PART VIII.—PRODUCTION.

375. The mode of disposing of Crown lands in Victoria has Alienation undergone numerous changes. At first it was necessary that all ^{of Crown} lands should be offered at auction before passing into the hands of private individuals, an upset price, according to its value, being placed upon it by the Government. Until 1840 the minimum upset price was 12s. per acre, it was then raised to 20s. Land which had passed the auctioneer's hammer without being bid for was open to be bought by any one at the upset price. Large blocks of land, called special surveys, and a block of a square mile in extent upon ^{Special} surveys. each squatting run, were, under certain Orders in Council, exempted from auction, and were permitted to be purchased at £1 per acre.

376. In 1860 the system was changed, and a law was passed Land Act permitting surveyed country lands to be selected at a uniform upset ¹⁸⁶⁰ (²⁴ Vict. No. 117). price of £1 per acre, the only exception being where two or more selectors applied simultaneously for one block, in which case a limited auction, confined only to such applicants, was to take place. The successful selector had the option of either paying for the whole of his block in cash or only for half; in the latter case, renting the other half at 1s. per acre per annum, with the right to purchase at the same rate per acre as he paid for the first moiety.

377. Another change was made in 1862. Large agricultural $L_{and Act}$ areas were proclaimed open for selection, within which land could Vict. No. be selected, at a uniform price of £1 per acre, lot being substituted for limited auction in the event of there being more than one applicant for an allotment. For one-half of the allotment it was necessary to pay at once; but for the remainder the purchase-money was allowed to be paid by instalments of 2s. 6d. each, extending over eight years. No more than 640 acres could be selected by one person in twelve months. Three alternative conditions to be complied with within twelve months of the date of selection, were imposed upon selectors under this Act:—Either that the selections be enclosed with a substantial fence; or that a habitable dwelling be erected on the land; or that one acre out of every 10 acres selected be cultivated.

378. The next change was made in 1865, when an Act was passed Amending providing that agricultural land could be acquired by payment of 2s. 1865(28 Viet. No. per acre per annum during three years, and by effecting improvements 237).

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to the extent of 20s. per acre within two years of the commencement These conditions having been complied with, the lessee of the lease. might, at the expiration of three years, if he resided upon the land, purchase his holding at £1 per acre; or, if not, he could require his leasehold to be offered at auction at the uniform price of 20s. per acre, with the value of improvements added in his favour. There was also a clause* whereby land adjacent to gold fields could be occupied in blocks of 20 acres each without having been previously surveyed. This clause was originally framed to meet the demand for the occupation of land adjacent to gold fields, but its operation was gradually extended by regulation to a circuit of 30 miles around gold fields, and the same individual was allowed to hold several 20-acre licences for the occupation of adjacent land to the total extent of 160 acres. The licensee, in all cases, was bound either to reside on his holding or to fence and cultivate a certain portion.

Land Act 1869 (33 Vict. No. 360).

379. The operation of the last-mentioned clause was so successful in leading to the occupation of the land that free selection before survey was the main principle of the next Land Act, which was passed in 1869, and came into operation on the 1st February, 1870. Under it, the area allowed to be selected by one person was limited to 320 acres; and it was further provided that the selection should be held under licence during the first three years, within which period the licensee was obliged to reside on his selection at least two and a half years, to enclose it, to cultivate 1 acre out of every 10, and generally to effect substantial improvements to the value of 20s. per acre. The rent payable during this period was 2s. per acre per annum, which was credited to the selector as part payment of the principal, viz., 20s. per acre without interest. † At the expiration of the three years' licence, the selector, if he obtained a certificate from the Board of Land and Works that he had complied with these conditions, could either purchase his holding at once, by paying up the balance of 14s. per acre, or might convert his licence into a lease extending over seven years. at an annual rental of 2s. per acre, which was also credited to the selector as part payment of the fee-simple. On the expiry of such lease, and due payment of the rent, the land became the freehold of the selector. The Statute also contained provision for the sale of Crown lands by auction at an upset price of £1 per acre, or such higher sum as the Governor in Council may direct, the whole extent to be sold in any one year not to exceed 200,000 acres.

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* The 42nd clause.

† See paragraph 411 post.

380. The Land Act of 1869, just described, was amended by the Amending Land Act Land Act 1878, which came into operation at the beginning of 1879. 1878 (42 Vict. No. 634). The principal alterations made by this amending Act, as regards selection for agricultural purposes, was to increase the period during which the land was held under licence from three to six years, and the time of compulsory residence from two and a half years to five years, and to reduce the annual rental per acre for a licence or lease from 2s. to 1s., which thereby allowed the payments to extend over a period of twenty years instead of ten years as formerly.* It also contained a provision for selection by persons who did not desire to reside on their selections. In such cases, however, the rent was 2s. per acre, and the total price to be paid for the land $\pounds 2$ per acre. Improvements to the value of £2 per acre, moreover, had to be made during the six years' licence, of which at least half were to be made before the expiration of the third year. Such licences are not to be issued in any one year for an aggregate area of more than 200,000 acres. Both these Acts expired by effluxion of time on the 31st December, 1884.

381. According to the Land Act 1869, the unalienated and Pastoral unselected Crown lands⁺ were occupied for pastoral purposes either under Land as "runs" under licence or lease, or as "grazing rights." Runs were $\frac{1001}{Runs}$. of two kinds: those in existence at the time of the passing of the Land Act 1869 (viz., on 29th December, 1869), and not since forfeited-described in the Act as "Existing runs;" and those created since that date-described in the Act as "New runs." The former kind, which were by far the more numerous and extensive, were held under pastoral licence renewable annually, and were unlimited as to size. The latter, which were but few in number, were held under lease for any term not exceeding 14 years—the right to the lease having, in the first instance, been purchased at auctionand were not permitted to be of larger extent than sufficient to carry 4,000 sheep or 1,000 head of cattle. An important privilege enjoyed by lessees of "new runs" was that they were entitled to the pre-emption of 320 acres on which their improvements were situated at the rate of £1 per acre.[‡] The annual rent payable for both descriptions of runs was assessed in accordance with the grazing capability of the land licensed or leased, on the basis of 1s. for every sheep and 5s. for every head of cattle the run was capable of carrying.

A ct 1869.

* See paragraph 411 post.

† Since the 1st December, 1883, the Crown lands situated in the Mallee country have been dealt with under a special Act.—See next paragraph.

t Under an Order of Her Majesty's Council, the lessees of the old or "existing" runs had been lowed a "pre-emptive right" to 640 acres.

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Grazing rights. As, however, the right of pre-emption to 320 acres at £1 per acre, without conditions as to residence, cultivation, etc., was considered too great a sacrifice of the public estate, the occupation of "new runs" was discouraged by the Government; but, in order to allow of the waste lands of the Crown being used for pastoral purposes, advantage was taken of a provision embodied in sub-section 7 of the 47th section of the Act, whereby the Governor in Council was empowered to grant a licence—known as a "grazing right"—to depasture live stock upon any park lands, reserves, or other Crown lands not forming part of any run or common. Under this provision, the unoccupied pastoral lands were divided up into blocks and offered for tender under annual licence.

Mallee Pastoral Leases Act 1883. 382. An Act dealing with the unalienated lands situated in the north-western portion of the colony, comprising about one-fifth of its extent, or some $11\frac{1}{2}$ million acres wholly or partially covered with the various species of stunted trees of which the "Mallee scrub" is composed, was passed in 1883. This Act, entitled the *Mallee Pastoral Leases Act* 1883 (47 Vict. No. 766), came into force on the 1st December, 1883. It divides the country just described into two main divisions—the larger division containing about ten million acres, being known as the "Mallee country"; and the other containing about one and a half million acres, and situated along the southern and eastern borders of the Mallee country, being called the "Mallee border."

Mallee blocks.

383. The Act directs that the "Mallee country" be divided into blocks of various sizes, each block to be subdivided into two parts. For either of these, at the option of the applicant, a lease may be granted under certain conditions, the lessee being also bound to occupy the other division. The principal conditions are that the lessee destroy all vermin (native dogs, rabbits, etc.) upon the whole block within the first three years, surrender to the Crown the unleased portion at the end of five years, and keep 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 20 from the commencement of the Act, at the end of which term (viz., on the 1st December, 1903) the land, with all improvements, reverts to the Crown. Every person who had occupied under pastoral or grazing licence any portion of the Mallee country for two years prior to the 1st December, 1883, was entitled to take up one Mallee block comprising the whole or any portion of the area occupied by him; but, in the event of his not applying for this privilege within one month

of the passing of the Act, the right of lease was to be sold by auction to the highest bidder. The annual rent to be charged for the leased portion of the block was fixed at 2d. for each sheep, or 1s. for each head of cattle depastured during the first five years, 4d. for each sheep or 2s. for each head of cattle during the second five years, and 6d. for each sheep or 3s. for each head of cattle during the remainder of the term; and for the unleased portion of the block 2d. for each sheep or 1s. for each head of cattle; but in no case is the annual rent for the whole block to be less than 2s. 6d. per square mile. No lessee of a Mallee block can acquire any portion thereof in fee-simple.

384. The "Mallee border" subdivided into "Mallee allot-Mallee allotments. ments," 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 the leased portions of a Mallee block; but the annual rent is fixed by regulations issued by the Governor in Council. On the 25th November, 1889, an Act * was passed, providing that, at any time within three years of the passing thereof, a lessee of a Mallee allotment might select out of such allotment an area, the total extent of which, together with that of any other land previously selected by him, should not exceed 320 acres; the land so selected to be subject to the same conditions as selections under the Land Act 1884. In case of this provision being taken advantage of, however, the Crown reserves to itself the right to resume as much of the leased portion as is in excess of 1,000 acres.

