,850	47,420	77,060
1897	3,031	1,192	65,889	2,810,293	71,420	43,350	81,670
1898	2,849	1,170	53,812	2,611,532	66,040	43,165	70,740

NOTE.—In 1899, there were 105 factories, employing 4,285 hands, which manufactured 2,929,000 pairs of boots.

1570. Twenty-two soap and candle works, or thirteen less than in 1893, were returned in 1898, and although the hands employed increased by 11, the horse-power of machinery was considerably reduced. The weight of soap made in the latest year was 19,026 cwt. less and the candles made 15,647 cwt. below the output of 1893. The value of land and buildings also decreased by £53,200, but the value of the machinery and plant increased by £5,000 :— Soap and candle works.

SOAP AND CANDLE WORKS, 1893 TO 1898.

Year. *	Number of Establishments.	Establishments employing—			Amount of Horse-power of Machinery.		Number of Hands employed.	Soap made.†	Candles made.	Approximate Total Value of—		
		Steam-power.	Gas-power.	Manual Labour only.	Capacity.	Used.				Machinery and Plant.	Lands.‡	Buildings.
								cwt.	cwt.	£	£	£
1893	35	20	1	14	693		414	147,026	57,554	95,010	96,290	72,500
1894	32	16	1	15	745		438	150,550	55,351	94,250	89,800	70,940
1895	33	15	1	17	520	475	538	139,989	56,700	97,760	53,690	76,470
1896	24	11	1	12	550	527	443	140,792	51,552	93,310	53,450	70,190
1897	21	10	1	10	454	433	487	127,993	51,212	98,100	49,420	65,450
1898	22	14	1	7	570	540	425	128,000	41,907	100,105	48,865	66,700

1571. The value of the raw material used, and of the articles produced, in soap and candle factories was returned for the twelve months preceding the last two censuses, with the following result :— Value of articles used and produced.

SOAP AND CANDLE WORKS, 1881 AND 1891.

	1880–81.	1890–91.
Value of raw material used ...	£288,340	£229,903
„ articles produced ...	450,924	348,316
Increased value ...	£162,584, or 56 per cent.	£118,413, or 52 per cent.

* See footnote (‡) on page 938.
† Including soap made in small works not included in the regular list in 1896-7-8.
‡ These figures apply to purchased land only. Two of these establishments in 1893 were on Crown lands. In this case no valuation of the land is given.

Butter and cheese factories.

1572. The number of butter and cheese factories returned in 1898, the great majority of which employed steam-power, was 194—of which 160 were exclusively for butter, 16 for cheese only, and 18 for both products—as compared with 133 in 1893. The particulars relating to creameries were not included in the returns for 1893 or 1894, as they were in subsequent years; but allowing for this omission, the horse-power of engines has more than doubled since 1893, the hands employed increased by 529, or by 77 per cent., the value of machinery and plant by £128,800, or by 84 per cent., and that of lands and buildings by £30,700, or by 23 per cent.—notwithstanding a depreciation in the value of land alone of £24,000. Moreover, the quantity of factory-made butter increased by 8,800,000 lbs., and of cheese by 1,180,000 lbs. In addition to the output of the factories, 7,193,450 lbs. of butter and 2,108,199 lbs. of cheese were made on farms, which are not returned as factories, although they employed in 1890 over 14,000 hands exclusively in dairy work.* The following are the particulars relating to the factories for the last six years :—

BUTTER AND CHEESE FACTORIES, 1893 TO 1898.

Year.†	Number of Factories.	Number of Creameries.	Establishments employing—					Horse-power of Steam-engines.	
			Steam-power.	Gas-power.	Water-power.	Horse-power.	Manual Labour.		
1893 ...	133	...	119	2	1	4	7	981	
1894 ...	155	..	142	6	1	...	6	1,214	
								Capacity.	Used.
1895 ...	191	284	169	9	4	5	4	2,962	2,271
1896 ...	193	282	175	7	2	8	1	3,157	2,418
1897 ...	190	357	177	7	1	5	...	3,493	2,690
1898 ...	194	351	181	7	1	5	...	3,527	2,666

Year.†	Hands Employed.		Quantity made.		Approximate Total Value of—		
	Males.	Females.	Butter.	Cheese.‡	Machinery and Plant.	Lands.§	Buildings.
			lbs.	lbs.	£	£	£
1893 ...	478	38	18,054 641	1,106,418	107,160	45,600	70,000
1894 ...	792	28	26,703.309	2,199.869	163,790	41,550	83,790
1895 ...	1,118	16	30,696.680	2,685,530	240,940	35,130	118,150
1896 ...	1,129	30	29,676,097	2,487,411	257,850	40,710	134,200
1897 ...	1,156	10	28,810,883	2,317,987	280.760	30,480	142,585
1898 ...	1,203	17	26,886,860	2,289,170	281,405	21,350	143,380

NOTE. The particulars respecting creameries were not included prior to 1895. In 1893 there were 139 creameries, employing 175 hands, with plant valued at £45,460, and lands and buildings valued at £18,440; and in 1894 there were 190, employing 245 hands, with plant valued at £53,980, and lands and buildings valued at £20,420.

* See also paragraphs 1498 to 1515, *ante.*

† See footnote (‡) on page 938

‡ Inclusive of cheese made in small factories not included in the regular list in 1896-7-8.

§ Thirty-three creameries and twelve butter factories in 1898 were on Crown lands, and in these cases no valuation of the land has been given.

1573. Further particulars of the milk used and of the products made in butter factories have been obtained for the last four years, and are embodied in the following table. The milk received at factories fell off from 77½ million gallons in 1895 to 66¾ millions in 1898, owing to the drought. A large and rapid increase occurred in the quantity of milk concentrated :— Various products of butter factories.

Year.	Milk Received at Factories and Creameries.	Milk Treated for—		
		Butter and Cream.	Cheese.	Concentration.
	gallons.	gallons.	gallons.	gallons.
1895	77,520,000	74,593,000	2,705,882	216,286
1896	73,800,000	71,222,600	2,514,776	317,921
1897	73,343,907	70,496,553	2,304,644	542,710
1898	66,783,166	63,857,651	2,254,945	670,570

Year.	Products Made.				Gallons of Milk Used to Make One Pound of--	
	Butter.	Cream sold.	Cheese.	Concentrated Milk Made.	Butter.	Cheese.
	lbs.	gallons.	lbs.	gallons.		
1895 ...	30,696,680	...	2,685,530	54,070	2·43	1·01
1896 ...	29,676,097	..	2,487,411	79,480	2·40	1·01
1897 ...	28,810,883	20,940	2,317,987	122,349	2·44	·99
1898 ..	26,886,860	39,277	2,289,170	164,817	2·36	·98

NOTE.—In 1899, the milk received rose to 108½ million gallons, whilst the butter made amounted to 45,878,459 lbs., cheese to 2,373,178 lbs., and concentrated milk to 205,888 gallons.

1574. Adding to the output of factories the quantity made on farms, the total production of butter and cheese in the colony (exclusive of small quantities made privately) is obtained, and which is shown in the following summary for each of the last eight years. Owing to the rapid extension of factories, the quantity of butter made on farms has fallen from over 10 million pounds to a little over 7 millions, but the quantity of cheese has only fallen off from about 2½ million pounds to 2,100,000 lbs. The maximum butter and cheese production of the colony was in 1895, the three following years having been affected by drought:— Total production of butter and cheese.

Total Production of Butter and Cheese, 1891 to 1898.

Year.	Made on Farms.		Total on Farms and in Factories.	
	Butter.	Cheese.	Butter.	Cheese.
	lbs.	lbs.	lbs.	lbs.
1891 ...	10,860,844	2,492,730	16,703,786	3,311,012
1892 ...	10,320,079	3,110,463	23,509,845	4,056,994
1893 ..	10,105,800	2,642,137	28,160,441	3,748,555
1894 ...	8,876,892	1,953,262	35,580,201	4,153,131
1895 ...	9,064,314	2,367,252	39,760,994	5,052,782
1896 ...	7,451,986	2,255,155	37,128,083	4,742,566
1897 ..	5,750,489	1,994,520	34,561,372	4,312,507
1898 ...	7,193,450	2,108,199	34,080,310	4,397,369

Note. – In 1899, the total production of butter amounted to 53,327,585 lbs.—by far the largest on record—and that of cheese to 4,512,706 lbs.

Analysis of Victorian butter.

1575. Victorian butter contains on the average about 84½ per cent. of butter-fat, nearly ¾ of curd, rather more than 2¾ of soluble salts, and 12 per cent. of water. In some samples, the proportion of butter-fat was as high as 88 per cent., and in others as low as 80 ; whilst that of curd varies from ½ to 1 per cent. ; that of soluble salts from 1 to 4½ per cent. ; and that of water from 9 to 16 per cent. As compared with an analysis four years ago, whilst the butter is now of a more uniform quality, the proportion of butter-fat and curd has slightly fallen off, but that of soluble salts and water has slightly increased. The following are the results arrived at by Mr. A. N. Pearson, Agricultural Chemist :—

Analysis of Victorian Butters, 1896-7 and 1900.

(From Samples in Government Cool Stores.)

Constituents.	Average in 100 Parts in—		Extremes in—			
			1896-7.		1900.	
	1896-7.	1900.	Max.	Min.	Max.	Min.
Fat	85·05	84·68	89·8	77·9	88·2	80·2
Curd	·75	·71	2·97	·13	1·1	·5
Soluble Salts	2·81	2·49	4·91	1·22	3·8	1·0
Boric Acid		·38			·77	·13
Water	11·31	12·05	16·4	6·8	16·3	8·8
Total ...	99·92	100·31	...	...	...	...

Note.—The number of samples analyzed in 1896–7 was 122, and in 1900, 36.

Butter factory averages, 1894 to 1898.

1576. Forms were sent to several of the principal butter factories in Victoria, seeking particulars of general averages for each of the five years ended with 1898. Only about a dozen of them responded, and some of these did not reply to all the questions or for all the years. Whenever a return showed evidence of carelessness or inaccuracy it was rejected. The results obtained are shown in the following table,

which will no doubt prove of some interest and value in dealing with the various aspects of the dairying industry:—

Butter Factory Averages, 1894 to 1898.

(According to returns furnished by a few Victorian Factories.)

Year.	No. of Factories sending Returns.	Average No. of Milk Suppliers.	Per 100 lbs. Milk used.			Percentage of Butter-fat in Butter Made.	Gallons of Milk to make 1 lb. of Butter.
			Butter-fat	Butter-fat lost in—			
				Separating.	Churning.		
			lbs.	lbs.	lbs.		
1894 ...	5	133	3·75	·12	·15	83	2·39
1895 ...	8	118	3·80	·12	·13	85½	2·38
1896 ...	11	66	3·75	·10	·09	86	2·42
1897 ...	13	60	3·81	·09	·13	86½	2·34
1898 ...	14	63	3·78	·10	·12	86	2·38
Average ...	...	...	3·8	·11	·12	85½	2·38
Minimum* ...	...	...	3·5	·07	·05	83	2·20
Maximum* ...	...	...	4·0	·15	·2	87·8	2·59

Year.	Average Price paid Farmers for –		Average Cost of Manufacture per lb.†	Transit Charges per cwt. from Factory to—		Average Net Price per Cwt. for Butter realized in—		
	Milk per Gallon.	Equivalent for Butter per lb.		Melbourne.	London.	Victoria.	London.	Other Places.
	d.	d.	d.	s. d.	s. d.	s. d.	s. d.	s. d.
1894 ...	2·75	6·57	1·61	1 10	11 9	89 11	101 0	...
1895 ...	2·69	6·40	1·39	1 8	11 5	89 4	99 0	...
1896 ...	2·99	7·24	1·17	1 11	10 2	89 4	100 10	93 4
1897 ...	3·27	7·65	1·29	1 11	9 9	93 9	96 11	95 8
1898 ...	3·19	7·59	1·23	1 10	9 6	103 1	97 8	88 8
Average	2·98	7·09	1·34	1 10	10 6	93 1	99 1	92 6
Min.* ...	2·40	6·0	0·75	1 4	8 6	74 0	...	84 0
Max.* ...	4·00	8·5	2·2	3 0	13 6	140 0	116 0	95 8

1577. It will be observed that the average number of milk suppliers to each factory is about 63 ; that the average test of milk is 3·8 per cent., which has been fairly uniform in all the years under observation, although one factory gave an average of 4 per cent.; that the average loss of butter-fat, both in the skim-milk and in the butter-milk, is ·23 per cent.; that the manufactured butter contains 86 per cent. of butter-fat, curd, salt, water, other ingredients forming only 14 per cent.; that it requires on the average 2·38 gallons of milk for one pound

Results compared.

* In any factory for any one season.

† Including all charges necessary to place the butter on the railway trucks at the nearest railway station, *but exclusive* of wear and tear of machinery and interest on capital. Wear and tear of machinery and interest on capital may be set down at ⅕d. per lb.

of butter, although one factory in one year averaged as little as 2·2 gallons. The average price paid to farmers for milk appears to have gradually increased from 2¾d. in 1894 to about 3¼d. per gallon in 1897 and 1898. The cost of manufacture of butter, exclusive of interest and depreciation, is shown to have averaged, for all the factories 1⅓d., which with allowance for interest and depreciation would be increased to close on 1½d., but one factory in the western district could manufacture for as low as ¾d. without, and $\frac{9}{10}$d. per lb. with, allowance for interest and depreciation. The transit charges to Melbourne averaged 1s. 10d., and to London 10s. 6d., per cwt, whilst the average net price realized per cwt. was 93s. 1d. in Melbourne, 99s. 1d. in London, and 92s. 6d. in other places. There is evidently room for improvement in the quality of the milk, the cost of manufacture, and the price realized.

Utilization of dairy by-products.

1578. From an interesting article on the Utilization of Dairy By-products, by the Chief of the Dairy Division, Bureau of Animal Industry, which appeared in the *U.S. Year-Book of Agriculture* for 1897, the following information is gleaned, which may be suggestive to those desirous of developing the various branches of the dairying and manufacturing industries of the colony :—

For every 1 lb. of butter made there remains, as residues, 15 to 20 lbs. of skim-milk and nearly 3 lbs. of butter-milk, and for every 1 lb. of cheese nearly 9 lbs. of whey. Some people can make 373 lbs. of skim-milk (the annual yield of one cow) and the butter-milk combined, worth 4s. 2d.; others not more than 1s. 3d.

Skim-milk.—The proportion of fat left in skim-milk after separation is, in ordinary practice, ·1 per cent., but is sometimes as low as ·01 per cent., whilst an actual trial by several different kinds of separators gave an average of ·13 per cent., but ·1 per cent. may now be regarded as the maximum fat contents of skim-milk. On the other hand, ordinary skimming by the best (*i.e.*, deep-setting) process leaves behind ·2 to ·4 per cent. of fat.

The composition of skim-milk is as follows:—Water, 90½ parts; solids, 9½ parts—the latter containing 3 to 3½ parts of casein and albumen, 4·7 to 5 parts of milk sugar, and ·7 to ·8 parts of ash.

Skim-milk is used for various purposes, the best use being for human food. For such purposes the retail price is generally half that of whole milk, it being sold near factories in England in large quantities at from 1d. to 2d. per quart; but, as the cost of transport is heavy, it is sometimes condensed, the result being a product having a decided commercial value and many domestic advantages. When used in bread skim-milk adds to the weight and to the nutrient value of the loaf by reason of its albuminoid and flesh-forming qualities. The milk loaf remains longer moist, is closer, more palatable, and the milk sugar caramels in baking, thus browning the crust. Used for this purpose one can get 2s. 1d. to 6s. 3d. per 100 lbs. skim-milk.

Next to human food the most profitable use for skim-milk is as a food for domestic animals, such as chickens, calves, hogs, and even cows and horses; and it appears to have been proved by experiments that (1) skim-milk gives the best return as food for young animals, if such animals be mainly fed on it; (2) it is next best for rapidly growing animals, when used in conjunction with food of a more carbonaceous character; (3) except for very young animals, the results are much better when other foods, principally grain, are given in addition; (4) in the cases of various live stock fed on skim-milk, none give a better return than poultry fed on this diet, it being the opinion of experts that this commodity is worth fully 4s. 2d. per 100 lbs. when judiciously fed to poultry. It should, in this respect, be used with some carbonaceous materials, such as cornmeal, oatmeal, &c.

In the manufacture of "cottage cheeses" skim-milk is said to be worth 4s. 2d. per 100 lbs.; it may also be used in combination with animal or vegetable fat to produce what is known in America as "filled cheese," and in Europe as "margarine cheese."

There are several other uses, more or less important, to which skim-milk may be profitably put. Mixed in whitewash skim-milk prevents the coating from falling off; and, mixed with hydraulic cement or water-lime, it gives an excellent, durable, and inexpensive covering for any structure of wood or stone. It is also used in the manufacture of casein, which, when combined with the oxides and salts of the calcium group, forms a cement-like compound insoluble in water. Other uses of this product are—for sizing or dressing in the manufacture of paper; as a substitute for celluloid; as Faracurd, a substitute for eggs in bakery products; and sugar of milk from whey, which contains 2½ to 3 per cent. of recoverable sugar, a commodity which may be sold, according to quality, at from 5d. to 8½d. per lb.

Bacon and ham curing works.

1579. The following particulars relating to bacon and ham curing establishments were returned for the last six years. It will be noticed that in 1898, as compared with 1893, there was a decrease of 4 in the number of establishments; but an increase of 41 in the number of hands employed. The horse-power used also slightly increased; whilst the bacon and ham produced increased by nearly 23 per cent. The value of the land showed a reduction of £2,570, but that of the machinery and plant an increase of nearly £6,700 :—

BACON AND HAM CURING ESTABLISHMENTS, 1893 TO 1898.

Year.*	Establishments employing—				Horse-power of Steam Engines.		Hands employed.	
	Steam Machinery.	Wind Machinery.	Horse-power.	Manual Labour.			Males.	Females.
1893 ...	15	1	...	11	111		160	4
1894 ...	16	1	...	9	105		157	4
					Capacity.	Used.		
1895 ...	15	2	1	9	200	140	193	1
1896 ...	19	1	1	3	254	152	205	2
1897 ...	20	1	...	3	135	107	203	1
1898 ...	21†	...	1	1	148	122	203	2

Year.*	Bacon and Ham cured.	Approximate Total Value of—		
		Machinery and Plant.	Lands.‡	Buildings.
	lbs.	£	£	£
1893	5,823,031	11,575	8,300	18,910
1894	6,231,100	11,570	8,300	17,300
1895	7,152,768	12,670	7,370	19,870
1896	7,817,977	14,160	8,800	16,730
1897	7,248,049	15,750	5,520	17,600
1898	7,135,740	18,250	5,730	18,950

NOTE.—In addition to the bacon and hams cured in factories, 1,795,372 lbs. were returned as having been cured on farms, making a total for the colony in 1898 of 3,987 tons 2 cwt.

* See footnote (‡) on page 938.
† Including one gas engine.
‡ Two of these establishments in 1898 were on Crown lands, and in these cases no valuation of the land has been given.

Meat freezing and preserving works.

1580. The recent development in the export trade in frozen meat has led to the opening of 9 meat freezing and preserving works in Victoria, situated usually near the principal sea-ports. Of the 9 referred to, all but one used steam power; 3 of them confined themselves to freezing, 1 to preserving, whilst 5 embraced both processes in their operations. The animals treated are chiefly sheep and rabbits, between 200,000 and 270,000 of the former, and over 3,000,000 of the latter being dealt with annually. The following are the particulars for each of the four years ended with 1898 :—

MEAT FREEZING AND PRESERVING WORKS, 1895 TO 1898.

Year.	Number of Works.*	Horse-power of Steam Engines.		Average Number of Hands employed (Males).	Frozen—			
		Full Capacity.	Actually used.		Sheep.	Beef.	Rabbits.	Poultry.
					Number.	Quarters.	Number.	Number.
1895	6	581	529	238	239,000	..	493,296	2,792
1896	9	689	645	426	271,790	...	860,904	17,360
1897	8	514	496	399	263,275	...	3,386,868	8,645
1898	9	553	552	416	215,639	398	3,014,240	22,962

Year.	Preserved—				Approximate Value of—		
	Beef.	Mutton.	Rabbits.	Fish.	Machinery and Plant.	Lands.	Buildings and Improvements.
	cwt.	cwt.	cwt.	cwt.	£	£	£
1895	588	3,100	30,112	...	24,520	2,330	155,020
1896	1,008	3,314	30,610	...	45,280	3,550	110,530
1897	193	1,942	56,806	172	49,110	3,070	120,970
1898	349	2,790	22,687	2,381	58,055	4,565	124,955

NOTE.—In addition to the hands employed as shown in the table, about 540 persons in 1895, 451 in 1896, 950 in 1897, and 770 in 1898 were employed in trapping and carting rabbits.

Gas works.

1581. In 1898 there were 46 gas works in the colony, of which 7 were for the supply of Melbourne and suburbs, whilst the 39 others supplied towns in other parts of the colony. The gas made amounted to 1,458 million cubic feet, in the production of which 142,411 tons of coal were used, and 680 hands employed, and the quantity consumed amounted to nearly 1,253 million cubic feet. Since 1895 the number of gas works increased by 5, the hands employed by 177, but the gas consumed fell off by 143 million cubic feet; there was an increase in the value of lands and buildings, but a small decrease in that of

* Two of these works in 1895-6-7 and three in 1898 were situated on Crown lands for which no valuation has been given.

machinery. The following are the particulars for each of the last four years :—

GAS AND COKE WORKS—1895 TO 1898.

Year.	Gas Works.				Horse-power of Engines.		Average Number of Hands employed.	Tons of Coal used.*
	Total Number.	Number having Machinery Worked by—		Number employing Manual Labour only.	Full capacity.	Actually used.		
		Steam.	Gas.					
1895	41	5	2	34	302	223	503	159,936
1896	41	5	2	34	305	223	505	146,425
1897	44	5	2	37	550	331	668	143,410
1898	46	6	2	38	557	350	680	142,411

Year	Products.			Approximate value of—		
	Gas made.	Gas consumed.	Coke produced.	Machinery and Plant.	Lands.	Buildings.
	cubic feet.	cubic feet.	tons.	£	£	£
1895	1,625,575,120	1,396,108,881	83,060	974,730†	96,400	599,850
1896	1,477,130,510	1,289,753,009	74,008	913,960†	94,830	623,210
1897	1,446,963,815	1,268,614,587	73,486	492,200	102,920	616,630
1898	1,457,948,000	1,252,618,000	74,778	519,818	105,300	605,545

1582. There were also 10 works for the supply of electricity, all using steam power, of which 7 were in the metropolis and 3 in country towns. They employed 158 hands, and supplied 4,500,000 British units of electricity. The use of electricity has apparently fallen off slightly in the last four years. The particulars for each of the last four years are subjoined. Electric light works.

ELECTRIC LIGHT WORKS, 1895 TO 1898.

Year.	Number of Works.	Horse-power of Steam Engines.		Average Number of Hands Employed	Electricity supplied.	Estimated Value of—		
		Full capacity.	Actually used.			Machinery and Plant.	Lands.‡	Buildings.
					Brit. units.	£	£	£
1895	10	4,790	3,498	131	4,623,326	165,960	16,450	38,740
1896	11	5,203	4,268	175	4,916,171	164,340	17,500	38,410
1897	11	5,688	4,468	174	5,022,630	170,560	14,680	41,050
1898	10	5,553	4,402	158	4,507,176	156,570	16,300	37,920

* Including 40 tons in 1895, 620 tons in 1896, 223 tons in 1897, and 9 tons in 1898, of Victorian coal.

† Owing to an error in the returns furnished, the value of machinery was overstated in 1895 and 1896 by about £410,000.

‡ Three of the works in 1895 and 1896, 5 in 1897, and 3 in 1898 were on Crown lands; in these cases no valuation of the land has been given.

Chief products of manufactories.

1583. The following is, for convenience of reference, a summary of the quantities of the principal articles produced in Victorian factories since 1894. In this case the figures are brought down to 1899:—

CHIEF PRODUCTS OF MANUFACTORIES, 1895 TO 1899.

Principal Products Manufactured.		1895.	1896.	1897.	1898.	1899.
Flour	tons	167,424	122,541	121,823	154,722	184,835
Beer	galls.	14,380,791	14,224,203	14,724,390	15,376,266	15,311,957
Spirits	proof galls.	370,332	409,981	381,844	398,577	448,680
Sugar—Cane-sugar refined*	tons	35,524	37,163	36,530	44,544	41,925
Sugar—Beet-sugar made	,,	..	..		617	348
Tobacco, cigars, and cigarettes	lbs.	1,344,575	1,243,275	1,391,568	1,392,329	1,514,750
Butter	,,	30,696,680	29,676,097	28,810,883	26,886,860	45,878,459
Cheese	,,	2,685,530	2,239,645	2,135,282	2,170,405	2,218,463
Bacon and hams	,,	7,152,768	7,563,237	7,103,419	6,898,711	8,429,472
Soap	cwt.	139,989	122,303	107,108	116,621	125,082
Candles	,,	56,700	51,552	51,212	41,907	45,848
Woollen cloth, flannel, &c.	yds.	1,836,485	2,180,704	2,432,223	2,019,981	2,160,015
Woollen blankets	pairs	7,626	9,519	12,519	23,872	33,427
Hides—tanned	No.	410,703	433,739	459,856	398,470	415,249
Skins ,,	,,	2,024,479	2,143,677	2,072,327	1,444,506	1,461,067
Boots and shoes	pairs	2,403,019	2,598,387	2,810,293	2,611,532	2,929,011
Timber—sawn	sq. ft.	36,285,426	31,973,743	27,772,081	37,698,486	40,716,500
Meat Frozen—						
Sheep (carcasses)	No.	239,000	271,790	263,275	215,639	475,579
Rabbits	,,	493,296	860,904	3,386,868	3,014,240	4,477,866

Raw materials used in manufactories.

1584. Particulars concerning the raw materials used in the manufacture of some of the articles just referred to will be found in the following statement:—

MATERIALS USED IN CERTAIN MANUFACTORIES, 1895 TO 1899.