385. A measure entitled the Land Act 1884, replacing the Land Land Act Act 1869, and subsequent Land Acts, except the Mallee Pastoral Vict. No. Leases Act 1883, came into operation on the 29th December, 1884. Its main features are to restrict the further alienation of the public estate by limiting the extent which may be sold by auction, and by substituting for the previously existing method of selecting agricultural land a system of leasing such lands in certain defined areas, at the same time conserving to the lessee the privilege of acquiring from his leasehold the fee-simple of 320 acres under deferred payments. The Act classifies the whole of the unalienated Crown lands-exclusive of the "Mallee country," dealt with under the Mallee Pastoral Leases Act 1883, as follows :---Pastoral lands, grazing and agricultural lands, auriferous lands, lands which may be sold by auction, swamp lands, State forest reserves, timber reserves, and water reserves. The area of land comprised within each of the above classes respectively is

* The Mallee Act 1889 (53 Vict. No. 1,040).

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delineated by projections bearing a distinguishing colour or shading on maps of the several counties in which such land is situated. These maps are deposited with the Clerk of Parliaments. The Governor in Council may, however, by proclamation increase or diminish the area comprised in any of the above-mentioned classes, except those relating to lands which may be sold by auction.

Pastoral occupation.

386. Under the Land Act 1884, the pastoral lands are to be leased in "pastoral allotments," capable of carrying from 1,000 to 4,000 sheep, or from 150 to 500 head of cattle, for any term not exceeding 14 years,* at the end of which the land, together with all improvements thereon-taken at a valuation as below mentioned-reverts to the Crown, the right to the lease to be granted to the first person who applies for the land after it has been first publicly notified as available, but if there should be two or more applicants, the lease is to be offered at auction. The annual rent payable for pastoral allotments is to be computed according to the grazing capability of the land, at the rate of 1s. per head of sheep and 5s. per head of cattle, upon a basis of not more than 10 acres to a sheep, and the equivalent number of acres for cattle. The principal conditions of the lease are that all "vermin" (rabbits, native dogs, etc.) upon the land shall be destroyed within the first three years, and that all buildings and improvements shall be kept in good condition and repair. Upon the expiration of the lease, the lessee is to be paid by any in-coming tenant the value of all improvements effected and calculated to increase the carrying capability of the land, at a price not exceeding the sum expended thereon, but in no case to exceed 2s. 6d. per acre. Alienation of pastoral lands is not permitted, except in the case of a lessee of a pastoral allotment, who has the right to purchase, at any time during the currency of his lease, 320 acres as a homestead.

Agricultural 387. The agricultural and grazing lands are also to be leased in and grazing lands. "grazing areas," varying in size, but not exceeding 1,000 acres, for any term not exceeding 14 years,* at the end of which term the land, together with all improvements—to be allowed for at a valuation limited to 10s. per acre—reverts to the Crown. The annual rent of a grazing area is to be appraised by valuers, but is in no case to be less than 2d. or more than 4d. per acre, any improvements that may

* No lease is to be granted for a longer term than 14 years from the commencement of the Act.

happen to be on the land at the commencement of the lease to be charged for in addition at the rate of 5 per cent. per annum on the capital value thereof. The only important conditions imposed on the lessee of a grazing area are that he shall, within the first three years, fence the land and destroy all "vermin" thereon. Any person over the age of 18 years is entitled to take up a grazing area; selectors, under former Acts, however, being limited to an area, which, together with the land previously selected, must not exceed 1,000 acres. 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.

388. The lessee of a grazing area is at liberty, after the issue Selection of of his lease, to select out of the area leased a block or "agricultural allotments" allotment" not exceeding 320 acres in extent; 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 320 acres in all. A licence is then issued to occupy the agricultural allotment (which is thereafter no longer considered portion of the grazing area), under the same terms and conditions as are allowed to selectors under the Land Acts of 1869 and 1878, as detailed in previous paragraphs;* but persons desirous of selecting an agricultural allotment cannot do so without first taking up a grazing area. Provision is also made for grazing area lessees to take up agricultural allotments as non-residence Non-residence licensees under similar conditions as under the Land Act 1878.⁺ The selections, area for which licences may be issued during any year for non-resident selections is limited to 50,000 acres. Other important features of the Act 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 allotment may, after the expiration of two years, obtain an advance of money (by giving a "licence lien") secured up to one-half of the improvements effected; that married women are permitted to take up land as pastoral or grazing lessees, but are not allowed to select an agricultural allotment

* See paragraphs 379 and 380 ante.
‡ See paragraph 380 ante.
‡ These privileges, although not previously enacted, are also to be allowed to selectors under previous Acts.

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out of the grazing area leased to them; and that facilities are given to allow of a non-resident selector becoming a resident selector, and vice vers \hat{a} .*

Only one selection may be made. 389. Under this Act, only one grazing area can be taken up by one person, and, consequently, if the area so taken up should be less than 1,000 acres in extent, the lessee is not allowed by any further selection to make up this quantity. In like manner, if the agricultural allotment he selects from his grazing area is less than 320 acres, he cannot by any further selection add to it or make it up to 320 acres. This provision does not, however, apply to selectors under former Acts, who if they have not selected as much as 320 acres, may, out of a new leasehold, convert into an agricultural allotment, and eventually into a freehold as much as will, with their old selection, make up 320 acres.

Auriferous Lands. 390. 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; and, for purely pastoral purposes, under licences renewable annually for periods not exceeding five years, in blocks not exceeding 1,000 acres. No auriferous land is permitted to be alienated in fee-simple.

Swamp lands.

Systems of land selection in Australasian colonies. 391. Swamp lands are to be first drained, and may then be leased in areas not exceeding 160 acres for a term of twenty-one years.

392. 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 18 years of age or over, and not a married woman,[‡] 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.§ The principal features of this portion of each system, corrected to date, is detailed under nine heads in the following table :—

* See footnote (‡) on page 241.

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

‡ In Tasmania and Western Australia married women may select land.

§ In all the colonies, as soon as the purchase-money is paid in full, the residence clause is no longer enforced.

	· · · ·			Queensland.		ılia.			
	Conditions of Selections.	Victoria.	New South Wales.	Home- steads.	Other Selections.	South Austra	Western Australia.	Tasmania.	New Zealand
1.	Maximum area allowed Acres	320	640 and 2,560	160	320 to 1,280	• •	1,000	320	640 and 2 000
2.	Price per acre	£1	£1	2s. 6d.	£1 upwards	*	10s.	£1	10s. to £2
3. 4.	Time over which purchase may extend	20	33	5	t	*	20	14	14
	Years	6	5	5	10	6	5	anytime	6t
5. 6.	Annual payment per acre Value of necessary improve-	1s.	1 s.	6d.	+		6d.	2s.	6d. to 4s.
	ments per acre	20s.	10s.	10s.	Fencing	Fenc- ing.	10s. and Fencing	••	20s.
7.	Time allowed for making im- provements Years	6	5	5	5	5	20	••	6
ø. 9	vated	10	••	••		••	••		20
	Years	5	5	5	† .	••	5	14	6‡

CONDITIONS OF LAND SELECTION IN AUSTRALASIAN COLONIES, 1889-90.

393. In Victoria the land is taken up in the first instance in blocks Land system of Victoria. not exceeding 1,000 acres, under lease for a term not exceeding 14 years, at a rental of from 2d. to 4d. per acre, out of which leasehold a "selection," not exceeding 320 acres, may be taken up under the conditions named in the preceding table. The right of selection has now been extended to the Mallee District. See also paragraphs 387 to 389 ante.

394. In New South Wales a territorial division of the colony is Land made into three zones, viz., the eastern, the central, and the western system of New South The maximum area allowed in the eastern division is 640, division. and in the central 2,560 acres. 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 annual rental of not less than 2d. per acre, with the right of conditional purchase at any time during the currency of The price per acre does not include interest, for which 4 the lease. per cent. per annum is charged and collected out of the annual instal-The first payment is 2s. per acre in advance, with an ments paid.

Wales.

* See account of South Australian land system, following paragraph 396 post.

† See paragraph 395 post.

t In New Zealand, the fee simple may be acquired, and residence may be dispensed with, on double the quantity of improvements being effected. § See footnote (§) on page 242.

interval of 3 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. Upon certain lands proclaimed "special areas," higher prices are payable, and the deposits and instalments are increased in proportion.

Land

395. In Queensland, within the limits named in the table, the system of Queensland, maximum area allowed to be selected may be varied in any district by the Government. In that colony the system of leasing has partly supplanted that of alienating the fee-simple of the land by means of deferred payments. The selector first occupies the land under licence, at an annual rental of not less than 3d. per acre, and subsequently, if the condition as to fencing (or improvements of equal value) has been complied with, may obtain a lease for 50 years; the annual rental for the first 10 years being not less than 3d. per acre, but for every succeeding period of 5 years to be fixed by the Land Board. The selector has the right to purchase at not less than 20s. per acre, at any time during the currency of the lease on proving personal residence for 5 years. Rents paid during periods of personal occupation are reckoned as purchase-money. The foregoing remarks relate to agricultural farms; in the case of grazing farms, leases of areas up to 20,000 acres are granted for 30 years at a minimum rental of $\frac{3}{4}$ d. per acre per annum for the first 10 years, but liable to be increased every subsequent 5 years.

Land system of South Australia.

396. 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 new system has been kindly furnished for this work by Mr. G. S. Wright,

Secretary for Crown Lands, South Australia:---

LAND SYSTEM OF SOUTH AUSTRALIA.

On the passing of the Crown Lands Act of 1888, the system of credit selection was abolished, and the following mode of obtaining land introduced. Crown lands can be taken up on leases with right of purchase or perpetual leases. Small blocks not exceeding 20 acres in area, 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 6 years of the term, at the price fixed by the Land Board, the minimum price being five shillings 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 revalued every 14 years. The rent for the first 14 years is as gazetted, and for subsequent terms of 14 years will be fixed by the Land Board at least twelve months before the expiration of every period of 14 years. The lands allotted are to be fenced within five years from the date of lease, and in the case of working men's blocks the condition of personal residence by the lessee, or any member of his family, is enforced.