Materials used.		1895.	1896.	1897.	1898.	1899.
Bark	tons	13,218	12,626	12,047	11,396	10,821
Pigs slaughtered for curing	No.	73,830	72,141	69,555	66,840	79,066
Milk†	gallons	77,520,000	73,800,000	73,160,739	66,661,997	108,313,165
Wheat ground	bushels	8,460,604	6,162,243	6,118,438	7,947,381	9,139,289
Sugar, raw (cane)	tons	38,027	40,102	39,755	47,779	44,528
,, beet, treated	,,	..	..	..	8,878	6,562
For Beer—						
Sugar	,,	4,667	4,725	5,051	5,482	5,487
Malt	bushels	616,450	602,905	605,581	605,423	594,601
Hops	lbs.	652,499	648,352	676,628	712,002	676,386
For Spirits—						
Wine	gallons	213,193	317,062	291,32[illegible]	350,956	160,798
Malt	bushels	77,985	39,631	36,356	46,177	84,558
Other grain	,,	39,062	2,202	831	1,963	3,241
Sugar and molasses	tons	423	2,300	2,389	2,312	2,386
Beer	gallons	15,524	9,250	3,386	1,000	..
Tobacco,‡ raw, imported leaf	lbs.	629,134	750,988	916,679	1,080,580	1,309,067
,, ,, colonial ,,	,,	640,780	545,524	472,024	386,148	306,728
Wool (for cloth, &c.)	,,	1,901,533	1,889,448	2,775,324§	2,685,803§	2,867,884§
Cotton ,,	,,	142,141	154,582	271,302	188,000	154,388
Coal (for gas)	tons	159,936	146,425	143,410	142,411	149,733

* Exclusive of molasses and treacle refined.

† According to the Agricultural Statistics, the number of dairy cows (wet and dry) in 1899–00 on farms (including dairy farms) was 465,469, for more than one-third of which the quantity of milk yielded was returned, viz.:—51,994,256 gallons, or an average of 316·6 per cow; applying this average to all the cows, the total milk yield of the colony in 1899 is equivalent to 147,367,000 gallons, exclusive of the yield of cows for private use. In the two previous years, the corresponding average was 301 per cow.

‡ Figures furnished by Customs Department.

§ *Greasy Wool.*—Previous to 1897 some mills returned the quantity of greasy wool, and others that of coured wool.

1585. By combining the products of factories with those made on farms, the total visible production in the colony of the articles named in the following list has been ascertained and set forth :— Production of certain articles on farms and in factories.

TOTAL PRODUCTION OF CERTAIN ARTICLES IN THE COLONY, 1895 TO 1899.

Articles.	1895.	1896.	1897.	1898.	1899.
Leather tanned—					
Hides .. .. No.	410,703	439,291	463,374	400,262	430,809
Skins—Calf .. .. ,,	135,356	153,488	199,571	177,739	162,814
Bacon and hams .. .. lbs.	10,138,646	9,892,416	8,670,536	8,931,112	10,886,314
Butter .. .. .. ,,	39,760,994	37,128,083	34,561,372	34,080,310	53,327,585
Cheese .. .. .. ,,	5,052,782	4,742,566	4,312,507	4,397,369	4,512,706
Beer .. .. .. gallons	14,380,791	14,224,203	14,724,390	15,400,017	15,326,289
Spirits, distilled* .. proof galls.	398,385	440,256	422,133	437,462	491,305
Bricks .. .. .. No.	64,204,846	55,682,110	51,048,200	64,511,000	82,751,200
Soap .. .. .. cwt.	139,989	140,792	127,993	128,000	136,424

1586. In 1891, which was the year of the last census, an inquiry was made respecting the value of the materials used and articles produced in all manufactories. This inquiry was responded to in most instances, and in cases where the information was not given the value has been estimated upon the same proportions as obtained in similar works respecting which information was supplied. The totals and difference between them—to which has been added an estimate for the value of the bricks and pottery made—together with similar results for the previous census year are as follow :— Value of materials used and produced.

VALUE OF RAW AND MANUFACTURED MATERIALS, 1881 AND 1891.

	1880-81.		1890-91.
	£		£
Value of materials operated upon	7,997,745	...	12,006,233
,, articles produced ...	13,370,836	...	22,390,251
Increased value ..	5,373,091, or 67 per cent.		10,384,018, or 86 per cent.
Bricks at £1 per 1,000	53,566	...	241,928
Value of pottery ...	34,600	...	68,160
Total value of manufactured articles, less cost of raw material	5,461,257	...	10,694,106

1587. The industries are not classified in the same way in Victoria as in New South Wales; but the following is, so far as the returns will allow, a comparison of the number of factories and average number of Different kinds of factories in Victoria and New South Wales compared.

* Including that used for fortifying wine.

hands employed in each class of industry in the two colonies according to the Victorian system of classification :—

Manufacturing Industries in Victoria and New South Wales, 1898.

Order.*	Classified Groups of Industry.	Victoria.			New South Wales.		
		Factories.	Average Number of Hands Employed.		Factories.	Average Number of Hands Employed.	
			Males.	Females.		Males.	Females.
	Class A.—Primary Treatment of Natural Products.						
1	Malt-houses	13	110	..	..	..	..
	Sugar mills	..	..	..	20	1,168	..
4	Lime, cement,† plaster	9	215	..	12	171	..
6	Tanning, fellmongering, wool-washing	102	1,764	2	148	2,344	..
	Bone milling, manure	18	137	..	6	35	..
7	Chaff-cutting, corn-crushing	169	782	7	37	219	1
	Forest and other saw-milling, joinery, &c.‡	160	2,665	..	302	3,678	4
	Bark milling	5	33	..	..	..	..
8	Boiling-down, tallow-rendering	17	78	1	17	121	..
9	Smelting and pyrites	2	40	..	32§	2,616	..
	Metallurgical	3	30	1	..	..	..
	Total Class A	498	5,854	11	574	10,352	5
	Class B.—Finished Articles of Consumption.						
1A	Animal—						
	Butter and cheese	195	1,219 ‖	17	138	940 ‖	27
	Bacon, meat freezing and preserving, ice	41	664¶	2	49	1,735	5
1B	Vegetable—						
	Flour	75	762	3	80	751	6
	Biscuit, maizena, oatmeal, corn-flour, &c.	13	697	270	11	498	263
	Confectionery	15	383	275	17	408	153
	Jam, fruit-canning, vinegar, &c.	21	886	291	18	513	119
	Sugar refining	4	584	8	1	454	..
1C	Mineral—						
	Salt	5	63	..	..	..	..
1D	Drinks and Narcotics —						
	Breweries	51	1,083	5	56	828	2
	Distilleries	10	138	..	..	..	..
	Aerated water, &c.	126	982	19	174	952	28
	Coffee, chicory, cocoa, chocolate, mustard, spice, &c., condiments	11	137	82	18	304	176
	Tobacco, cigar, snuff	14	428	336	8	483	127

* For classification, see paragraph 1542 *ante.*

† Cement and lime have not been separated in New South Wales, therefore cement in Victorian returns has been transferred from Class B for the purpose of comparison.

‡ This line in the Victorian returns is strictly confined to forest saw-mills only, but as they cannot be separated from other mills in New South Wales both kinds of mills are here included.

§ Smelting works only.

‖ Including 360 hands employed in creameries in Victoria, and 297 in New South Wales.

¶ in addition to this number about 770 persons were employed in trapping and carting rabbits for preserving purposes.

Manufacturing Industries in Victoria and New South Wales, 1898—*continued.*

Order.	Classified Groups of Industry.	Victoria.			New South Wales.		
		Factories.	Average Number of Hands Employed.		Factories.	Average Number of Hands Employed.	
			Males.	Females.		Males.	Females.
2A	Textiles—						
	Woollen mills	8	426	387	5	169	72
	Rope, twine, mat, bag, sack, sail, tent, tarpaulin ..	15	309	185	13	181	27
2B	Clothing, including undercloth-ing	226	1,331	6,119	177	1,675	2,935
	Dressmaking, millinery ..	153	32	2,642	148	33	1,764
	Hat, cap	17	325	342	4	39	77
	Oilskin, waterproof clothing	8	45	198	3	97	287
	Hosiery,* fur, umbrella,* dyeing	15	91	203	8	40	19
	Boot, shoe	89	2,849	1,170	76	2,655	845
3	Cabinet, including billiard-table	56	808	12	69	1,081	6
	Upholstery, bedding, flock, &c. ..	18	214	100	22	309	80
	Brush, broom	11	177	43	12	134	6
	Picture-frame, looking-glass, venetian blind, curled hair, &c.	27	200	5	10	77	16
4	Brick, pottery	94	1,093	12	148	1,660	..
	Stone-sawing, polishing, and monumental	29	335	3	28	280	..
5	Apparatus for transportation—						
5A	Coach, carriage, lamp (car-riage), &c.	170	1,548	3	154	1,444	26
	Saddle, saddle-tree, harness, whip, &c.	44	374	16	37	419	7
	Cycle, perambulator	6	147	9	2†	17	5
5B	By rail—						
	Railway and tramway work-shops	10	1,787	6	21	2,738	10
5C	By water—						
	Ship, boat, graving dock, patent slip, &c.	9	137	..	19	1,228	..
6	Leather belting, fancy leather, portmanteau	11	111	17	9	93	..
7	Wood-carving, turnery, cork cut-ting, cooperage	30	183	..	27	329	..
	Paper, strawboard, fancy box, hat box‡	11	203	200	11	133	162
	Basket, wicker, dairy and domes-tic implement	9	134	1	4	61	7
8	Soap and candle	22	421	4	35	258	18
	Essential oil	8	52	6	..	..	..
	Oil, glue, printing ink	4	27	..	5	100	1
9A	Agricultural implement ..	51	1,087	4	13	251	1
	Engine, machine, iron foundry ..	173	4,509	7	120	3,206	4
	Cutlery, tool, nail, safe, door ..	16	190	2	3§	11	..
9B	Sheet iron, tin, &c., oven ..	48	688	3	45	614	1
	Brass, copper	23	402	..	16	220	..
	Wire, pattern, meter, spring, lead, shot, &c.	15	159	..	5‖	229	..
	Other metals—not described (single establishments) ..	..	..	..	18	344	..
10	Goldsmithing, jewellery, electro-plating, &c.	37	423	11	11	114	4

* No hosiery or umbrella factories specified in the statistics for New South Wales.
† Perambulator only.
‡ Including three paper mills in Victoria, and two in New South Wales.
§ Cutlery only.
‖ Four wire-working and one lead works.

Manufacturing Industries in Victoria and New South Wales, 1898—*continued.*

Order.	Classified Groups of Industry.	Victoria.			New South Wales.		
		Factories.	Average Number of Hands Employed.		Factories.	Average Number of Hands Employed.	
			Males.	Females.		Males.	Females
11	Glass	8*	432	1	14	356	2
12	Gas coke	46	679	1	48	794	..
	Electric light and apparatus ..	12†	168	..	33	141	..
	Match, charcoal dust, hydraulic power	3	32	41	..	..	..
13	Blasting-powder, dynamite, fireworks, fuse	4	107	16	..	..	..
14	Printing, account-book, stationery, &c.	208	4,071	864	266	4,131	489
	Organ, pianoforte	3	29	..	..	..	..
	Die-sinking, engraving, &c. ..	7	83	..	..	..	..
	Philosophical and surgical instrument	5	16	4	8	47	7
15	Chemical	18	196	71	15	210	43
	Other industries	13	121	120	17	222	13
	Total class B ‡	2,371	34,777	14,136	2,249	34,006	7,840
	Grand total ‡	2,869	40,631	14,147	2,823	44,358	7,845

Factories in Victoria and New South Wales compared.

1588. According to the official returns of the two colonies (with the exception noted)‡, as set forth in the foregoing table, it appears that in Victoria the total number of manufactories exceeds those in New South Wales by 46, and the total number of hands employed by 2,575; but the males employed in New South Wales exceed those in Victoria by 3,727, whereas the females in Victoria exceed those in New South Wales by 6,302. Under Class A, which embraces factories occupied in the primary treatment of natural products, there were 76 more factories in New South Wales than in Victoria, and also 4,492 more hands, viz., 4,498 more males, but six less females; whereas under Class B, which embraces industries producing the more finished articles of manufacture, there were 122 more factories in Victoria than in New South Wales, and 7,067 more hands, viz., 771 males and 6,296 females. Under Class A, New South Wales has an excess of 2,576 hands in smelting works, which includes those at the Broken Hill silver mines; of over 1,100 in sugar works (which have no parallel in Victoria); and over 1,000 in saw-mills; and of nearly 600 in tanneries and wool-washing establishments; whilst the only kind of establishments where Victoria had a large excess was chaffcutting and corn-crushing works. Under Class B, Victoria had a preponderance of over 3,700 hands (entirely women) in clothing and dressmaking,

* Including one asbestos manufactory.

† Including two apparatus works.

‡ Exclusive of Royal Mint. Stone-crushing and asphalt (tar-paving) works are also excluded from both colonies; in the official returns they are included in New South Wales.

&c., establishments; over 2,300 in machine, tool, and implement manufactories; between 500 and 600 each in jam and fruit preserving works, in woollen mills, in hat and cap, and in boot manufactories; over 300 each in goldsmiths and jewellery, and in printing and stationery establishments; over 200 each in butter and cheese, in biscuit maizena and starch, in brewing, in rope twine &c., and in fur dyeing &c., establishments; and over 100 each in sugar refineries, in distilleries, in tobacco, in picture-frame, in coach &c., in cycle and perambulator, in paper strawboard &c., in soap and candle, and in explosive, &c., factories; and nearly 100 each in confectionery, in brush and broom, and in diesinking and engraving establishments. But, on the other hand, New South Wales had an excess of over 1,000 each in meat freezing and preserving works and in the ship and boat building industry; over 900 in railway and tramway workshops; 500 in brickyards and potteries; over 200 each in coffee and chicory, and in cabinetmaking works; and over 100 each in waterproof clothing, wood carving and turnery, gas and coke works, and in metal industries other than machines tools and implements.

Factories of various sizes in Victoria and New South Wales.

1589. According to the official returns of the two colonies, there appears in 1898 to have been 500 more hands employed in the small factories (under 4 hands) in Victoria than in New South Wales, and over 3,200 more in factories employing on the average 51 hands and upwards; but nearly 1,000 fewer in those employing between 4 and 50 hands. The following are the number of factories and the hands employed in factories of different sizes in each colony in 1898 :—

RELATIVE SIZES OF FACTORIES IN VICTORIA AND NEW SOUTH WALES, 1898.

Factories Employing on the Average—	Victoria.		New South Wales.	
	Factories.	Hands Employed.	Factories.	Hands Employed.
Under 4 hands*	460	1,467	394	969
4 hands	323	1,292	353	1,412
5 to 10 ,, ...	1,044	7,329	1,040	7,450
11 to 20 ,, ...	491	7,168	513	7,469
21 to 50 ,, ...	326	10,152	344	10,542
51 to 100 ,, ...	138	9,499	118	8 018
101 and upwards	87	17,871	77	16,119
Homeworkers	...	†	...	539
Total	2,869	54,778	2,823‡	52,203‡

NOTE.—The Royal Mint has been excluded in both colonies.

* Chiefly establishments using steam or other motive power, and gasworks.

† Distributed over the other heads; the number so distributed was 418.

‡ Exclusive of stone-crushing and asphalt (tarpaving) works (to compare with Victoria) which could not be eliminated in detail, viz., 16 works and 315 hands. Hence the totals obtained by adding the figures will exceed those shown in the total line to that extent.

Chief manufactures in Victoria and New South Wales.

1590. A comparison is made in the following statement of the quantities of different articles manufactured in the two colonies so far as the statistics are available :—

CHIEF MANUFACTURES IN VICTORIA AND NEW SOUTH WALES, 1898.

Articles Manufactured.		Victoria.	New South Wales.
Flour	tons	154,722	170,473
Beer	gals.	15,400,017	11,674,880
Spirits	proof gals.	445,626	Nil
Sugar raw	cwt.	...	582,198
Sugar refined	,,	890,880	948,400
Tobacco	lbs.	1,066,003	2,081,260
Cigars	,,	115,999	21,678
Cigarettes	,,	210,327	232,732
Butter *	,,	34,080,310	31,483,601
Cheese *	,,	4,397,369	3,245,312
Bacon and Hams *	,,	7,135,740	7,184,058
Soap	cwt.	128,000	139,983
Candles	,,	41,907	20,649
Woollen Cloth, Tweed, Flannel	yds.	2,019,981	487,374
Woollen Blankets	pairs	23,872	†
Hides, tanned	No.	400,262	†
Skins, tanned	,,	1,449,699	†
Boots and Shoes	pairs	2,611,532	2,904,783
Timber, sawn	super. feet	37,698,486	†
Bricks	No.	64,511,000	113,126,000
Gas	cubic feet	1,457,948,000	1,788,218,000

Stone quarries.

1591. The stone quarries, stone-crushing and tar-pavement works returned in 1898 were fewer by 8 than in 1893, and the hands employed showed a falling-off of 62. The output of stone fell off by 41,737 cubic yards and its value by £21,120; a considerable decrease also appears in the number and power of steam-engines, value of machinery, plant, lands, and buildings, which depreciated by £55,804, or 65 per cent. The following are the figures for the last six years :—

STONE QUARRIES,‡ ETC., 1893 AND 1898.

Year.§	Number of Quarries, &c.	Cubic Yards of Stone raised.				Steam-engines in use.		
		Bluestone.	Slate and Flagging.	Sandstone and Freestone.	Granite.	Number.	Horse-power.	
		cub. yds.	cub. yds.	cub. yds.	cub. yds.			
1893 ...	60	181,419	450	400	1,750	16	316	
1894 ...	43	138,910	308	379	120	17	328	
							Capacity.	Used.
1895 ...	34	126,731	...	356	146	11	192	148
1896 ...	45	154,540	...	260	387	13	212	174
1897 ...	46	122,638	...	736	782	13	160	135
1898 ...	52	141,112	...	864	306	11	148	113

* Inclusive of that made on farms, viz., *Butter*, 7,193,450 lbs. in Victoria and 4,961,134 lbs. in New South Wales; *Cheese*, 2.108,199 lbs. in the former and 1,0 4,867 in the latter; and *Bacon* and *Hams*, 1,795,372 lbs. and 2,347,159 lbs. respectively. —† Information not available. —‡ Including stone-crushing and tar-pavement works. —§ See footnote (‡) on page 938.

STONE QUARRIES,* ETC., 1893 AND 1898—*continued.*

Year.†	Number of Hands employed.	Approximate Total Value of—			
		Stone raised.	Machinery and Plant.	Lands.‡	Buildings.
		£	£	£	£
1893 ...	342	40,302	42,865	30,060	11,014
1894 ...	273	19,100	34,790	11,300	6,170
1895 ...	237	18,048	18,380	6,700	2,780
1896 ...	306	23,326	16,370	7,550	3,830
1897 ...	276	18,360	12,320	13,920	3,250
1898 ...	280	19,182	12,435	12,180	3,520

Gold raised, 1897 and 1898.

1592. According to the estimate of the Mining Department, the gold raised in Victoria in 1898 was 837,257 ozs., which is more than the quantity obtained in 1897 by 24,491 ozs., representing, at £4 per oz., an increased value of £97,964.§ The following are the figures for the two years :—

QUANTITY AND VALUE OF GOLD RAISED IN 1897 AND 1898.‖

Year.	Gold raised in Victoria.	
	Estimated Quantity.	Value, at £4 per oz.
	ozs.	£
1897	812,766	3,251,064
1898	837,257	3,349,028
Increase ...	24,491	97,964

Gold raised, 1871 to 1893.

1593. From 1871 to 1891 the quantity of gold raised gradually diminished, with little intermission, from over 1,300,000 ozs. to only 576,000 ozs.; but since then there has been a steady annual increase, until over 837,000 ozs. was raised in 1898, which was the largest production since 1882. The subjoined figures give an estimate of the quantity of gold raised in 1871 and each subsequent year :—

ESTIMATED QUANTITY OF GOLD RAISED, 1871 TO 1898.

	ozs.		ozs.		ozs.		ozs.
1871 ...	1,355,477	1878 ...	775,272	1885 ...	735,218	1892 ...	654,456
1872 ...	1,282,521	1879 ...	758,947	1886 ...	665,196	1893 ...	671,126
1873 ...	1,241,205	1880 ...	829,121	1887 ...	617,751	1894 ...	673,680
1874 ...	1,155,972	1881 ...	858,850	1888 ...	625,026	1895 ...	740,086
1875 ...	1,095,787	1882 ...	898,536	1889 ...	614,839	1896 ...	805,087
1876 ...	963,760	1883 ...	810,047	1890 ...	588,561	1897 ...	812,766
1877 ...	809,653	1884 ...	778,618	1891 ...	576,400	1898 ...	837,257

Gold raised, 1851 to 1898

1594. Carrying on to the end of 1898 the calculations given in previous years, the following may be estimated as the total quantity and value of the gold raised in Victoria from the period of its first

* Including stone-crushing and tar-pavement works.——† See footnote (‡), page 938.——‡ The figures in this column apply to purchased land only; 17 of the stone quarries in 1893, and 11 in 1898, were on Crown lands, and in these cases no valuation of the land has been given.——§ For recommendations contained in the Reports of Royal Commission on Gold Mining made in 1890 and 1891, see issue of this work for 1890-91, Vol. II., paragraph 598.——‖ In 1899 the yield was 854,500 ozs

discovery, about the middle of 1851. The figures give an average per annum during the whole period of about 1,318,000 ozs., which is nearly 60 per cent. more than the quantity raised in 1898:—

ESTIMATED TOTAL QUANTITY AND VALUE OF GOLD RAISED IN VICTORIA, 1851 TO 1898.

Gold raised in Victoria.	Estimated Quantity.	Value. at £4 per oz.
	ozs.	£
Prior to 1898 ...	61,772,960	247,091,840
During 1898 ...	837,257	3,349,028
Total ...	62,610,217	250,440,868

Gold raised in Australasian Colonies.

1595. Since the first discovery, in 1851, of gold in Australasia, more than 106 million ozs. have been raised in the various colonies, nearly three-fifths of which was got in Victoria. Prior to 1898, Victoria was almost invariably the leading gold-producing colony of the group, but in 1898 its yield was about 83,000 ozs. less than in Queensland, and 213,000 ozs. less than in Western Australia, which has in recent years increased its production by leaps and bounds, from 110,000 ozs. in 1893 to over a million ounces in 1898. Victoria, however, still produced 15 per cent. more than the other four colonies combined. The following is a statement of the quantity recorded as having been raised in the respective colonies during each year, the figures for Western Australia being shown in a note *:—

GOLD RAISED IN AUSTRALASIAN COLONIES, 1851 TO 1898.†

Period.	Victoria.	New South Wales.	Queensland.	South Australia.	Tasmania.	New Zealand.
	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
1851 to 1855	11,218,772	1,920.200	...	...	...	...
1856 to 1860	12,712,946	1,360,763	4,127	...	...	35,845
1861 to 1865	8,341,464	2,233,001	52,580	...	...	2,288,088
1866 to 1870	7,105,820	1,309.911	512,803	...	3,504	3,218,916
1871 to 1875	6,130,962	1,612,227	1,319,952	24,685	25,296	2,412,446
1876 to 1880	4,136,753	639,435	1,668,819	59,910	154,883	1,596,899
1881 to 1885	4,081,269	624,835	1,327,366	88,366	235,973	1,237.456
1886 to 1890	3,111,373	546,726	2,598,254	130,218	169,017	1,028,571
1891 ...	576,400	153,336	576,439	35,533	48,769	251,996
1892 ...	654,456	156,870	615,558	30,218	45,110	238,079
1893 ...	671,126	179,288	616,940	42,905	37,230	226,811
1894 ...	673,680	324,787	679,511	42,795	58,059	221,615
1895 ...	740,086	360 165	631,682	37,054	54,964	293,491
1896 ...	805,087	296,072	640,385	31,504	62,591	263,694
1897 ...	812.766	292,217	807,928	33,900	71,131	251,645
1898 ...	837,257	340,493	920,048	31,961	74,233	280,175

* For Western Australia, the yield prior to 1889 has been estimated roughly at 120,000 ozs., and to this have been added the quantities which have since appeared in the export returns, viz., 15,492 ozs. in 1889, 22,806 ozs. in 1890, 30,311 ozs. in 1891, 59,548 ozs. in 1892, 110,890 ozs. in 1893, 207,131 ozs. in 1894, 231,513 ozs. in 1895, 281,265 ozs. in 1896, 674,994 ozs. in 1897, and 1,050,184 ozs. in 1898. This, however, is admitted to be considerably below the actual production.

† The gold referred to is the crude gold as obtained from the mines, and has not been reduced to any definite standard. It is believed that the fineness of Victorian gold is of a higher degree than that of any other colony.

1596. According to the foregoing table, the total quantity of gold raised in each colony from 1851 to 1898 has been as follows :— Gold produce of Australasia, 1851 to 1898.

SUMMARY OF GOLD RAISED IN AUSTRALASIA, 1851 TO 1898.

	ozs.
Victoria	62,610,217
New Zealand	13,845,727
Queensland	12,926,967
New South Wales	12,350,326
Western Australia	2,804,134
Tasmania	1,040,760
South Australia	597,805
Total	106,175,936

1597. The average value of the gold raised varies in the different colonies from £4 in Victoria to £3 10s. per oz. in Queensland. The aggregate quantities, as given in the foregoing statement in unrefined ounces, is estimated to be equivalent to 97,135,378 fine ounces, valued at £411,951,138.* Value of gold raised in Australasia.

1598. The South African gold-fields, which are of recent growth, and are rapidly increasing in importance, are now yielding nearly as much gold as Australasia. The following are the quantities and values raised in the Transvaal, where the principal gold-fields are located, in the last nine years :— Gold raised in South Africa.

GOLD RAISED IN THE TRANSVAAL, 1890 TO 1898.†

Year.	Quantity.	Value.
	ozs.	£
1890‡	529,117§	1,851,905
1891	833,632	2,917,702
1892	1,325,394	4,638,879
1893	1,610,335	5,636,122
1894	1,633,652‖	6,929,414
1895	2,075,538‖	8,803,749
1896	2,054,142‖	8,712,995
1897	2,705,600‖	11,476,260
1898	3,782,507‖	16,044,135

1599. By the following table—which, with the exception of the figures for Australasia, has been taken from the report for 1898 of Mr. Edward O. Leech, director of the United States Mint—it appears that during the three years ended with 1897, the world's annual production of gold has averaged more than 10⅕ million ozs., and appears to be increasing, being larger in 1897 than in any of the two previous Gold produce of the world, 1895 to 1897.