397. In Western Australia, the particulars given in the table Land relate to the South-Western (or Home) District only. In the five other land divisions of the colony, land may be taken up in specially declared areas only by selectors, who need not reside upon the land, in areas of from 100 to 5,000 acres at not less than 10 shillings per acre, payable in 10 yearly instalments, the conditions required being fencing and the expenditure on improvements of an amount equal to purchase-money. Besides selections under the system of deferred payments, with residence, in the south-west division selections may be made, without residence, by paying double the amount of purchasemoney, *i.e.*, 1 shilling per acre per annum, the other conditions remaining the same, and there is also a method of selecting land by direct payment under certain conditions, the extent of a selection being limited to 1,000 acres in a declared area, and to 5,000 acres outside such area, at a price of not less than 10 shillings per acre; the conditions being fencing within 3 years, and an expenditure of 5 shillings per acre on improvements within 7 years from date of survey. Moreover, pastoral lessees, excepting those in the eastern division, have the privilege of selecting a certain proportion of their leasehold adjoining the Homestead prior to the 1st March, 1892, under similar conditions, except in regard to residence, as in the case of other selectors in the respective districts; thus, in the south-western division, the proportion allowed to be selected is 5 per cent. with a maximum of 3,000 acres, and in the other divisions, excepting the eastern, 1 per cent. with a maximum of 5,000 acres; provided also, in the latter case, the runs are stocked with 10 sheep or 1 head of large stock to every 1,000 acres leased.

Land system of Western Australia.

398. In Tasmania, $33\frac{1}{3}$ per cent. is added to the price named in Land the table (£1 per acre) as interest for the period of 14 years. In Tasmania. mining districts in Tasmania selection is allowed in lots ranging from

10 to 100 acres, the price being $\pounds 1$ per acre, with one-fourth in addition added for credit for a term of 7 years. Residence and improvement is compulsory, and fee-simple cannot be obtained until the expiration of 7 years. These lots are sold, reserving to the Crown the right of mining at a distance of not less than 50 feet from the surface. During the first half of 1889, a consolidated Land Act was proposed with clauses providing more effectually for residence and improvement, and limiting selection so as to prevent as much as possible monopoly and speculation.

Land system of New Zealand.

399. In New Zealand, the price per acre varies with the quality of the land. There is besides a system of "perpetual leasing" in that colony, under which as much as 640 acres of first-class or 2,000 acres of second-class land may be leased with the right to acquire the freehold as soon as the prescribed improvements are effected at an annual rental equal to 5 per cent. of the value of the land. The first lease is for 30 years, with the option of renewal for succeeding periods of 21 years, the rent being assessed afresh at each renewal. The lessee may acquire the freehold at any time after the required improvements are effected, if the land is not within a proclaimed gold-field. The conditions as regards residence and improvement are the same as under the deferred payment system. The "Homestead system" is also in force throughout the colony to a limit of 30,000 acres in any one year. Under this system no payment is made for the land. After 5 years' residence and the cultivation of one-third of the selection if open land, and one-fifth if bush land, the selector can claim his Crown grant. No family or household can hold more than 200 acres of first-class land or 300 acres of second-class land under this system. Owing however to the liberal provisions of the Amending Acts of 1887 and 1888 under which lands are opened for cash, or a perpetual lease, or deferred payments at the option of the applicant, the Homestead system has fallen generally into disuse. In the case of bush land personal residence is not necessary.

400. In dealing with the figures relating to the alienation of the Ambiguity of the term public estate, it is customary in Victoria to consider Crown lands "alienation," as as sold or alienated-only when the right to the title in fee-simple applied to Crown has been acquired. Consequently a large proportion of the land set lands. down as alienated in any year, having been originally selected with right of purchase under certain conditions, the purchase-money being payable by annual instalments, without interest, may have been virtually parted with many years previously. The land set down as

alienated in any year, therefore, consists of the area sold by auction, that granted without purchase, and that selected or conditionally purchased—of which the purchase had been completed during the year. Some of the neighbouring colonies, however, adopt a different principle, for, in their statements of land alienated, that sold conditionally—which, of course, is liable to revert to the Crown should the conditions of sale not be complied with—is included with that of which the fee-simple has been obtained. Both methods are useful in their way, the Victorian plan giving the more accurate account of the condition of the public estate, and the other giving the better indication of the progress of settlement. In the following paragraphs it may perhaps be sometimes necessary to use the term "alienated" in connexion with land which is only conditionally purchased, but, when this occurs, such explanation will be given as will prevent a mistake.

401. The total extent of Crown land sold and finally parted with Crown lands in Victoria up to the end of 1889 was 15,827,347 acres, and the ^{alienated} to end of extent granted without purchase was 14,965 acres. The whole area alienated in fee-simple was thus 15,842,312 acres, of which 6,615,958 acres, or 42 per cent., were sold by auction, and nearly the whole of the remainder was originally acquired by selection under the system of deferred payments.

402. The selected lands, of which the purchase had not been Crown lands completed up to the end of the year, amounted to 10,598,367 acres. Of this extent it is estimated that 3,979,595 acres had been forfeited or abandoned, and had reverted to the Crown. The remainder, representing approximately the whole area in process of alienation under deferred payments, amounted to 6,618,772 acres.

403. According to the latest computation, the total area of the crown lands colony is 56,245,760 acres; and if from this be deducted the sum of unalienated. the lands granted, sold, and selected, amounting—less the extent forfeited—to 22,461,084 acres, it will follow that the residue, representing the Crown lands neither alienated nor in process of alienation, amounted at the end of 1889 to 33,784,676 acres.

404. The whole of this residue, however, is not available for Public settlement, for it embraces lands occupied by roads, the unsold 1889. 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 7,591,267 acres, also that portion of the colony known as the Mallee country, containing 11,572,000 acres, leased for pastoral purposes under a special Act, and 6,320,841 acres occupied under lease or licence for various terms of years—from the extent unalienated and unselected, already stated to have been 33,784,676 acres, it will be found that the available area is narrowed to 8,300,568 acres. This will be at once seen by the following table, which shows the position of the public estate at the end of 1889:—

PUBLIC ESTATE OF VICTORIA ON 31ST DECEMBER, 1889.

Condition of Land.	Condition of Land.								
Land alienated in fee-simple		15,842,312 6 650 000							
Boads in connexion with the above	••	1 322 000*							
Water reserves	•••	288.160							
Reserves for agricultural colleges and experimental farm	ns	146.008†							
Timber reserves and State forests		2,063,750							
Other reserves		2,126,200 [†]							
Unsold land in towns, beds of rivers, etc., etc.	•••	1,613,921							
Mallee country §		11,577,000							
Land in occupation under-		, ,							
Pastoral leases		1,711,710							
Grazing area leases		4,241,227							
Grazing licences for auriferous lands		367,904							
Available for settlement at end of 1889		8,300,568							
Total area of Victoria		56,245,760							

Crown lands available for settlement.

405. The area of the colony, exclusive of the Mallee country, is 44,673,760 acres, of which, at the end of 1889, 22,492,312 acres, or 50 per cent., were already alienated or in process of alienation; 7,560,039 acres, or 17 per cent., were occupied by reserves, etc.; 6,320,841 acres, or 14 per cent., were occupied under lease¶ for pastoral purposes; and 8,300,568|| acres, or 19 per cent., were available for

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settlement.

* Calculated at 5 per cent. of the gross extent sold and selected up to the end of 1889.

 \dagger Only 13,393 acres of this area is for the sites of colleges and experimental farms, the balance being intended as an endowment in aid. Of this balance 126,074 acres were leased for agricultural and grazing purposes, and return an annual revenue of £5,806.

‡ In 1889, the area of pastoral lands available for occupation was reduced by nearly 2 million acres, which was reserved as an endowment to State education; hence the area under "Other Reserves" shows a considerable increase, and that available for occupation a considerable decrease as compared with the previous year.

§ Occupied for pastoral purposes, under the *Mallee Pastoral Leases Act* 1883, for terms not exceeding 20 years. See paragraph 424 post. It has recently been thrown open to selection.

|| Of this area 4,924,383 acres is temporarily held under grazing licences, renewable annually; only 90,148 acres of it may be sold by auction.

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

406. Following the classification provided for under the existing Classification of Land Act, the estimated area of Crown lands, exclusive of the Mallee available land. country, available, under the Land Act 1884, at the end of 1889 may be divided as follows :----

CLASSIFICATION OF LAND AVAILABLE AT END OF 1889.

Pastoral lands	• • •				2,439,842*
Agricultural and grazing	lands	•••		• • •	4,574,244
Auriferous lands	• • •	•			1,108,682
Swamp lands					87,652
May be sold by auction				• • •	90,148
	Total	• • •	•••	• • •	8,300,568

407. The land finally alienated from the Crown in fee-simple Crown lands alienated, during 1889 amounted to 258,233 acres, of which 257,702 acres were 1889. sold, and 531 acres were granted without purchase. The total extent was less by 181,257 acres than in 1888, and was also much smaller than in any other of the previous eleven years, during which period the extent alienated annually usually exceeded 400,000 acres, and only once did it fall below 300,000 acres.

408. Of the area sold, 13,681 acres, or 5 per cent., were disposed Crown land sold by of by auction, and 1,959 acres under pre-emptive rights, private auction. contracts, etc., whilst the remainder had been in the first instance selected in previous years under the system of deferred payments. The extent sold by auction in 1889 was from 5,500 to 6,500 acres less than in any of the three preceding years, and also far less than in any of the sixteen years ended with 1885, during which period the annual average extent so sold was 63,700 acres, and the maximum over 150,000 acres.

409. The amount realized for Crown lands finally alienated in Amount realized on 1889 was £330,054, or at the rate of £1 5s. 7d. + per acre. Of this Crown land alienated sum, only part was received during the year, nearly all the remainder in 1889. having been paid in former years as rents and licence fees. The proportion sold by auction realized £73,662, or an average of £5 7s. 8d. per acre; and the proportion sold otherwise than at auction realized £256,392, or an average of £1 1s. 1d. per acre.

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410. The principle of deferred payments in connexion with sales Deferred payments of Crown lands by auction was introduced for the first time in the on lands sold by auction.

* See footnote (‡) on page 248.

† 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 paragraph 411 post.

Land Act 1884,* it being necessary to pay one-fourth of the price bid at the time of sale, the remaining three-fourths being, at the option of the purchaser, spread over three years, payable quarterly, in instalments of equal amounts, bearing interest at the rate of 6 per cent. per annum. The majority of purchasers do not avail themselves of this concession, as only £125,928, out of a total of £595,459 during the last five years was left unpaid at the time. the amount received being £469,531, as well as £13,923 for interest.