* Pure gold is worth to the public £4 4s. 10d., and standard gold (22 carats fine) £3 17s. 9d.
† For the first nine months of 1899 the output was 3,502,048 ozs.
‡ Accounted for in export returns only.
§ Estimated.
‖ Fine ounces.

years; the largest quantities in 1897 having been produced in Africa, the United States, Australasia, and Russia :—

GOLD PRODUCE OF EACH COUNTRY, 1895 TO 1897.*

Countries.	1895.	1896.	1897.
	ozs. fine.	ozs. fine.	ozs. fine.
Australasia	2,091,205	2,120,726	2,557,269
Europe—			
Great Britain	5,176	1,188	1,698
Russia	1,397,767	1,041,794	1,124,511
Sweden	2,540	3,681	4,083
Germany	107,542	55,104	66,424
France	...	...	...
Austria-Hungary	96,218	104,137	108,147
Turkey	256	353	353
Italy	6,063	6,782	9,404
Asia—			
Borneo	3,569	2,220	2,220
British India	225,244	296,563	350,598
China	170,328	146,285	106,865
Corea	33,824	34,915	35,464
Japan	25,015	34,506	34,506
Africa	2,163,736	2,156,611	2,820,582
America—			
Canada	92,440	135,943	291,561
United States	2,254,760	2,568,132	2,774,935
Mexico	290,250	403,046	456,481
Central American States ...	22,760	22,760	22,760
Colombia	139,939	145,125	145,125
Venezuela	43,997	45,882	45,882
Guiana (British)	107,059	107,059	111,001
Guiana (Dutch)	25,426	23,309	23,810
Guiana (French)	90,263	101,945	74,376
Brazil	46,498	48,428	58,253
Peru	3,086	5,639	30,380
Bolivia	3,241	36,281	36,281
Chile	68,092	68,092	44,921
Argentine Republic	15,238	15,238	6,656
Uruguay	1,316	1,625	1,862
Ecuador	6,429	6,429	6,429
The World	9,539,277	9,739,798	11,352,837

Value of the world's gold produce, 1895-6-7.

1600. According to the figures, the gold raised in the world during 1897, valued at £4 4s. 10d. per oz., was worth £48,154,950. During the three years the value of the whole quantity raised (30,631,912 ozs.) as shown in the table would amount to £129,930,359.

Gold derived from alluvial and quartz working.

1601. Of the gold which was raised during 1898 in Victoria, 531,941 ozs. were obtained from quartz reefs, and 252,479 ozs. from alluvial deposits. Results were obtained, however, for only about 94 per cent. of the total production. The respective proportions of quartz and alluvial gold raised were 68 and 32 per cent. in 1898, as against 67 and 33 per cent. in 1893—five years previously.

* See U.S. Mint Report, 1898, pages 270 and 271, where the quantities are given in fine ounces The figures for Australasia, however, have been obtained from other sources. The total production in 1898 was 13,777,734 ozs.

1602. The value of gold raised in Victoria in proportion to the number of miners at work* fell to its lowest point in 1879, when it only amounted to £76 1s. 2d. per head; and reached its highest point in 1892, when it was £111 6s. 3d. per head. The average in 1898 was exceeded only twice in the last fifteen years. The following figures, which have been derived from returns supplied by the Secretary for Mines, express this proportion for the last sixteen years:— Value of gold per miner.

VALUE OF GOLD PER MINER,† 1883 TO 1898.

	£	s.	d.		£	s.	d.
1883	95	6	3½	1891	97	0	6
1884	106	14	6¼	1892	111	6	3
1885	108	15	9¼	1893	105	3	11
1886	104	18	4	1894	96	15	6
1887	96	17	2	1895	99	0	4
1888	97	8	7	1896	100	5	0
1889	101	2	3	1897	99	1	2
1890	98	15	7	1898	108	14	5

1603. In proportion to the number of miners engaged in alluvial and quartz mining, the yield of gold from the latter has frequently been more than twice as large as that from the former. The following are the figures for the last five years:— Value of gold per alluvial and quartz miner.

VALUE OF GOLD PER ALLUVIAL AND QUARTZ MINER, 1894 TO 1898.

Year.	Alluvial Miners.			Quartz Miners.		
	£	s.	d.	£	s.	d.
1894	78	2	8	113	1	3
1895	77	12	9	106	19	9
1896	67	19	10	115	2	6
1897	71	14	8	113	12	1
1898	65	19	6	137	6	2

1604. Exclusive of the amounts paid by a few private companies, respecting which the Mining Department was unable to obtain information, the following are the dividends paid by gold mining companies in Victoria for the past five years. The total shows an increase between 1894 and 1898 of £155,912, or 34 per cent. Dividends of gold mining companies.

DIVIDENDS OF GOLD MINING COMPANIES, 1894 TO 1898.

1894	£459,722
1895	438,507
1896	519,695
1897	537,094
1898	615,634

1605. Of the steam-engines employed in connexion with gold mining, about a sixth are used on alluvial and five-sixths on quartz workings. The particulars have not been returned since 1892, but the Steam-engines used in mining.

* For the number of gold miners at work in 1893 to 1897, see paragraph 153, *ante*.

† These amounts are sometimes incorrectly spoken of as the "average earnings" of the miners. It has been pointed out on former occasions that, as a very large proportion of the miners are working on wages, the gold they raise no more represents their individual earnings than do the products of a manufactory represent the earnings of its operatives. For wages of miners, see Part "Interchange," *ante*. For figures relating to the years 1871-82, see issue of this work for 1893, Vol. II., paragraph 494.

following is the number of engines in use and their horse-power in each of the ten years ended with the year named :—

STEAM-ENGINES USED IN GOLD MINING, 1883 TO 1892.

Year.	Number.	Horse-power.	Year.	Number.	Horse-power.
1883	1,087	25,933	1888	1,119	27,472
1884	1,104	26,228	1889	1,123	26,680
1885	1,085	26,627	1890	1,104	27,153
1886	1,072	26,920	1891	1,094	27,812
1887	1,080	27,218	1892	1,112	27,780

Mining machinery.

1606. The value of gold-mining machines of all descriptions, as estimated by the Department of Mines, increased from £1,769,748 in 1896, and £1,828,408 in 1897, to £1,882,552 in 1898. In the latter year, the value of those used in quartz mining was £1,398,026, whilst that of those used in alluvial mining was only £484,526.

Average yield of quartz.

1607. It is impossible to obtain an exact statement of the yield of auriferous quartz in any year, owing to the fact that many of the owners of machines for crushing quartz are unable to give, or are precluded from giving, information respecting their operations. The officers of the Mining Department, however, succeeded in obtaining particulars respecting the crushing of 904,367 tons in 1893, and 1,000,901 tons in 1898. The average yield per ton of these crushings was 9dwt. 6gr. in the former year and 9dwt. 3gr. in the latter year. From similar estimates, extending over a long series of years, and embodying information respecting the crushing of 32,747,848 tons of quartz, an average is obtained of 10dwt. 4gr. of gold to the ton of quartz crushed.

Gold from various matrices.

1608. The following is the estimate of the Mining Department* of the gross and average yield of over $62\frac{3}{4}$ millions of tons of the various minerals and drifts from which gold is obtained in Victoria. The quantity of gold included in the estimate is one-third of the total yield of the Victorian gold-fields from the period of the first gold discoveries to the end of 1898 :—

GOLD FROM VARIOUS MATRICES.

Matrix.	Quantity Treated.	Yield of Gold.			
		Total.	Average per ton.		
From Quartz Reefs.	tons.	ozs.	oz.	dwt.	gr.
Quartz	32,747,848	16,648,534	0	10	4
Tailings and mullock ...	3,167,874	413,003	0	2	15
Pyrites	181,745	414,517	2	5	15
From Alluvial Workings.					
Washdirt	26,115,385	1,916,945	0	1	11
Cement	570,924	113,417	0	4	0
Total	62,783,776	19,506,416	0	6	5

* *Mineral Statistics*, 1898, page 11.

1609. The eight deepest shafts in the colony are those of Lazarus mine, 3,474 feet; Lansell's 180 mine, 3,352 feet; Shenandoah, 3,226 feet; New Chum and Victoria Company, 3,200 feet; New Chum Consolidated Company, 3,099 feet; New Chum Railway Company, 3,081 feet; Eureka, 3,050 feet; Carlisle, 2,930 feet. It thus appears that the greatest depth to which the earth's crust has been pierced in this colony by a shaft is about 3,500 feet. All these mines are at Bendigo. Deep shafts.

1610. Some years ago a silver mine was worked at St. Arnaud, in Victoria, but after a time it ceased to be remunerative, and the workings were abandoned. Since the establishment of a branch of the Royal Mint in Melbourne, a certain quantity of silver has been extracted annually from the crude gold lodged there for coining, and latterly the whole quantity of silver produced in Victoria has been from that source. It is difficult to obtain reliable information respecting silver produce, as, in consequence of the silver being generally associated with lead and other metals, it is sometimes found economical to send the ore in a concentrated form to Europe for smelting. For South Australia* no definite returns are available; and but little silver has been raised in Western Australia. The following, so far as it is known, are the quantities (in fine ounces) raised in Victoria, New South Wales, Queensland, Tasmania, and New Zealand, during the 36 years ended with 1898:— Silver raised in Australasian Colonies.

Silver Raised in Australasian Colonies, 1863 to 1898.

Year or Period.	Victoria.†	New South Wales.	Queensland.	Tasmania.†	New Zealand.†
	ozs.	ozs.	ozs.	ozs.	ozs.
1863 to 1865 ...	10,165	...		...	...
1866 to 1870 ...	8,187	14,621		...	48,186
1871 to 1875 ...	56,106	318,432		...	223,174
1876 to 1880 ...	116,042	335,734	2,771,733‡	...	110,244
1881 to 1885 ...	119,442	1,060,771		...	82,943
1886 to 1890 ...	136,321	30,753,233		168,500	90,062
1891 to 1895 ...	208,393	75,659,842	930,116§	4,304,500	252,353
1894	50,909	17,195,000	163,410	1,684,900	54,177
1895	50,647	12,340,500	223,759	1,011,800	85,024
1896	52,975	13,408,000	279,300	1,638,950	94,237
1897	69,633	12,755,000	234,065	1,134,000	183,892
1898	83,756	12,799,200	104,021	2,857,000	293,851
Total to end of 1898	861,020	147,104,833‖	4,319,235	10,102,950	1,378,942

* It is known that in South Australia, 1,620 tons of silver-lead ore, valued at £23,349, were raised in the ten years ended with 1884.

† In Victoria and New Zealand, nearly all the silver produced has been extracted from crude gold. The figures for Tasmania are only rough estimates.

‡ Including that raised in 1891.

§ For the four years, 1892 to 1895.

‖ No official statement having been published in New South Wales of the quantity of silver raised in that colony for the eleven years ended with 1898, the quantities for that period have been estimated in the office of the Government Statist, Melbourne, from information supplied by the secretaries of the leading mines and smelting companies to the end of 1893; and after that year, from the best available data.

Value of silver raised in Australasia.

1611. The total quantity of silver raised in five of the colonies, commencing with the year 1863, was estimated to be 196,624,950 ozs., which would represent a value, at 3s. 1d.* per fine oz., of £30,313,000.

Broken Hill silver mines.

1612. The bulk of the silver raised in Australasia is from the Broken Hill mines, situated in New South Wales, at or near the Barrier Ranges, close to the eastern frontier of South Australia. The principal mine is that of the Broken Hill Proprietary Company, which has a capital of £384,000 in 960,000 shares of 8s. each, fully paid up.† From the time of the formation of this company on the 13th August, 1885, to the 30th November, 1898, the ore treated (including moisture) amounted to 3,900,212 tons, the total yield of which was 367,970 tons of lead, 96,340,383 fine ozs. of silver, 41,999 ozs. of gold, and 4,043 tons of copper; of which 5,565,230 ozs. of silver, 30,993 tons of lead, 14,841 ozs. of gold, and 450 tons of copper were produced in the year 1897–8.‡ During the year 1897–8, the net furnace return per ton of ore treated was 16·83 per cent. of lead, and 13·28 ozs. of silver; whilst the average since the commencement was 11·89 per cent. of lead, and 24·70 ozs. of silver—the total treated having reached nearly 4,000,000 tons. Considerable attention has been given to the economical treatment of sulphide ores. The deepest shaft in the mine is over 900 feet. The dividends and bonuses paid, together with profits resulting from sales of outlying portions of the company's property, allotted to shareholders since the commencement, have amounted in value to £9,168,000, of which £6,848,000 were dividends and cash bonuses. For the six months ended with November, 1898, the profits amounted to £122,152, and the mine paid dividends to the amount of £144,000. The number of men permanently employed at and in connexion with the mine at Broken Hill on 31st May, 1894 (the latest date for which figures are available), was 3,352 (as against 2,938 twelve months previous), of whom 998 (as against 1,099 in 1893) were underground, 458 surface miners, and 647 contractors' men (quarrying, &c.), 738 were smelters, 198 were engaged on general construction and repairs, 104 on the amalgamating mill, 84 on crushing and chloridizing works, 61 on leaching works, and 64 on miscellaneous works. The mine wages and salaries paid during the half-year ended 30th November, 1898 (including contracts) amounted to £185,748; coal, coke, and limestone, £96,605; freight and charges on products, £71,724; and £47,935 sundry expenses; amounting to £402,012 as the total working account.

Price of silver in Melbourne.