Amount realized, 1836 to 1889.

411. From the period of the first settlement of the colony to the end of 1889 the amount nominally realized by the sale of Crown lands was £24,311,585, or at the rate of £1 10s. 9d. per acre. It must, however, be remembered that payment of a considerable portion of this amount 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 10 years without interest, the amount of purchase-money is really equivalent to only 15s. 6d. per acre, and if it be extended over 20 years, it is reduced to 12s. 6d. per acre.

Selection of public

412. During the year 1889, 461 applications were granted for the lands, 1889. selection of 71,251 acres under the deferred payment system. The whole of this area, excepting 6 acres, was selected out of grazing areas leased in allotments limited to 320 acres, nominally for agricultural purposes; and the remaining 6 acres were taken up in parcels of 3 acres each, for the purpose of residence. Except in regard to the latter, which were under the Land Act 1878, these transactions were all under the Land Act 1884. The following is a summary of the selectors, the number of acres selected, and the amount of purchasemoney payable under each authority during the year 1889:-

SELECTORS AND EXTENT SELECTED, 1889.

Selections of C for pu	rown Lands, rpose of—	1889,	Lega	lization.	Number of Selectors.	Area Selected.	Purchase money payable. (Nominal.)
Agriculture, " Residence	with resid withoutres dence 	ence	Land Act Land Act Land Act	; 1884, sec. 42 ; 1884, sec. 49 ; 1878, sec. 10	418 41 2	Acres. 65,862 5,383 6	£ 65,862 10,766 30
Total	•••				461	71,251	76,658

* 48 Vict. No. 812, Section 71.

† See paragraphs 379 and 380 ante.

413. The number of selectors approximates closely to the Number of selectors, number of approved applications. The following are the numbers ^{1870 to 1889} in each of the years named in the last table, those under the different sections of the *Land Acts* 1869, 1878, and 1884 being distinguished :---

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APPROVED APPLICATIONS (SELECTORS), 1870 TO 1889.

			N	umber of Sele	ectors of Land	L.	
			For Purposes of	of Cultivation.			
	Year.		With Resi- dence. (Sec. 19, Act No. 360; and Sec. 42, Act No. 812.)	Without Residence. (Section 11, Act No. 634.; and Sec. 49, Act No. 812.)	For Residence and Cultiva- tion near Goldfields. (Section 49, Act No. 360.)	For Resi- dence. (Section 10, Act No. 634.)	Total.
1870			3.017		131		$3,\!148$
1871	•••		4,575		673		5,248
1872			7,771		1,408	•••	9,179
1873			6,689	• • •	1,455		8,144
1874	• • •		9,578	• • •	1,493		11,071
1875			6,320	•••	771	•••	7,091
1876	* 6 4		5,785		697	•••	6,482
1877	• • •	• • •	6,240	•••	777		7,017
1878		• • •	7,524	* # #	1,534	•••	9,058
1879		• • •	5,726	75	887	•••	6,688
1880			4,036	67	1,054	56	5,213
1881			3,110	42	1,151	106	4,409
1882		• • •	4,383	51	837	47	5,318
1883	* * *		4,453	58	1,070	22	5,603
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
Тс	otal	• • •	88,880	498	15,866	401	105,645

414. The extent of Crown lands absolutely or conditionally Progress of alienated during each year 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 :—

* The great majority of the applications approved in the years 1835 to 1886 were lodged in 1884, under the provisions of the Land Act 1869.

				Area, G	ranted, Sold, and	l Selected.	
	Year.		Granted without Purchase.	Sold by Auction.*	Conditionally alienated. (Selected).	Total.	
				Acres.	Acres.	Acres.	Acres.
1870		- • •		21	$148,\!685$	322,592	471,298
I871				118	118,440	$487,\!436$	605,994
1872				320	146,611	797,176	944,107
1873				1,575	19,929	1,063,066	1,084,570
1874				- 44	49,655	1,831,698	1,881,397
1875				•••	83,395	$1,\!183,\!520$	1,266,915
1876				546	150,628	1,040,356	$1,\!191,\!530$
1877				260	76,006	$1,\!126,\!498$	1,202,764
1878		- • •		57	$47,\!376$	1,415,129	1,462,5 6 2
1879				503	56,430	1,032,214	1,089,147
1880				461	$27,\!272$	752,639	780,372
1881		- • •		3,237	24,753	588,922	616,912
1882				666	31,386	851,402	883,454
1883	• • •			159	20,085	843,971	864,215
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	22,41 3*	53,738	76,673
1889	• • •			531	15,639*	71,251	87,421
	Total		• • •	13,800	1,139,895	15,130,511	16,284,206

CROWN LANDS ABSOLUTELY AND CONDITIONALLY ALIENATED, 1870 то 1889.

Average size of selections.

415. 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 years the average number of acres taken up by each selector has been 154.

Selected land forfeited, 1889.

416. Of the land which had been selected in former years, 118,291 acres during 1889 were abandoned or forfeited to the Crown in consequence of non-fulfilment of conditions, resulting in a gain to the Treasury of $\pounds 2,352$.

417. The present Land Act prescribes that anyone wishing to Leases of grazing areas, 1889. select for agricultural purposes must first acquire the lease of a grazing area.[‡] The number of applications for such leases received in 1889 was 5,868; but the number approved during that year was only 2,348, the extent for which approval was granted being 925,939 acres, at an annual rental of £9,749.

* Including 2,389 acres in 1888, and 1,959 acres in 1889 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, etc., and may subsequently be included in re-adjustments of selections, re-licensed, sold by auction or retained by the Crown. "Gold-fields" selections are included in this column. See paragraph 402 ante. ‡ See paragraphs from 387 to 389 ante.

418. The number of lessees of "grazing areas" who made appli-selections under the cation during the year 1889 for the issue of licences of agricultural Land Act allotments (selections) was 724, for an area of 121,672 acres. The number of approved applications, however, was 459, and the area licensed 71,245 acres, as compared with 50,758 acres in 1888. The annual fees, which form part of the purchase-money, payable on these selections amount in the aggregate to $\pounds 3,831$.

419. Licensees of agricultural allotments (or selectors) under the Licenceliens Land Acts 1869 and 1884 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 four years :---

			Liens Registered.					
Ye	Year.		Number.	Area on which Lines were granted.	Amount Secured.			
1000			000	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			

LICENCE LIENS, 1886 TO 1889.

420. Under the present Land Act it was intended that the purely Pastoral pastoral lands of the colony, the whole of which have been marked 1889. off as "pastoral allotments," should be occupied under lease for periods not exceeding fourteen years from the commencement of the Act. But it is provided, 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 Act. Moreover, agricultural lands, which are not occupied for agricultural purposes, are leased in grazing areas as already stated*; and auriferous lands, in blocks not exceeding 1,000 acres, may be licensed for grazing purposes for periods of five years. The following table shows the area of Crown lands under the Land Act 1884, held under lease or licence for pastoral or grazing purposes at the end of 1889, also the number of leases and licences, and the annual rental payable :---

occupation,

* See paragraph 387 ante.

(Under Lan	id Act 1854.)	
Description of Tenure.	Number of Licences or Leases.	Extent of Crown Lands.	Annual Rental.
Pastoral leases (sec. 21) Grazing area leases (sec. 32) Grazing licences (secs. 3 and 119) ,, ,, (auriferous lands, secs. 65 and 67)*	$94 \\ 10,478 \\ 2,336 \\ 2,075$	Acres. 1,711,710 4,241,227 4,924,383 367,904	£ 6,283 26,189 } 36,417
Total	14,983	11,245,224	68,889

PASTORAL OCCUPATION, 1889. T ... J / ... 1001)

Average area of runs rights.

421. By these figures it may be ascertained that the average and grazing extent of land embraced in a pastoral lease was 18,210 acres, in a grazing area lease 405 acres, and in a grazing licence (secs. 3 and 119) 2,108 acres. The areas are exclusive of those of any purchased land attached thereto.

Rent of runs

422. According to the table, the average rent per acre of pastoral and grazing allotments was something less than a penny (.88d.), and of land held under grazing licence—a penny and two-thirds (1.65d.).

Assessment of pastoral lands.

423. The rental of pastoral lands (exclusive of agricultural lands used for pastoral purposes, and of the Mallee pastoral lands) available at the end of 1885, viz., 7,078,100 acres, was assessed in 1886 at Since 1885, however, the area has been con- $\pm 24,717$ per annum. siderably reduced which will naturally reduce the assessment referred to.

Mallee pastoral leases.

424. The Mallee country is, as already stated, subject to the provisions of a special Act. † It is divided into blocks and allotments. The number of leases and of lessees of these, together with their approximate area, and the annual rental payable therefor, are shown in the following table :---

MALLEE PASTORAL LEASES ON 31ST DECEMBER, 1889.

Description of Leaseholds.	Number of Leases.	Number of Lessees.	Area.	Annual Rental.‡
Mallee blocks ,, allotments	58 1,011	40 1,011	Acres. 7,043,770 2,405,066	£ 2,517 4,426
Total	1,069	1.051	9,448,836	6,943

* Including licences for residences or cultivation limited to 20 acres each. At the end of 1889 the number of these was 1,288, but the area was only 24,077 acres.

t See paragraphs 382 to 384 ante.

Approximate only. The amount actually received in 1839 was £6,072, viz., £2,460 for blocks and £3,612 for allotments; but arrears are included in these figures.

425. On the 1st January, 1889, the occupied portions of most of Surrender the blocks were surrendered to the Crown.* The greater number of leasing of Mallee these were re-leased for the remainder of the duration of the Act, but blocks some were subdivided into allotments and made available for selection with others which were subsequently surrendered. In all ten blocks have thus been subdivided into 500 allotments, each having an area of about 640 acres. Not only will the revenue be very substantially increased by this means (as the annual rental will range from £2 to £4 for each allotment), but the settlement of the country will much more rapidly progress and the destruction of vermin be more effectual than was possible when it was, as previously, held under ten leases and was practically unsettled. The water resources of the Mallee have been tested with very gratifying results. Good water has been struck on two blocks and wells sunk thereon, which yield a plentiful supply of fresh water.