1613. During the year ended 30th November, 1898, the average price obtained from the sale of refined silver (·996 fine) by the Broken Hill Proprietary Company was 2s. 5d. per oz., or nearly ¼d. less than what would have been received at the London market prices.

Cost of treating silver ores.

1614. The average cost of treating ore, including all charges, from the time of its arrival on the smelter floors to the delivery of the bullion on truck, at the Broken Hill mines during the six months

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* This was the average price for fine silver during the last seven years, as computed from an average of 2s. 10d. per oz., standard.

† Prior to the 12th February, 1890, the share capital was £320,000, divided into 160,000 shares of £2 each. Of the present shares 160,000 are registered in London.

‡ A considerable quantity of silver is also obtained from other Broken Hill mines; thus, in 1893 they raised 3,848,082 ozs. of silver and (exclusive of the British Broken Hill mine) 17,876 tons of lead.

ended 31st May, 1894, was £1 8s. 2d., per net ton of ore, made up of the following items:—Coke, 13s. 3½d.; limestone, 6s. 0¼d.; coal, 1s. 3½d.; castings, 2¼d.; stores, 4d.; water, 2½d.; labour, 6s. 3½d.; superintendence and assaying, 2¾d.; ironstone and scrap iron, 2½d.; all other items (rates, &c.), 1¼d. At Port Pirie, S.A., the cost of smelting a ton of dry ore was only 17s. 7¼d., and at Broken Hill £1 3s. 1¼d. per ton; whilst the cost for separating and refining was £1 9s. 3¾d. per ton. During the year 1893–4, the value per ton of ore treated was £4 5s. 4d., whilst the cost of production was £1 12s. 2d., resulting in a net profit of £2 13s. 2d.

Silver produce of each country.

1615. The next table, with the exception of the figures for Australasia, has been taken from Mr. Leech's Mint Report for 1898, and shows that the world's production of silver during the three years ended with 1897 averaged about 173 million ozs. per annum, whilst the returns for 1897 show an increase on those for 1895 and 1896 of upwards of 13 million ozs. per annum; the largest quantities raised in 1897 being in Mexico and the United States and the next largest in Bolivia, Australasia, and Peru :—

SILVER PRODUCE* OF EACH COUNTRY, 1895 TO 1897.

Countries.	1895.	1896.	1897.
	ozs. fine.	ozs. fine.	ozs. fine.
Australasia	13,711,730	15,473,462	14 376,290
Europe—			
Greece	1,139,041	1,028,609	1,028,609
Russia	401,646	336,127	284.625
Sweden	38.130	17,822	20,728
Norway	195,525	162,198	162.198
Germany	5,818,106	5,890,500	5,498.135
Austria-Hungary	2.184,265	1,863,921	1,970.332
Turkey	260,958	225,225	225 225
Italy	183,655	875,763	737.163
France	566,346	525,628	525,628
Spain	3 529,582	5,779,357	5,779,357
Great Britain	280,371	262,567	232,108
Asia—Japan	2,165,084	2,507,532	2,507,532
America—			
Canada	1,775,658	3,205,343	5,558,446
United States	55,726,945	58,834,800	53,860,000
Mexico	46,962,738	45,646,424	53,903,180
Central America	1,546,875	1,546,875	1,546,875
Colombia	1,687,950	1,687,950	1,687,950
Peru	3,162,973	2,254,021	9,784,680
Bolivia	21,999,966	15,000,000	15,000,000
Chile	5,031,907	5,031,907	6,440,569
Argentine Republic	328.170	328,170	383,470
Ecuador	7,734	7,734	7,734
The World	168,705,355	168,491,935	181,520,834

* See U.S. Mint Report, 1898, pages 270 and 271, where the quantities are given in fine ounces. The total production in 1898 was 169,409,873 fine ounces.

Value of the world's silver produce, 1895-7.

1616. At 2s. 6d. per oz.* the quantity of silver raised in the world during 1897 would be worth £22,690,000. The quantity raised in the three years ended with 1897 would be worth £69,163,000 at 2s. 8d. per oz. If the former ratio to gold (*i.e.*, 15½ to 1) were restored, as proposed by some bimetallists, this would increase the value of the world's annual production by £27,000,000.

World's production of gold and silver, 1851-1897.

1617. Since 1851 almost equal quantities of gold have been contributed by Australasia and the United States, or more than one-third in each case of the production of the whole world, the total quantity of which has probably amounted in the last 47 years to nearly 299 million ozs. During the same period one-third of the world's production of silver has also been obtained in the United States, and a somewhat smaller quantity from Mexico, whilst the quantity from Australasia (the mines of which are of recent growth) was equal to little more than a twenty-fourth of the world's production, amounting to over 3,485 million ozs. In connexion with the remarkable depreciation of silver before alluded to,* it is important to note that, whilst the annual production of gold has not increased, having stood at nearly 6¾ million ozs. during the decade 1851–60 and at the same during 1881–97, the annual production of silver rose, notwithstanding its declining value, from less than 30 million ozs. during 1851–60 to nearly 182 million ozs. in 1897. The following are the figures for successive decennial or quinquennial periods from 1851 to 1890, also for the years 1891 to 1897 :—

World's Production of Gold and Silver (in Ounces Troy), 1851 to 1897.

(000's omitted.)

Period.	Australasia. †	United States. ‡	Russia. ‡	Other Countries. ‡	Total.
Gold.	ozs.	ozs.	ozs.	ozs.	ozs.
1851 to 1860 ...	27,253,	26,670,	8,250,	5,140,	67,313,
1861 to 1865 ...	12,915.	10,720,	3,870,	2,675,	30,180,
1866 to 1870 ...	12,151,	12,215,	4,830,	2,485,	31,681,
1871 to 1875 ...	11,526,	9,476,	5,664,	2,354,	29,020,
1876 to 1880 ...	8,257,	9,531,	6,531,	2,760,	27,079,
1881 to 1885 ...	7,595,	7,730,	5,750,	4,178,	25,253,
1886 to 1890 ...	7,584,	8,070,	5.311,	6,764,	27,729,
1891	1,673,	1,605,	1,167,	2,017,	6 462,
1892	1,809,	1,596,	1 200,	2,519,	7,124,
1893	1,681,	1,740,	1,345,	2,797,	7,563,
1894	1,953,	1,911.	1,167.	3,640,	8,671,
1895	2,091,	2,255,	1.398,	3,795,	9,539,
1896	2,121,	2,568,	1,042.	4,009,	9,740,
1897	2,557,	2,775,	1,125,	4,896,	11,353,
Total Gold ...	101,166,	98,862,	48,650,	50,029,	298,707,

* In 1897 the average price per oz. paid by the British Mint for silver bullion for coinage (standard silver) was slightly more than 2s. 3½d., and for the three years 1895–7 it was 2s. 5⅜d.. See table following paragraph 559 *ante*.

† Crude gold.

‡ Fine ounces since 1892.

World's Production of Gold and Silver (in Ounces Troy) 1851 to 1897—*continued.*

(000's omitted.)

Period.	United States.	Mexico.	Australasia. *	Other Countries.	Total.
Silver.	ozs.	ozs.	ozs.	ozs.	ozs.
1851 to 1860 ...	2,330,	146,910,	...	138,680,	287,920,
1861 to 1865 ...	27,970,	76,035,	10,	72,995,	177,010,
1866 to 1870 ...	48,385,	83,735.	71,	83,069,	215,260,
1871 to 1875 ...	121,262,	98,290,	598,	75,732,	295,882,
1876 to 1880 ...	157,622,	98,433,	822,	99,518,	356,395,
1881 to 1885 ...	182,900,	124,003,	2,313,	129,742,	438,958,
1886 to 1890 ...	230,980,	150,520,	32,746,	144,904,	559,150,
1891	58,330,	40,990,	17,101,	34,666,	151,087,
1892	58,000,	45,630,	14,201,	34,871,	152,702,
1893	60,000,	44,363,	17,115,	41,227,	162,705,
1894	49,500,	47,038,	19,148,	53,141,	168,827,
1895	55,727,	46,963,	13,712,	52,304,	168,706,
1896	58,835,	45,646,	15,473,	48,537,	168,491,
1897	53,860,	53,903,	14,376,	59,381,	181,520,
Total Silver ...	1,165,701,	1,102,459,	147,686,	1,068,767,	3,484,613,

NOTE.—The figures for Australasia have been estimated in the office of the Government Statist, Melbourne; those for other countries prior to 1871 are derived from estimates by Soetbeer, published in *L'Almanach de Gotha,* and those for subsequent years have been taken chiefly from the United States Mint Reports. The total world production of gold in 1898 was 13,777,734 ounces, and of silver 169,409,873 fine ounces.

World's relative production of gold and silver, 1873 to 1898.

1618. As the annual supply of gold and silver has an important bearing on the price of silver, the ratio of silver to gold production has been deduced for the last 26 years from the figures in the following table, showing the value of the gold, and the quantity and value of the silver, produced in the world for each year since 1872, when the price of silver first began to decline. These are given in the last column, by which it will be seen that the supply of silver relatively to gold was tolerably uniform until 1879, the average of the seven years ended with that date being nearly 13 (12·8) ozs. of silver to 1 of gold; but after that year the proportion rose rapidly, until in the years 1890–92 it stood

* Fine ounces since 1892.

at over 22½, since then, however, it has shown an annual decline, and in 1898 was only 12 times that of gold :—

PRODUCT OF GOLD AND SILVER IN THE WORLD, 1873–98.

(000's omitted.)

Years.	Gold (Value).	Silver.		Proportion in Quantity of Silver Produced to 1 of Gold.
		Quantity.	Value.	
	£	Fine ozs.	£	
1873	20,042,	63,267,	17,108,	13·4
1874	18,906,	55,300,	14,724,	12·4
1875	20,313,	62,262,	16,162,	13·0
1876	21,604,	67,753,	16,317,	13·3
1877	23 750,	62,648,	15,675,	11·2
1878	24,792,	73,476,	17,634,	12·6
1879	22,708,	74,250,	17,371,	13·9
1880	22,188,	74,791,	17,841,	14·3
1881	21,458,	78,890,	18,704,	15·6
1882	21,250,	86,470,	20,465,	17 3
1883	19,875,	89,177,	20,622,	19·1
1884	21,187,	81,597,	18,920,	16·4
1885	22,583,	91,652,	20,326,	17·3
1886	22,083,	93,276,	19,328,	18·0
1887	22,036,	96,124,	19,590,	18·5
1888	22,958,	108,827,	21,288,	20·1
1889	25,726,	125,420,	24,431,	20·7
1890	25,096,	134,380,	29,395,	22·7
1891	26,283,	143,994,	29,638,	23·3
1892	28,929,	151,949,	27,699,	22·6
1893	32,462,	162,705,	24,235,	21·5
1894	37 213,	168,827,	22,254,	19·5
1895	40 946,	168,706,	23,021,	17·7
1896	41,808,	168,491,	24,045,	17·3
1897	48,726,	181,520,	22,690,	16·0
1898	68,982,	169,410,	20,735,	12·3

NOTE.—The figures in this table, except those in the last column and the produce of Australasia, have been calculated in the office of the Government Statist, Melbourne, and have been derived from the United States Mint Reports, where the values have been given in dollars, which have been reduced to sterling money.

Relative values of gold and silver.

1619. The relative values of silver and gold have always been variable. Until comparatively recent years, however, the fluctuations have been but slight. In the 102 years, 1687 to 1789, the ratio of the value of the former to that of the latter was as high as 15·39 to 1, viz., in 1734 ; and as low as 14·14 to 1, viz., in 1760. After 1789 the ratio was never below 15 to 1, but until 1874 only twice rose above 16 to 1, viz., in 1812, when it rose to 16·11 to 1, and in 1813, when it rose to 16·25 to 1. Since 1873, the fall in the gold price of silver and consequent difference in value between the two metals has, with little intermission, been growing steadily year by year, reaching its maximum in 1898, when it took nearly 35 parts of silver to be equivalent to 1 part of gold. In 1890 the ratio fell suddenly to 19·8, owing, it is believed, to the artificial demand caused by large purchases of bullion

by the United States Treasury, but such appreciation did not last long, and in 1893 the ratio rose to 28·4, and with one exception (1896) has continued to rise ever since. The following figures show the relative values of the two metals in each of the 28 years, 1871 to 1898 :—

RELATIVE VALUE OF SILVER AS COMPARED WITH GOLD, 1871 TO 1898.*

	Ounces of Silver required to purchase 1 oz. of Gold.		Ounces of Silver required to purchase 1 oz. of Gold.
1871	15·57	1885	19·41
1872	15·63	1886	20·78
1873	15·92	1887	21·13
1874	16·17	1888	21·99
1875	16·59	1889	22·09
1876	17·88	1890	19·76
1877	17·22	1891	20·92
1878	17·94	1892	23·72
1879	18·40	1893	28·39
1880	18·05	1894	32·09
1881	18·16	1895	31·09
1882	18·19	1896	29·72
1883	18·64	1897	33·93
1884	18·57	1898	34·66

Minerals other than gold existing in Victoria

1620. Silver, tin, copper, antimony, lead, iron, and coal have been mined for at different times in Victoria, but with the exception of black and brown coal, and small quantities of tin and antimony, no minerals of importance were raised in 1898. The silver obtained in that year was, as has already been stated, extracted at the Mint during the process of refining the gold. The results of tin mining at Mount Wills have proved disappointing, but the low yields are believed to be due rather to the method of treatment than to the poverty of the stone ; the yield of this and other mines in 1898 amounted to 87 tons of tin ore, valued at £3,913. Some argentiferous and auriferous lead ores have recently been discovered near Casterton, which promise to give good yields. The following metals also exist in Victoria, but up to this date have not been discovered in paying quantities :—Bismuth, cobalt, cadmium, lead, manganese, molybdenite, osmiridium, silver, mercury, and zinc-blende. Various lime-stones and marbles, as well as kaolin and other clays, also exist, and have been worked to a certain extent.