426. At the end of 1889 the following areas were still available Mallee areas for occupation in the Mallee country :---Mallee blocks, 951,680 acres; still unoc-cupied, 1889. Mallee allotments, 225,964 acres.

427. In 1883, prior to the passing of the Mallee Pastoral Leases Past and Act, the Mallee country was held under pastoral licences or grazing rights. The number of such licences and rights was 147, held by 58 individual occupiers; the area over which the right of occupation was given was 7,727,360 acres, and the annual rental payable was \pounds 8,076. From a comparison of these figures with those in the above table, it appears that since 1883, whilst the occupiers of the Mallee country have increased eighteen times, and the extent occupied by nearly onefourth, the annual rental has fallen off by \pounds 1,100, or by 14 per cent. As a set-off against this reduced rental, however, it should be pointed out that the present lessees have to comply with certain conditions * to which the licensees under the former Act were not subject.[†]

428. According to the figures in the last table, the average rental Average

per 100 acres payable for the Mallee country is 1s. $5\frac{1}{2}d.$, or $8\frac{1}{2}d.$ for rental of Mallee blocks, and 3s. $8\frac{1}{4}d.$ for the Mallee allotments. In 1883, rountry. prior to passing of the present Act, the average rental in the Mallee country was 2s. 1d. per 100 acres.

429. The revenue from the sale and occupation of Crown lands $_{\text{Land}}$ may be divided into—(1) receipts from the alienation of land in fee-

* See paragraph 383 ante. † Mallee lands may now be selected. See paragraph 384 ante. which count towards the purchase-money; (2) receipts on account of temporary occupation, which include payments for pastoral leases and grazing licences, rents for business, factory, and hotel sites, etc., and rents of land which do not count towards the purchase-money; (3) penalties, interest, and fees for grants, leases, licences, etc. The gross receipts show a falling-off of about £125,000, as compared with the previous year, chiefly under the head of land sales and selection, as will be seen by the following figures :---

		Amounts	s Received.	Increase (\pm)
Heads of Land Revenue.		1888.	1889.	Decrease $(-)$.
Alienation in fee-simple and progressive Temporary occupation Penalties, fees, etc	••••	\pounds 585,055 91,417 40,277	£ 461,009 97,911 32,846	£ -124,046 +6,494 -7,431
Total	•••	716,749	591,766	- 124,983

LAND REVENUE, 1888 AND 1889.

Agricultural statistics.

430. The agricultural statistics of Victoria are collected by the municipal bodies, which, under the *Local Government Act* 1874 (38 Vict. No. 506), and the *Local Government Act Amendment Act* 1883 (47 Vict. No. 786), 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 to £10.

Bonuses for 431. In assigning the duty of collecting statistics to the local collecting statistics. bodies, the law did not provide that they should receive any payment therefor; and thus, although under that 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 generally 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 have now been given for six years with excellent effect, as the measures taken have resulted in the statistics being sent in at such a date that it has become possible to publish nearly complete returns about the 12th March, or fully two months earlier than such a result had been achieved in previous years.

432. The agricultural statistics to which reference will now be Agricultural made are those for the year ended 1st March, 1890.* Tables ^{statistics,} embodying the final results of these statistics will be found in the *Government Gazette* of the 28th May last,[†] and these, with additional tables, form portion of the *Statistical Register of Victoria*.

433. The total number of farm holdings visited in the year under Number of notice was 36,497, of which 35,528 were in shires, and 969 in cities, ^{cultivators.} towns, or boroughs. In the previous year the number of farms visited was 35,727, the increase being thus 770.

434. The extent of land returned as under cultivation amounted to Land under 2,627,262 acres, as against 2,564,742 acres in 1888-9. The increase shown by the figures was, therefore, 62,520 acres.

435. The average area returned as in cultivation to each person Area cultivated per in the colony was about $2\frac{1}{3}$ acres in the year under review as against head of nearly $2\frac{1}{2}$ acres five years previously, and 2 acres 10 years previously. The exact proportions at the three periods were as follow:—

AVERAGE AREA CULTIVATED TO EACH PERSON IN THE COLONY.

		•		Acres.
1879-80		 ·		2.01
1884-5		 	• • •	2.46
1889-90	• • •	 • • •	• • •	2.35

436. The following table shows the area per head cultivated in Area cultivated per each Australasian colony during the nine seasons ended with that of Head in Austral-1888-9, also the mean of those seasons, the colonies being placed in Australcolonies.

* A summary of the agricultural statistics of each year, since the first settlement of the colony, is published at the commencement of this volume (second folding sheet).

† This year tables containing a statement of the extent of land under crop, and yield of wheat, oats, potatoes, and hay, were published in the Melbourne daily journals of the 13th March.

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order according to the average extent of land per head that each cultivates :---

CULTIVATION PER HEAD IN AUSTRALASIAN COLONIES, 1880 TO 1889.*

Colony	Acres under Tillage per Head of Population.									
Colony.	1880-81.	1881-2.	1832-3.	1883-4.	18 84-5 .	1885-6.	1836-7.	1887-8.	1888-9.	Mean.
1. S. Australia† 2. Tasmania 3. New Zealand 4. Victoria 5. W. Australia 6. N. S. Wales 7. Queensland	9.62 3.25 2.12 2.32 2.20 .96 .53	8.913.152.632.061.78.83.56	8.083.082.682.251.84.90.64	9.05 3.12 2.61 2.38 1.94 .91 .58	8.913.262.392.422.42 $2.42.92.64$	$\begin{array}{c}\\ 3.12\\ 2.20\\ 2.42\\ 2.19\\ .90\\ .66\end{array}$	$3 \cdot 25$ $2 \cdot 33$ $2 \cdot 41$ $2 \cdot 18$ $1 \cdot 02$ $\cdot 65$	$ \begin{array}{c}\\ 3 \cdot 21\\ 2 \cdot 39\\ 2 \cdot 49\\ 2 \cdot 49\\ 1 \cdot 01\\ \cdot 56 \end{array} $	8.773.292.412.352.52.92.55	8.873.202.442.312.18.93.59

Results in different colonies compared 437. It will be observed that South Australia cultivates much more, and New South Wales and Queensland cultivate much less, per head than any of the other colonies; also that over a series of years Victoria has in this respect occupied a middle place, being below South Australia, Tasmania, and New Zealand, but above the other three colonies, viz., Western Australia, New South Wales and Queensland. In the four years ended with 1887-8, however, and in one previous year, Victoria, in proportion to population, had more land in cultivation than New Zealand.

Land under principal crops. 438. The principal crops grown in Victoria are wheat, oats, barley, potatoes, hay, and green forage. In 1889-90, the area under wheat was less by 38,500 acres than in 1888-9, also less by 54,000 acres than in 1887-8, but was larger than in any previous year; the area under oats was larger by 39,000 acres, and that under barley larger by over 7,000 acres, than in 1888-9, and both were also larger than in any previous year; the area under potatoes, although larger than in 1888-9 by 4,000 acres, was exceeded in 1887-8 and in 1886-7; that under hay was larger by 40,000 acres than that in 1888-9, and was also larger than in any other year; the area returned under green forage was smaller by 37,000 acres than that in 1888-9, and was also less than that returned in any previous year since 1871-2. The large falling-off since 1886-7 is accounted for by the fact that in the last

* For the population and number of acres under tillage in each Australasian colony during the seventeen years ended with 1889, see Summary of Australasian Statistics (third folding sheet) ante; also Appendix A μost .

† The colony of South Australia did not collect agricultural statistics in the three years ended with 1837-8, the mean is, therefore, for six years.

three 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 two seasons :—

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Green Forage.
1889 1890	Acres. 1,217,191 1,178,735	Acres. 197,518 236,496	Acres. 83,483 90,724	Acres. 43,074 47,139	Acres. 411,332 451,546	Acres. 192,515 155,596
Increase Decrease	38,456	38,97 8 	7,241 	4,065 	40,214 	 36,919

LAND UNDER PRINCIPAL CROPS, 1889 AND 1890.

439. As was naturally to be expected from the break-up of the Produce of drought which prevailed in 1888-9, a large increase occurred in crops. 1889-90 in the gross yield of all the principal crops. Thus the yield of wheat and oats each increased by nearly 3,000,000 bushels, the yield of the latter being more than twice as large as in the previous year; the yield of hay was also more than doubled; whilst that of barley increased by 60 per cent. and that of potatoes by 20 per cent. The wheat crop in 1889-90—11,500,000 bushels—was the fourth largest ever raised in the colony; still it was 4,000,000 bushels below the crop produced in 1883-4. The gross yield of oats, barley, and hay were much larger in the year under review than in any previous one, but that of potatoes was exceeded in six other years. The following is a statement of the gross produce of each of the principal crops in 1888-9 and 1889-90:—

GROSS PRODUCE OF PRINCIPAL CROPS, 1889 AND 1890.

Year ended March.		Wheat.	Oats.	Barley.	Potatoes.	Hay.	
		Bushels.	Bushels.	Bushels.	Tons.	Tons.	
1889 1890	•••	$8,647,709 \\ 11,495,720$	2,803,800 5,644,867	1,131,427 1,831,132	$131,149\\157,104$	308,117 666,385	
Increase	•••	2,848,011	2,841,067	699,705	25,955	358,268	

S 2

440. The following table shows the area under and gross produce Area under of wheat in each county during the year ended 1st March, 1890, also duce of the average produce of wheat per acre in each county during that wheat.

Victorian Year-Book, 1889-90.