Coal.

1621. The coal raised in Victoria in 1898 amounted to 242,860 tons,† as compared with only 91,726 tons in 1893, showing an increase in 5 years of 151,134 tons, or 165 per cent., making a total yield up to the end of 1898 of 1,264,588 tons, valued at £680,046. An impetus has been given to coal-mining by the Government reducing the railway freights to ½d. per ton per mile or by about ¼d. less than the actual cost, and by preference being given in Government contracts to the

* Taken from the U.S. Mint Reports.

† Exclusive of 2,869 tons of brown coal valued at £767.

local products, as against the somewhat superior imported article. The principal mines are at Coal Creek, Korumburra, Jumbunna, Outtrim, and neighbouring districts, which had a population in 1898 of about 5,000. In these and other parts of Gippsland, the area of country containing seams of workable coal is about 100 square miles, in which, it is estimated, there are about 20 million tons of coal available.* The following statement shows the progress of the industry since 1892, also, for comparison, the quantity and value of coal imported in the seven years. It will be observed that in 1899 the colony produced one-third of the quantity required for local consumption.

COAL RAISED IN COLONY AND IMPORTED, 1892 TO 1899.

Year.	Raised in Colony.		Imported.		
				Value.	
	Quantity.	Value.	Quantity.	Official.†	Actual.‡
	tons.	£	tons.	£	£
1892	23,363	20,044	739,703	675,047	520,874
1894	171,660	94,999	542,037	195,415	320,705
1896	226,562	113,012	502,972	194,035	289,733
1897	236,277	108,640	527,374	228,647	330,707
1898	242,860	103,099	562,329	257,688	393,630
1899	262,380	113,522	532,676	276,137	352,898

Coal raised in Australasian Colonies.

1622 At the present time the coal-producing colonies of Australasia are, practically, New South Wales, New Zealand, and Queensland, whilst Victoria now raises about one-third of the quantity required for her own consumption. In these colonies nearly $6\frac{1}{3}$ millions tons of coal were raised in 1898, of which New South Wales contributed three-fourths; as against over $4\frac{1}{3}$ millions tons raised five years previously of which nearly four-fifths came from New South Wales. The total increase in the production of coal for the five years under review was 1,953,147 tons, or 44 per cent. The increase in New South Wales was 1,427,923 tons, or 44 per cent.; in Queensland, 143,531 tons, or 54 per cent.; in Tasmania, 15,074 tons, or 44 per cent.; in New Zealand, 215,485 tons, or 31 per cent.; and in Victoria, 151,134 tons, or 165 per cent. The following are the quantities returned as

* For further particulars about coal and lignite (or brown coal) and the economic value of Victorian coal for various purposes see issue of this work for 1893, Vol. II., paragraphs 515 to 517.

† Value according to Customs Return found by adding 10 per cent. to value in New South Wales as given by importers.

‡ Estimated value found by adding to cost at Newcastle the actual freight, insurance, primage, &c.

brought to the surface in each of those colonies during a series of years :—

COAL RAISED IN AUSTRALASIAN COLONIES, 1876 TO 1898.

Year.	Tons of Coal raised in—				
	New South Wales.	Queensland.	Tasmania.	New Zealand.	Victoria.
1876	1,319,918	50,627	6,100	...	1,095
1877	1,444,271	60,918	9,470	...	2,420
1878	1,575,497	52,580	12,311	162,218	Nil
1879	1,583,381	55,012	9,514	231,218	Nil
1880	1,466,180	58,052	12,219	299,923	3
1881	1,769,597	65,612	11,163	337,262	Nil
1882	2,109,282	74,436	8,803	378,272	10
1883	2,521,457	104,269	8,872	421,764	428
1884	2,749,109	129,980	7,194	480,831	3,280
1885	2,878,863	209,698	5,334	511,063	800
1886	2,830,175	228,656	10,391	534,353	86
1887	2,922,497	238,813	27,763	558,620	3,357
1888	3,203,444	311,412	41,577	613,895	8,573
1889	3,655,632	265,507	40,300	586,445	14,596
1890	3,060,876	338,344	53,812	637,397	14,601
1891	4,037,922	271,603	45,524	668,794	22,834
1892	3,780,968	257,803	35,669	673,315	23,363
1893	3,278,328	264,403	34,042	691,548	91,726
1894	3,672,076	270,705	30,922	719,546	171,660
1895	3,738,589	323,068	33,349	740,827	194,227
1896	3,909,517	371,390	43,548	792,851	226,562
1897	4,383,591	358,407	42,530	840,713	236,277
1898	4,706,251	407,934	49,116	907,033	242,860

NOTE.—In 1898 Western Australia raised 3,250 tons.

Price of coal 1898.

1623. During 1898 the average value of coal at the pit's mouth was as follows :—Newcastle, New South Wales, 5s. 5d. ; Queensland, 7s. 5d.; Western Australia, 10s.; Tasmania, 7s. 11d.; New Zealand, 10s.; Victoria, 8s. 5d. per ton.

Coal raised in various countries.

1624. The following is a statement of the quantity of coal raised in various countries during one year, the returns being generally those for 1897, except where otherwise indicated. The total output for 1897 was 622,343,000 tons, or 8·9 per cent. more than that recorded for 1892—five years previously :—

ANNUAL PRODUCTION OF COAL IN VARIOUS COUNTRIES, 1897.*

Country.	Tons.
United Kingdom	202,130,000
United States	178,769,000
Germany	118,538,000
France	30,303,000
Austria-Hungary	35,282,000
Belgium	21,189,000
Russia	11,027,000
Australasia (1898)	6,319,000
Other Countries	18,786,000
Total	622,343,000

* The figures in this table (except those for Australasia) have been derived from *The Statistical Year-Book of Canada* for 1899.

Minerals other than gold raised.

1625. According to the estimate of the Mining Department, the following are the values of metals and minerals other than gold raised in Victoria from 1851 to the end of 1898 :—

VALUE OF MINERALS AND METALS OTHER THAN GOLD, 1851 TO 1898.

Name of Metals or Mineral.	Estimated Value.		
	1851 to 1897.	Year 1898.	Total.
	£	£	£
Silver	144,003	9,300	7,446 145,857*
Black coal	576 947	103,099	680,046
Brown coal	15,926	767	16,693
Lignite	3,086	...	3,086
Copper ore	206,395	...	206,395
Tin ore	691,187	3,913	695,100
Antimony ore	176,664	510	177,174
Silver-lead ore	5,520	240	5,760
Iron ore	12,540	...	12,540
Diamonds	108	...	108
Sapphires, &c.	630	...	630
Gypsum	497	...	497
Magnesite	12	...	12
Kaolin	7,504	...	7,504
Infusorial earth	680	280	960
Clays (brick)	199,398	2,500†	201,898‡
,, (pottery)	28,545	2,000†	30,545‡
Building stones (basalt, sandstone, granite, slate, flagging, &c. ...	2,893,089	20,000†	2,913,089‡
Total	4,962,731	142,609	5,105,340

NOTE. - The greater part of the information given in this return has been taken from the Report of the Secretary for Mines and Water Supply for 1898.

Miners for minerals other than gold.

1626. The following, according to the estimate of the Mining Department, was the number of men engaged in searching for various kinds of minerals and metals other than gold§ at the end of 1898. As compared with 1893, the figures show an increase of 333 in the miners for coal and lignite, and of 4 in those for silver and lead, but a decrease of 27 in those for tin ; the net increase being 251 :—

MINERS FOR MINERALS OTHER THAN GOLD, 1898.

	Number of Miners.		Number of Miners.
Black coal	887	Silver lead ore	10
Brown coal	6	Antimony ore	11
Tin ore	14	Infusorial earth ...	2
		Total	930

* Extracted from gold at the Melbourne Mint.
† Estimated.
‡ From 1866 only.
§ For number of gold miners, see paragraph 153 *ante*.

1627. In New South Wales the number of hands employed in coal mining alone in 1898 was 10,258; whilst the average output of coal was about 458 tons per miner, as compared with 887 miners with an average output of 274 tons per miner in Victoria. Coal miners in New South Wales.

1628. The revenue derived from the gold-fields amounted to £25,286 in 1893-4, and £24,521 in 1897–8. The amounts are made up of the following items:— Revenue from gold-fields.

REVENUE FROM GOLD-FIELDS, 1893–4 TO 1897–8.

Source of Revenue.	1893–4.	1894–5.	1895–6.	1896–7.	1897–8.
	£	£	£	£	£
Miners' rights	9,502	6,063	9,302	8,677	6,063
Business licences	115	120	155	148	120
Rents for leases of auriferous and mineral lands	10,871	12,181	12,125	14,149	12,181
Rents for mining on private property ...	1,889	3,316	2,398	2,613	3,316
Water-right and searching licences ...	1,595	844	1,029	843	844
Fees for leases	1,314	1,997	1,507	1,949	1,997
Total	25,286	24,521	26,516	28,379	24,521

1629. The mining industry has always been assisted by votes of money from the general revenue, the details of which appear in Part *Finance ante*,* for the five or six years ended June, 1898. In the succeeding year, 1898–9, the expenditure on this industry was £59,021, principally for the cost of the Mining Department itself, on which £35,161 was spent; £13,513 on an allowance to the Railway Department for the carriage of coal; £5,575 on underground surveys; and the balance of £4,772 on other items. During the period from 1875–6 to 1879–80 the sum of £21,050 was lent by the State to mining companies, but only £1,237 has been repaid; the balance (£19,813) being written off as non-recoverable. In addition to the above expenditure, advances were made to assist mining enterprise from Loan moneys under Acts 1451 and 1566. Under the former Act, £140,000 was authorized, and the expenditure to the end of June, 1900, amounted to £111,233, principally on advances to mining companies, which exhausted £35,235; for cutting tracks, £25,556; for draining metalliferous areas, £17,000; as advances to miners for prospecting, £11,000; and the balance on various miscellaneous works. Under Act 1566 £170,000 was authorized, and the total amount expended to the end of June, 1900, was £41,294, the chief expenditure being for pioneer work in connexion with mining, and £20,000—the whole amount Aid to mining.

* See pages 152 and 178 *ante*.

authorized—for the purchase of the patent rights of the cyanide process. The following table shows the details of the items referred to :—

ADVANCES TO MINING COMPANIES FROM LOAN MONEYS ON MINING ENTERPRISE TO 30TH JUNE, 1900.

	Amount Authorized.	Amount Expended.
UNDER TREASURY BONDS ACT 1896 (1451).	£	£
Advances to companies for development of mining—		
Preliminary expenses		232
For draining metalliferous areas		17,000
Advances to companies		35,235
Construction of roads and tracks for mining—		
Preliminary expenses		544
Formation of roads	140,000	8,149
Cutting tracks		25,556
Plant for testing metalliferous material, including expenses		7,873
Construction of races and dams for gold sluicing ...		2,242
Advances to miners for prospecting		11,534
Disseminating information in Great Britain, &c. ...		1,837
Expenses of Exhibition		1,031
Total expenditure	140,000	111,233
UNDER ACT 62 VICT. 1566.		
Carrying on pioneer mining, procuring machinery, &c.	60,000	16,842
Purchase of cyanide process patent rights ...	20,000	20,000
Construction of roads and tracks for mining purposes	45,000	...
Construction of races and dams	12,000	...
Advances to miners for prospecting	15,000	2,915
Disseminating mining information in the colony and in other countries	5,000	362
Advances to assist in developing pigments ...	1,000	640
Equipping schools of mines with mining appliances	12,000	535
Total expenditure	170,000	41,294

Diamond drills.

1630. In 1894, inclusive of the cost of wear and tear of diamonds, £26,065 was spent on working diamond drills, of which £16,087 was expended in gold prospecting, and £9,978 in coal prospecting. The average cost of boring with diamond drills was 13s. $0\frac{3}{4}$d. per foot, and with other machines on contract, 3s. $6\frac{3}{4}$d. per foot. The average cost of boring for coal alone with diamond drills was 11s. 6d.

Operations of diamond drills.

1631. Of the eighteen diamond drills belonging to the Mining Department, seven were engaged in prospecting for gold and eleven for coal at the end of December, 1894. The number of bores made in 1894 was 157, viz., 136 in search of gold, and 21 in search of coal; the aggregate depth bored was 28,348 feet for gold, and 18,793 feet for coal.

1632. The estimated value of the produce raised from Victorian mines and quarries in 1894 to 1898 is summarized as follows :— Value of mining produce.

VALUE OF MINING PRODUCE, 1894 TO 1898.

Product.	1894.	1895.	1896.	1897.	1898.
	£	£	£	£	£
Gold	2,694,720	2,960,344	3,220,348	3,251,064	3,349,028
Other minerals ...	113,632	122,980	117,049	149,384	142,609
Stone from quarries ...	19,100	18,048	23,326	18,360	19,182
Total	2,827,452	3,101,372	3,360,723	3,418,808	3,510,819

1633. The estimated value of the principal items of agricultural pastoral, and mining produce raised in Victoria, during each of the last twenty-five years, is given in the following table. It should be borne in mind that the prices of agricultural and pastoral produce, on which the value mainly depends, fluctuates from year to year.* The decreased valuation in 1893 is principally due to the adoption of a fresh basis of calculation, which gave a much lower but, it is believed, a more accurate result. In several of the years the value of the pastoral produce was greater than that of the other two industries combined :— Agricultural, pastoral, and mining produce.

VALUE OF AGRICULTURAL, PASTORAL, AND MINING PRODUCE, 1874 TO 1898.

Year.	Estimated Value of—			Total.
	Agricultural Produce.	Pastoral Produce.†	Mining Produce.‡	
	£	£	£	£
1874 ...	4,410,436	9,840,562	4 740,679	18,991,677
1875 ...	4,835,894	9,541,551	4,475,876	18,853.321
1876 ...	5,574,239	10,069,570	3.949.135	19,592,944
1877 ...	5,792,898	8,652,471	3,322,264	17,767.633
1878 ...	4,912,745	8,360,265	3,211,990	16,485,000
1879 ...	5,875,313	6,375,965	3,136.527	15,387,805
1880 ...	5,395,021	9,855,800	3,397,661	18,648.482
1881 ...	5,893,874	8.684.218	3,533,658	18,111 750
1882 ...	6,439,972	9,297,812	3,681,245	19,419,029
1883 ...	7,372,143	10,203.914	3,357,252	20,933,309
1884 ...	6,565,527	9,887.229	3.228.738	19,681,494
1885 ...	7,118,388	9,049.679	3,091,244	19.259,311
1886 ...	7,260,735	8,911,336	2,839,120	19,011,191
1887 ...	7,078,653	8,651,599	2,661,625	18,391,877
1888 ...	6,601,601	9,016.573	2,711,024	18,329,198
1889 ...	7,845,739	9,063,910	2,687,098	19,596,747
1890 ...	7,800,139	10,105.498	2,682,444	20.588,081
1891 ...	7,770,658	10,237,952§	2 503,272	20,511,882§
1892 ...	7,204.401	10,092,558	2,726,433	20,023,392
1893 ...	5,222,918	7,676,129§	2,785,201	15.684,248§
1894 ...	5,066,786	7,057,710	2,827,452	14,951,948
1895 ...	6.056,166	7,896,335	3,101,372	17,053.873
1896 ...	6,891,990	7,663,065	3,360,723	17.915,778
1897 ..	6,892,820	6,391,583	3,418,808	16,703,211
1898 ...	6,653,295	7,216,919	3 510,819	17.381.033

* For prices of agricultural produce in different years, see table following paragraph 1417 *ante*.——† The pastoral produce referred to is that derived from the live stock kept by farmers as well as that kept by graziers and squatters.——‡ Including the value of stone raised from quarries.——§ The basis of valuation was revised in 1891, and again in 1893, giving on each occasion, but especially the latter, a reduced result.

Agricultural, pastoral, mining, and manufacturing produce.

1634. The census taken on the 5th April, 1891, enabled an approximate return to be made of the value of articles manufactured in the twelve months prior to that date, and the net result has already been stated to be £10,694,106.* Since the census there has been an increase of about 5 per cent. in the number of hands employed, and on the assumption that the manufacturing produce has increased in the same proportion, the value in 1898 would be £11,229,000, which amount being added to the figures in the lowest line of the last column in the above table, a total of the gross value of the agricultural, pastoral, mining, and manufacturing produce will be obtained for the year 1898, amounting in the aggregate to £28,610,000.

Annual value of other miscellaneous products

1635. In addition to the foregoing, there are numerous other products concerning which it is difficult to obtain information, but an attempt has been made to estimate the annual value of some of them —such as poultry, game, fish, timber, and a total is arrived at of nearly $2\frac{3}{4}$ millions sterling, or about the same as the mining industry, as follows :—

VALUE OF MISCELLANEOUS PRODUCTS, 1894–5 TO 1897–8.

—	894–5.	1895-6.	1896–7.	1897–8.
	£	£	£	£
Honey and wax ...	23,605	5,171	12,575	4,091
Poultry	2,257,300	2,257,300	2,257,300	2,257,300
Rabbits and hares ...	52,991	93,127	135,890	168,273
Wild fowl	13,768	8,006	9,947	3,976
Kangaroo and opossum skins (net exports only)	16,037	264	4,964	12,658
Fish	65,678	57,140	60,095	73,544
Timber (product of forest saw-mills only) ...	101,556	104,115	78,619	104,734
Bark (wattle)	100,184	82,589	92,356	71,344
Total	2,631,119	2,607,712	2,651,746	2,695,920

Annual wealth from poultry.

1636. The principal miscellaneous product, for which an estimate is given, is poultry. The importance of this industry has perhaps never been fully realized, as its value as estimated is nearly two-thirds of that of the mining production, and is about the same as the total wool production of the colony, according to the returns of the last Census (1891). The number of owners of poultry were, 142,797 ; and the number of poultry, 4,097,094, giving an average of 28 to each owner. The results which have been arrived at, after careful computation, thus show a gross annual income to each poultry owner of £15 16s. 2d., or of 11s. $3\frac{1}{2}$d. per fowl, as compared with a capital outlay of say 3s. 6d. This return from a single fowl is very striking, considering that the wool produced in the colony in 1898, only gave a gross annual return per sheep of 3s. $6\frac{3}{4}$d., and it would thus appear that the yearly income from a

* See paragraph 1586 *ante*.

single fowl is equal to the value of the wool from $3\frac{1}{3}$ sheep. The poultry industry should, therefore, prove a most profitable one, as there is room for great expansion in the outlet for both eggs and poultry, and the cost of production probably does not exceed 5s. per head.

1637. The following is an estimate of the value of the gross annual production in Victoria from the agricultural, pastoral, mining, and manufacturing industries in 1880, 1890, and 1897, taking into account the annual payments abroad for interest and absentees' incomes ; also the approximate expenditure of introduced capital in each year :— Value of gross annual production less payments abroad.

Value of Annual Production in Victoria in 1880, 1890, and 1897.

Year.	Population.		Value of Annual Production.*			Annual Payments abroad of—	
	Total Mean.	Males between 15 and 65.	Total.	Per Unit of— Total Population.	Per Unit of— Male Population, 15–65.	Interest on Public Borrowings.	Net Income of Absentees.
			£	£ s. d.	£ s. d.	£	£
1880	850,343	272,341‡	22,396,739	26 6 9	82 4 9	1,040,000	750,000§
1890	1,118,500	375,058‡	31,282,187	27 19 4	83 8 7	1,650,000	1,500,000§
1897	1,172,790	351,685	26,980,800	23 0 1	76 14 5	2,000,000	1,228,000‖

Year.	Value of Annual Production, less Annual Payments abroad.			Approximate Expenditure in Colony of capital introduced by—	
	Total Amount.	Per Unit of— Total Population.	Per Unit of— Male Population, 15-65.	State and Public Corporation.†	Private Individuals.
	£	£ s. d.	£ s. d.	£	£
1880	22,286,739	26 4 2	81 16 8	890,000	790,000
1890	33,382,187	29 16 11	89 0 0	2,750,000	2,500,000
1897	23,752,800	20 5 1	67 10 10	..	..

No allowance has been made for the return from Victorian investments in other colonies in pastoral, mining, and other properties, which are known to be considerable. It will be observed that the annual production has fallen off in recent years by nearly £7 per head of the male population between 15 and 65.

1638. The following table shows, for Victoria and New South Wales, the approximate total value of imports for home consumption, and of exports of domestic produce in each of the eight years 1891 to 1898. Exports of domestic products in Victoria and New South Wales compared with imports for consumption.

* Including agricultural, pastoral, mining, and manufacturing.
† Deducting one-fourth of the total loan expenditure by the State, to allow for the expenditure out of the colony on railway rails, rolling stock, &c.
‡ As shown by census.
§ Assumed.
‖ According to Income Tax Commissioner.

To arrive at these results, the total value of imports and exports have been reduced by the value of the re-export trade (exports of other than home production) as shown by the customs returns of the two colonies, except in regard to the following articles, for which the customs returns could not be relied on, and for which the net import or net export (as the case may be) is substituted :—Wool, gold, live stock, hides and skins, wheat and flour, and butter. By net import or export is meant the difference between the gross imports and gross exports of any article:—

APPROXIMATE VALUE OF IMPORTS FOR HOME CONSUMPTION AND EXPORTS OF DOMESTIC PRODUCE IN VICTORIA AND NEW SOUTH WALES, 1891 TO 1898.

Year.	Victoria.				New South Wales.		
	Imports.	Exports.	Excess of— Imports over Exports.	Excess of— Exports over Imports.	Imports.	Exports.	Excess of Exports.
	£	£	£	£	£	£	£
1891 ..	14,653,414	8,948,549	5,704,865	..	19 102,491	19,663,114	560,623
1892 ..	10,807,765	7,847,766	2,959,999	..	15,374,862	16,570,593	1,195,731
1893 ..	6,721,502	6,746,239	..	24,737	11,608,464	16,422,652	4,814,188
1894 ..	6,740,658	8,296,605	..	1,555,947	10,407,111	15,182,843	4,775,732
1895 ..	6,637,966	8,713,354	..	2,075,388	10,189,540	16,131,910	5,942,370
1896 ..	8,306,782	7,950,463	356,319	..	13,204,206	15,653,045	2,448,839
1897 ..	9,031,199	10,316,387	..	1,285,188	13,749,060	15,755,782	2,006,722
1898 ..	9,891,486	8,994,828	896,658	..	13,355,176	16,549,733	3,194,557

Large exports of wool, coal, and silver in New South Wales.

1639. The excess in the exports from New South Wales over those from Victoria is more than accounted for under three articles, viz., wool, coal, and silver—lead metal and ore. The values of the exports of these articles in 1898 were as follow :—

Article.	Victoria.	New South Wales.
	£	£
Wool	2,228,476	8,368,700
Coal	...	962,668
Silver, &c.	...	1,723,337
Total of three articles ...	2,228,476	11,054,705

Patents.

1640. The patents for inventions applied for in 1898 numbered 955, or 85 less than in 1897, and also less than in 1896, but greater than in any other year since 1891. The greatest amount of business was transacted in 1896 and 1897. Since 1854 the total number of patents

applied for has been 15,856. The business done since 1st March, 1890, when the new Patents Act came into force was as follows:—

PATENTS 1890 TO 1898.—PATENTS APPLIED FOR AND GRANTED UNDER THE NEW PATENT ACT, 1ST MARCH, 1890.

Year.	Applications Received.	Patents Granted.
1890 (ten months only)... ...	855	515
1891	956	556
1892	882	539
1893	830	467
1894	853	458
1895	866	491
1896	1,048	627
1897	1,040	628
1898	955	572

Copyrights.

1641. The first Victorian Copyright Act* came into force in December, 1869. Copyrights—especially those for literary productions—had been increasingly numerous during the eleven or twelve years ended with 1894 during which period they averaged about 690 per annum; whereas prior to 1883 the largest number registered in one year was 347, and since 1894 the highest was 440 in 1896, while the number fell to as low as 315 in 1898. The following copyrights have been registered since the passing of the original Act:—

COPYRIGHTS, 1870 TO 1898.

Subject of Copyright.	Copyrights Registered.					
	Prior to 1894.	During—				
		1894.	1895.	1896.	1897.	1898.
DESIGNS.						
Articles of manufacture, chiefly of—						
Metals	419	18	19	37	40	32
Wood, stone, cement, or plaster	132	5	4	7	8	18
Glass	23	1	3	1	1	1
Earthenware	24	4	1	1	1	1
Ivory, bone, papier-mâché, &c. ...	105	5	2	5	11	6
Woven fabrics	29	3	1	3	...	...
Miscellaneous	21	1	1	1	2	...
LITERARY PRODUCTIONS.						
Literary works	6,832	835	289	283	264	171
Dramatic "	152	6	5	4	1	5
Musical "	120	2	12	19	7	11

* 33 Vict. No. 350, repealed and re-enacted by 54 Vict. No. 1076.

COPYRIGHTS, 1870 TO 1898—*continued.*

Subject of Copyright.	Copyrights Registered.					
	Prior to 1894.	During.				
		1894.	1895.	1896.	1897.	1898.
WORKS OF ART.						
Paintings	16	...	3	2	...	...
Drawings	44	2	5	5	4	3
Engravings	1,395	6	3	13	28	51
Photographs	1,304	29	39	59	36	16
Sculpture	9	1	...	...	2	...
Total	10,625	918	387	440	405	315

Trade marks.

1642. Provision for the registration of trade marks was established under *The Trade Marks Registration Act* 1876, which came into operation on the 22nd September of that year. The law has since been amended, and is now embodied in the Consolidated Act (54 Vict. No. 1146). The registration of a person as the proprietor of a trade mark is *primâ facie* evidence of his right to its exclusive use, subject to the provisions of the Act as to its connexion with the good-will of a business. From the period of the commencement of the Act to the end of 1898, 5,802 trade marks were submitted for registration, and 4,465 were registered. During the year 1898 the number submitted was 421, or 43 less than in 1897, and the number registered was 350, or 40 less than in 1893.