		Year 1	.889-90.	Average Produce per Acre.			
Counties.	,	Area under Crop.	Gross Produce.	1889-90.	1888-9.	1887-8.	
		Acres.	Bushel s .	Bushels.	Bushels.	Bushels.	
Anglesev		766	8,696	11.35	13.12	11.88	
Benambra		1,456	21,557	14.81	17.01	13.57	
Bendigo		61,319	867,758	14.15	7.29	12.84	
Bogong		17,008	112,098	6.59	7.82	7.60	
Borung		305,374	$3,\!122,\!711$	10.23	6.34	10.72	
Bourke		585	6,655	11.38	19.58	18.17	
Buln Buln		297	5,379	18.11	19.11	14.35	
Croajingolong		48	847	17.65	12.98	7.64	
Dalhousie		1,896	23,933	12.62	13.68	12.38	
Dargo		41	270	6.59	14.20	22.77	
Delatite		6,762	59,018	8.73	9.39	6.85	
Dundas	• • •	7,028	$69,\!684$	9.92	16.19	16.64	
Evelyn		30	411	13.70	17.88	6 [.] 83	
Follett	- • •	1,620	16,722	10.32	14.49	14.89	
Gladstone		$71,\!615$	730,594	10.20	5.95	12.37	
Grant		1,608	24,984	15.54	15.63	16.29	
Grenville		1,013	14,901	14.71	12.31	16.83	
Gunbower		49,403	581,119	11.76	5.40	7.14	
Hampden		448	7,069	15.78	13.52	17.26	
Hevtesbury	•••	310	5,222	16.85	19.59	21.83	
Kara Kara		$111,\!454$	1,066,397	9.57	6.65	10.94	
Karkarooc	•	16,122	171,488	10.64	2.74	7.88	
Lowan		207,451	1,312,320	6.33	8.21	10.39	
Moira	•	184,200	1,673,578	9.09	8.29	10.91	
Mornington		10	160	16.00	13.85	17.35	
Normanby		2,521	30,775	12.21	16.06	15.33	
Polwarth		714	20,723	29.02	19.53	23.01	
Ripon		4,151	65,277	15.73	12.48	17.63	
Rodney	•••	71,023	853,939	12.02	6.51	12.17	
Talbot		8,893	110,716	12.45	11.39	15.44	
Tambo	•••	42	1,045	24.88	12.87	9.70	
Tanjil	• • •	2,767	42,388	15.32	7.48	10.41	
Tatchera		38,280	424,921	11.10	1.88	9.02	
Villiers		2,410	41,485	17.21	20.87	21.13	
Wonnangatta	•••	70	880	12.57	3 8·25	5.74	
Total	• • •	1,178,735	11,495,720	9.75	7.10	10.81	

WHEAT IN EACH COUNTY.-AREA UNDER CROP AND GROSS AND AVERAGE PRODUCE.

441. A reference to the table will show that ten and three-quarter Wheat-yield in ten million out of the eleven and a half million bushels of wheat raised in counties 1888-9 and Victoria in the year under notice were raised in ten counties, which, 1889-90 compared. for the most part, lie between the 36th and 37th parallels of south latitude, and which have been mentioned in previous issues of this work as, above all others, the wheat producing counties of Victoria. The reaction after the drought of 1888 is specially marked by the

increased wheat yield in all but three of these counties, in some of which the yield has doubled, and in one (Tatchera) it was more than five times as high in the year under review as in the previous one. In the following table these counties are arranged in order, according to the yield of wheat in 1889-90; the increase or falling-off, as compared with the previous year, being also shown :—

YIELD IN TEN WHEAT PRODUCING COUNTIES, 1889 AND 1890.

	Gaundia			Bushels of Wheat Produced.				
	Counties.			1888-9.	1889-90.	Increase + Decrease -		
Borung Moira Lowan Kara Kara Bendigo Rodney Gladstone Gunbower	···· ··· ··· ···	···· ··· ··· ··· ···	···· ···· ····	1,770,819 $1,870,978$ $1,697,170$ $790,525$ $450,376$ $455,328$ $454,202$ $311,016$ $75,048$	$\begin{array}{r} 3,122,711\\ 1,673,578\\ 1,312,320\\ 1,066,397\\ 867,758\\ 853,939\\ 730,594\\ 581,119\\ 424,021\end{array}$	$\begin{array}{r} +1,351,892 \\ -197,400 \\ -384,850 \\ +275,872 \\ +417,382 \\ +398,611 \\ +276,392 \\ +270,103 \\ +240,872 \end{array}$		
Bogong	•••	· • •	•••	15,048 187,226	424,921 112,098	+ 549,875 -75,128		
	Total			8,062,688	10,745,435	*+2,682,747		

442. As regards the acreable yield of wheat, it will be noticed that Acreable yield of in 1889-90, taking the colony as a whole, it was about $2\frac{2}{3}$ bushels wheat. higher than in 1888-9, but about 1 bushel less than in 1887-8. In 17 of the 35 counties, however, the yield per acre was less in 1889-90 than in the previous year, viz. :—Anglesey, Benambra, Bogong, Bourke, Buln Buln, Dalhousie, Dargo, Delatite, Dundas, Evelyn, Follett, Grant, Heytesbury, Lowan, Normanby, Villiers, and Wonnangatta; but, with the exception of Bogong and Lowan, only

a very small quantity of the wheat grown in Victoria is obtained from these counties.

443. It will be observed that in several of the countries in which Small gross the average yield of wheat is high a very small quantity is grown, wheat in which is probably raised on a patch of choice land, and does not afford an indication of the general productiveness of the county. Thus, in 1889-90 only 10 acres were placed under wheat in

* Net increase.

Mornington, 30 in Evelyn, 42 in Tambo, 48 in Croajingolong, and 714 in Polwarth; and in all these counties the yield per acre was much above the average of the colony.

Area under other prinin each county.

444. The following table gives a statement of the number of cipal crops acres under oats, barley, potatoes, and hay, in each county during 1889-90 :---

Gunting		Area under Crop, 1889-90.						
Cour	ities.		Oats.	Barley.	Potatoes.	Hay.		
			Acres.	Acres.	Acres.	Acres.		
Anglesey			1,955	205	403	2,060		
Benambra	•••	• • •	1,606	28	267	1,718		
Bendigo	•••	• • •	17,529	1,976	14	33,702		
Bogong	•••	•	8,196	408	455	11,704		
Borung	•••	•••	3,731	$1,\!485$	54	51,332		
Bourke		•••	9,325	2,357	5,795	27,203		
Buln Buln	· • •	•••	3,561	88	2,973	4,700		
Croagingolong	g		242	8	83	260		
Dalhousie	· • •	• • •	16,408	699	3,873	10,648		
Dargo	• • •		246	62	241	939		
Delatite	•••	~ * ž	10,272	230	882	6,631		
Dundas		•	3,899	727	105	3,856		
Evelyn	• • •		531	64	763	4,821		
Follett	· · ·		1,285	134	122	886		
Gladstone	•••		13,123	1,587	16	21,028		
Grant	• • •		$12,\!613$	2,205	6,912	28,195		
Grenville	•••		8,272	3,197	884	9,996		
Gunbower			4,439	1,561	2	18,681		
Hampden	•••	• • •	2,077	916	659	2,591		
Heytesbury	• • •		2,271	308	1,380	1,616		
Kara Kara			9,903	1,691	103	30,182		
Karkarooc	•••		122	51	1	1,602		
Lowan	•••		4,484	1,117	12	36,994		
Moira	• • •		26,341	43,082	26	42,225		
Mornington			908	41	764	5,214		
Normanby		• • •	3,654	437	739	3,729		
Polwarth	• • •		3,074	2.301	1.815	2,183		
Ripon			10,831	306	1.169	12,405		
Rodney	• • •		16,488	13.674	10	21,308		
Talbot	· • •		26,626	1.872	7.339	38.097		
Tambo			134	14	137	456		
Tanjil			4.915	2.689	886	3.274		
Tatchera			475	385	3	5.977		
Villiers	•••		6.045	4.811	8 052	4.627		
Wonnangatta	•••		915	8	200	706		
Total	•••		236,496	90,724	47,139	451,546		

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

445. By the next table, which shows the gross produce of oats, Gross probarley, potatoes, and hay in each county, it will be seen that in 1889-90 most oats was grown in Talbot, Bendigo, and Moira, in the order named; most barley in Moira, Rodney, and Villiers; most potatoes in Villiers, Grant, and Bourke; and most hay in Talbot, Borung, Grant, Bourke, Bendigo, and Moira:---

duce of other principal crops in each county.

OATS, BARLEY, POTATOES, AND HAY, IN EACH COUNTY. GROSS PRODUCE.

			Gross Produ	ace, 1889-90.	
Counties.		Oats.	Barley.	Potatoes.	Hay.
		Bushels.	Bushels.	Tons.	Tons.
Anglesey		36,515	$3,\!491$	1,031	3,168
Benambra		49,870	625	1,033	2,539
Bendigo		$524,\!179$	44,688	34	49,764
Bogong	••••	119,411	$5,\!435$	1,095	$10,\!534$
Borung		79,334	24,350	188	63,362
Bourke		229,142	61,673	20,702	53,709
Buln Buln		97,491	2,459	14,476	9,076
Croajingolong		7,235	272	304	387
Dalhousie		$352,\!446$	16,131	8,635	15,763
Dargo	• • • •	6,366	1,622	972	1,964
Delatite		172,768	3,662	1,839	7,151
Dundas		78,613	15,509	251	6,091
Evelyn		11,087	790	2,769	8,214
Follett		29,920	3,289	340	1,391
Gladstone		329,221	28,837	43	28,569
Grant		368,611	72,579	20,978	58,697
Grenville		239,779	117,242	1,964	17,552
Gunbower		136,303	31,507	4	27,019
Hampden		53,665	32,243	2,675	4,911
Heytesbury		53,237	11,435	4,586	2,772
Kara Kara		190,898	23,463	. 178	38,122
Karkarooc		1,912	1,010	5	2,895
Lowan		70,566	9,624	37	31,815
Moira		519,094	638,733	28	48,004
Mornington		21,698	759	3,750	$8,\!271$
Normanby		82,190	11,228	$2,\!179$	$6,\!420$
Polwarth		93,267	86,415	8,781	4,998
Ripon		272,996	6,285	2,447	$23,\!442$
Rodney		393,848	249,597	9	30,592
Talbot		695,522	45,960	17,658	71,583
Tambo		4,970	329	640	930
Tanjil	• - •	126,620	87,095	3,358	6,749
Tatchera		12,259	6,407	4	9,402
Villiers	• • •	167,584	186,165	33,443	9,602
Wonnangatta	• • •	16,250	223	668	927
Total		5,644,867	1,831,132	157,104	666,385

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Victorian Year-Book, 1889-90.

Average 446. The average produce per acre of oats, barley, potatoes, and other principal crops in each county during the last two seasons is given in the following table :--

> AVERAGE PRODUCE OF OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY, 1888-9 AND 1889-90.

			Averag	e Produce	per Acre	of—		
Counties.	Oa (Busł	its. nels.)	Bar (Bus)	l ey. hels.)	Pota (To	atoes. ons.)	Ha (To	ny. ns.)
	1888-9.	1889-90	1888-9.	1889-90.	1888-9.	1889-90.	1883-9.	1882-90.
Anglesev	17.79	18.68	20.79	17.03	2.51	2.56	1.00	1.54
Benambra	22.97	31.05	24.30	$22 \cdot 32$	4.81	3.87	1.01	1.48
Bendigo	11.25	29.90	8.25	22.62	1.50	2.43	•49	1.48
Bogong	14.24	14.57	12.02	13.32	3.22	2.41	•66	•90
Borung	12.41	21.26	8.32	16.40	2.71	3.48	•55	1.23
Bourke	18.50	24.57	23.11	26.17	3.54	3.57	•79	1.97
Buln Buln	20.92	27.38	21.13	27.94	4.52	4.87	1.59	1.93
Croaingolong	24.10	29.90	16.00	34.00	4.20	3.66	1.43	1.49
Dalhousie	17.90	21.48	16.74	23.08	2.95	2.23	·98	1.48
Dargo	42.81	25.88	$\cdot 45$	26.16	4.42	4.03	·82	2.09
Delatite	12.83	16.82	21.45	15.92	2.48	2.09	·82	1.08
Dundas	18.80	20.16	23.17	21.33	2.22	2.39	1.27	1.58
Evelyn	17.19	20.88	20.00	12.34	3.24	3.63	1.17	1.70
Follett	17.46	23.28	22.05	24.54	2.43	2.79	1.23	1.57
Gladstone	11.81	25.09	8 •70	18.17	1.00	2.69	$\cdot 52$	1.36
Grant	16.46	29.22	17.99	32.92	3.23	3.04	•94	2.08
Grenville	16.40	28.99	19.68	36.67	2.38	2.22	·85	1.76
Gunbower	11.84	30.71	10.94	20.18	1.00	2.00	•48	1.45
Hampden	19.24	25.84	27.67	35.20	3.06	4.06	1.51	1.90
Heytesbury	17.47	23.44	32.50	37.13	2.73	3.32 .	1.10	1.72
Kara Kara	12.75	19.28	9.66	13.88	1.92	1.73	•59	1.26
Karkarooc	4.78	15.67	7.25	19.80	2.00	5.00	·23	1.81
Lowan	13.87	15.76	11.05	8.62	1.50	3.08	.73	•86
Moira	11.39	19•71	10.45	14.83	•61	1.08	•55	1.14
Mornington	18.77	23.90	21.57	18.51	4.48	4.91	·83	1.59
Normanby	16.59	22.50	20.27	25.69	2.74	2.95	1.09	1.72
Polwarth	19.97	30.34	31.69	37.56	2.81	4.84	1.48	2.29
Ripon	16.75	25.21	19.93	20.54	1.76	2.09	1.16	1.89
Rodney	7.81	23.89	8.05	18.25		•90	•44	1.44
Talbot	14.90	26.12	16.12	24.55	2.66	2.41	1.01	1.88
Tambo	21.08	37.09	19.43	23.50	4.64	4.67	1.37	2.04
Tanjil	10.29	25.76	7.59	32.39	3.22	3.79	•76	2.06
Tatchera	7.95	25.81	4.70	16.64	• • •	1.33	•36	1.57
Villiers	17.90	27.72	36.17	38.70	2.71	4.15	1.32	2.08
Wonnangatta	17.73	17.76	30.00	28.00	4.10	$3\cdot34$	1.13	1.31
Total	14.20	23.87	13.55	20.18	3.04	3.33	•75	1.48

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county.

Yieldofoats, 447. It will be noticed that in the year ended 1st March, 1890, the barley, potatoes, and hay, 1889-90.
Polwarth, Croajingolong, Bendigo, Grant, and Grenville, in the order named; that the average yield of barley was highest in Villiers, Polwarth, Heytesbury, Grenville, Hampden and Croajingolong; that

potatoes yielded the largest crop per acre in Karkarooc, Mornington, Buln Buln, Polwarth, Tambo, Villiers, Hampden, and Dargo, where the average was over 4 tons; that the highest yields of hay were in Polwarth, Dargo, Grant, Villiers, Tanjil, and Tambo, in which this crop averaged over 2 tons to the acre; and in Bourke, Buln Buln, Hampden, Ripon, Talbot, Karkarooc, and Grenville, in which it exceeded $1\frac{3}{4}$ tons to the acre.

448. Comparing the averages of 1889-90 with those of the Yield of previous season, an increase is observed in the yield per acre of oats in all the counties except Dargo; of barley in all except Anglesey, crops in past two Benambra, Delatite, Dundas, Evelyn, Lowan, Mornington, and Wonseasons. nangatta; of potatoes in all except Benambra, Bogong, Croajingolong, Dalhousie, Dargo, Delatite, Grant, Grenville, Kara Kara, Talbot, and Wonnangatta; and of hay in every one of the counties.

449. In the past season, over the colony as a whole, the acreable Yield of yield of wheat and potatoes was below, but that of the other crops was above, the average; the yield per acre of wheat was exceeded in all but six of the eighteen other years named in the following table; but that of oats was higher than in any of those years except four, and that of hay was higher than in any previous year :---

Vor anded March		Average Produce per Acre of-								
iear ei	ided M	larcn.	Wheat.	Oats.	Barley.	Potatoes.	Hay.			
<u></u>			Bushels.	Bushels.	Bushels.	Tons.	Tons.			
1872		•••	13.45	18.76	20.00	3.22	1.40			
1873	•••	•••	16.51	19.55	20-86	3.45	1.32			
1874			13.58	15.69	19.84	2.86	1.27			
1875	•••	•••	14.57	18.46	21.01	3.23	1.32			
1876	•••	•••	15.49	21.92	22 [.] 20	3.37	1.33			
1877	•••		13.15	19.91	21.18	3.31	1.22			
1878	•••		12.41	19.39	19.81	3.11	1.17			
1879	•••		8·76	17.60	$18^{-}24$	2.71	1.21			
1880	•		13.29	24.00	24 .67	4 ·04	1.45			
1881			9.95	17.62	15.57	2· 81	1.20			
1882	•••		9.40	24.57	19.07	3.43	1.13			
1883			9.03	26.17	17.35	3.78	1.06			
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	1.02			
1887	•••	•••	11.49	22.91	22:36	3.41	1.09			
1888	•••		· 10·81	22 ·9 2	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			
Mean	•••		11.65	20.93	19.84	3.42	1.23			

AVERAGE PRODUCE OF PRINCIPAL CROPS, 1872 TO 1890.

principal crops, 1872 to 1890.

Victorian Year-Book, 1889-90.

Malting and other barley. 450. In the last six years the statistics of malting barley were distinguished from those of other descriptions of the same cereal. The following is the result of this division for the year under review :—

Descriptio	Description of Barley.			Gross Produce.	Average per Acre.
Malting Other	· · · ·	• • • •	Acres. 70,693 20,031	Bushels. 1,217,416 613,716	Bushels. 17·22 30·64
Total			90,724	1,831,132	20.18

MALTING AND OTHER BARLEY, 1889 TO 1890.

Yield of malting smaller than of other barley. 451. Of the total area under barley 78 per cent. was under malting barley; and of the produce of barley, 66 per cent. was of malting barley. In the previous year these proportions were respectively 76 per cent. and 64 per cent. It will be noticed that this description of barley is by far the less prolific of the two kinds, the average in 1889-90 being only $17\frac{1}{4}$ bushels to the acre, as against $30\frac{1}{2}$ bushels of the other barley.

Average produce in Australasian colonies.

452. In the following table the average yield of wheat, oats, barley, potatoes, and hay in Victoria is placed side by side with the average of the same crops in the other Australasian colonies* during each of the seventeen years ended with 1889:—

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN AUSTRALASIAN COLONIES, 1873 TO 1889.

Year en March	ded a.	Victoria.	New South Wales.	Queens- land.*	South Australia.≉	Western Australia.	Tasmania.	New Zealand.
WIIE	AT.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1873	•••	16.51	16.32		11.20	6.02	18.62	24.19
1874		13.58	13.43	• • •	7.87	13.44	16.17	25.61
1875	• • •	14.57	12.87	* * *	11.75	12.00	18.51	28.15
1876	• • •	15.49	14.66		11.95	11.00	16.38	31.54
1877	•••	13.15	16.43	•••	5.40	12.00	19.30	28 ·63
1878	•••	12.41	13.84	10.63	7.76	11.00	18.12	26.03
1879	• • •	8.26	14.74	13.56	7.15	9.97	16.10	22.94
1880		13.29	15.48	8.11	9.78	14.94	23.22	28.16
1881		9·95	14.69	20.40	4.96	14.94	14.99	25.07
1882		9.40	15.35	8.41	4.57	7.00	18.88	22.69
18 S 3		9.03	16.35	13.89	4.21	11.00	20.27	26.28
1884		14.10	15.00	4.34	7.94	13.00	17.74	26.02
1885	/	9.52	15.27	16.17	7.53	13.00	19.20	25.43
1886		8.99	10.32	5.11		11.20	17.32	24.40
1887		11.49	17.38	3.13		12.00	17.91	24.89
1888	ļ	10.81	12.06	22.10		9.14	16.67	26.37
1889		7.10	4.76	•89	3.85†	10.50	20.16	24.22
Mean		11.66	14.06	10.56	7.59	11.32	18.21	25.92

* The produce of crops in Queensland was not given prior to 1878. No agricultural statistics were collected in South Australia in the four years ended with 1888-9. † Estimated.

Average Produce per Acre of the Principal Ceops in Australasian Colonies, 1873 to 1889—continued.

				1	1		
Year ended March.	Victoria.	New South Wales.	Queens- land.*	South Australia.*	Western Australia.	Tasmania.	New Zealand.
OATS.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1873	19.55	19.94		16.39	13.24	25.85	27.00
1874	15.69	18.71		10.61	19.22	20.98	29.81
1875	18.46	16.31		14.61	16.00	26.82	25.99
1976	21.92	18.72	•••	16.69	15.00	20.02	97.70
1070	10.01	21.16	•••	10.65	15.00	20 40	01 19
1070	10.90	10.91	10.11	10.00	1500		31.24
1878	19.39	19 51	10.11	11.90	14.00	22.32	31.68
1879	17.50	20.24	9.05		18.02	24.82	30.11
1880	24.00	21.64	24.74	15.02	19.00	28.61	36.23
1881	17.62	19.87	17.94	11.50	19.00	2 2·1 3	32.05
1882	24.57	21.81	12.74	10.66	1.0.00	28·44	28.45
1883	26.17	24.88	16.58	11.13	15.00	27.34	32.89
1884	25.07	21.15	8.90	14.65	17.00	27.39	35.11
1885	23.40	21.87	15.17	12.20	18.00	28.65	34.84
1886	21.72	19.77	4·8 4		14.50	26.82	26.11
1887	22.91	25.09	10.42		16.14	25.95	30.92
1999	22.92	20.35	24.26		15.05	18.20	31.94
1889	14.20	13.77	5.65	[•••]	23.42	27.97	29.89
1000		10 11					
Mean	20.89	20.27	13.42	12.93	16.33	25.41	31.82
BARLEY.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1873	20.86	18 .96	• • •	14.31	1400	22.44	21.25
1874	19.84	18.61		10.69	17.22	19.33	27.41
1875	21.01	17.33		15.18	16 .00	24.46	29.39
1876	22.20	20.46		14.12	14.00	27.84	35.91
1877	21.18	23.69	•••	10.64	15.00	23.58	28.95
1077	10.91	10.68	16.86	11.97	13.00	20.00	25.40
1070	19.94	91 .47	15.87	11.82	12.23	20 20 94.99	20 - 20
1879	10'24		10.07	12.20	12 20	24 22 97.01	2411
1880	24.07		24:00	11.69	10:00	27 91	30 47
1881	15.97	20.35	20.97		18.00	20.39	20.00
1882	19.07	21.04	12.93		10.00	22.29	22.28
1883	17.35	20.55	17.82	11.03	14.00	27.79	26.19
1884	22.84	2 0·96	13.24	14.01	16.00	25.57	29.31
1885	17.38	21.16	24.73	$13\cdot48$	16.50	29.58	30.37
1886	17.58	16.16	24.20	••	14.50	25.83	25.92
1887	22.36	2 1·87	24.07	•••	15.97	22.40	25.94
1888	23.34	19.20	27.03		11.75	13.87	27.26
1889	13.55	11.08	22.94		14.70	23:55	31.15
Mean	1 9·81	19.65	20.41	12.59	14.76	23.61	27.53
POTATOES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1873	3.45	2.98	•••	3·28	2.34	3.92	4.92
1874	2.86	2.98	•••	3.41	2.67	3.16	4.46
1875	3.53	2.83		3.72	3.00	3.75	5.24
1876	0 00 9.9/7	2.08	• • •	4.52	3.00	3.54	4.89
10/0	0.01	2 30 9.09	• • •	2.81	3.00	3.43	5.36
10//	16.6	0 V0 0.50	···· 1·01	9.51	9.00	2.95	5.38
10/0	3.11	Z 5Z	1.9T	401 9.07	2 00 9.40	0 40 2.2/7	1.02
1879	2.71	3.20	2.33	2'07	449	9.91	¥ 70

* The produce of crops in Queensland was not given prior to 1878. No agricultural statistics were collected in South Australia in the four years ended with 1888-9.

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN AUSTRALASIAN COLONIES, 1873 TO 1889.—continued.

Year ended March.	Victoria.	New South Wales.	Queens- land.*	South Australia.*	Western Australia.	Tasmania.	New Zealand.
POTATOES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1880	4.04	3.23	3 ·0 3	3.80	3.50	3.18	5.62
1881	2.81	2.73	2.65	2.89	3 ·50	3.12	4.94
1882	3.43	2.78	2.36	2.96	2.00	3.47	5.41
1883	3.78	3.00	2.90	3.02	2.50	3.88	5.10
1884	4.01	2.47	2.60	4 ·22	3.00	3 ·59	5.36
1885	4 ·16	2.52	2.92	4 ·10	3 ·00	4.37	5·78
1886	3.83	2.55	2.82		2.50	4.83	4.58
1887	3.41	2.64	3.74		3 ·0 1	4.71	4.88
1888	4 ·11	2 ·94	3.52		2 ·38	2.59	5.45
1889	3.04	2.39	2.84	•••	4.10	4.88	5.08
Mean	3.47	2.81	2.80	3.38	2.82	3.71	5•14
Нат.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1873	1.32	1.61		1.21	1.51	1.39	1.25
1874	1.27	1.54		1.02	2 ·00	1.08	1.43
1875	1.32	1.37		1.26	1.20	1.35	•84
1876	1.33	1.15	1	1.21	1.00	1.42	1.46
1877	1.22	1.43		1.95	1.00	1.21	1.31
1878	1.17	1.22	1.30	1.13	1.00	1.13	1.30
1879	1.21	1.66	1.33	·97	1.00	1 ·19	1.22
1880	1.45	1.45	1.96	1.12	1.25	1.52	1.51
1881	1.20	1.33	1.95	•96	1.25	1.13	1.27
1882	1.13	1.32	1.16	•72	.75	1.29	1.30
1883	1.06	1.35	1.67	•75	1.00	1.30	1.24
1884	1.43	1.28	1.39	1.06	1.00	1.29	1.39
1885	.1.09	1.24	1.40	•93	1.00	1.24	1.41
1886	1.05	·88	1.06		1.00	1.24	1.14
1887	1.09	1.22	1.92	•••	1.00	1.06	1.36
1888	1.41	1.35	2.02		94	1.14	1.49
1889	$\cdot 75$	•64	1.54	•••	1.00	1.11	1.41
Mean	1.21	1.32	1.26	1.10	1.13	1.24	1.31

NOTE.—All the calculations in this table were made in the office of the Government Statist, Melbourne. For the land under and total produce of each crop in the respective colonies during the seventeen years ended with 1889-90, see summary of Australasian Statistics (third folding sheet ante; and for average yields per acre in 1889-90, see Table XVI. of Appendix A. post.

Colonies with highest and lowest average yields. 453. It will be observed that, according to the mean of the whole period, 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, barley, and hay is in South Australia; and the yield of potatoes is lowest in Queensland, New South Wales, and Western Australia, in which

^{*} The produce of crops in Queensland was not given prior to 1878. No agricultural statistics were collected in South Australia during the four years ended with 1888-9.

the difference in the average yield is very slight. Victoria stands third in regard to the average per acre of oats and potatoes, fourth in regard to wheat and barley, and fifth in regard to hav.

454. It will further be noticed that in 1888-9 the average produce Average proof all the crops named in Victoria, New South Wales, and South and previous years Australia, and of wheat and oats in Queensland, was very much below compared. the mean of the seventeen years to which reference is made; but that the average produce of all the crops in Western Australia, Tasmania, and New Zealand, and of barley, potatoes, and hay in Queensland, was either above, or only slightly below the average of the same period.

455. 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 countries. the United States of America. All the information has been taken from official documents :---

Land under
crop in
British and
Foreign
countries

		Number of Acres under—					
Country.	Year.	Wheat.	Oats.	Barley.	Rye.	Potatoes.	
The United Kingdom Australasia	$ 1889 \\ 1888-9 $	2,545, 3,570,	4,140, 616,	2,316, 158,	85,	1,377, 112,	
Canada—			, ,				
Ontario	1888	1,194,	1,850,	895,		154,	
Quebec, Nova Scotia, and New Brunswick	1881	305,				235,	
Manitoba	1888	518,*	171,*	70,*		11,	
Prince Edward Island, British Columbia,	1885	67,	35,	12,		4,	
and the Territories			•				
Cape of Good Hope	1875	188,	115,	29,	• • •	9,	
Austria	1887	2,875,	4,631,	2,798,	4,985,	2,758,	
Belgium	1883	811,	616,	99,	686,	492,	
Denmark	1881	138,	991,	781,	660,	110,	
France	1887	17,210,+	9,189,	2,308,	4,012,	3,675,	
Germany	1888	4,775,	9,466,	4,256,	14,361,	7,213,	
Holland	1887	210,	285,	111,	504,	364,	
Hungary	1888	6,842,	2,581,	2,424,	2,731,	1,085,	
Italy	1883	11,700,	1,100,	856,	397,	173,	
Norway	1875	11,	224,	138,	37,	86,	
Russia in Europe	1881	28,947,	34,890,	12,454,	64,609,	3,713,	
Sweden	1887	1,089,‡	2,742,§		•••	384,	
United States	1887-8	37,336,	26,998,	2,902,	2,053,	2,357,	

LAND UNDER CERTAIN CROPS IN SOME BRITISH AND FOREIGN COUNTRIES (000'S OMITTED).

* Estimated.

† Including spelt (Triticum spelta).

‡ Including also rye. § Including also barley and mixed corn.

Victorian Year-Book, 1889-90.

Gross yield of crops in Foreign countries.

456. The official returns of the various countries contain state-British and ments 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.		Number of Bushels* of—					
	Year.	Wheat.	Oats.	Barley.	Rye.	Potatoes.	
The United Kingdom Australasia	1889 1888-9	75,884, 26,206,	$164,079, \\ 14,926,$	74,704, 2,872,	···· ···	257,416, 16,096,	
Canada— Ontario Quebec, Nova Scotia,	1888 1881	20,284, 3.070,	$65,467,\ 25,161,$	23,367, 2,064,	••••	22,274, 29,213,	
Manitoba Prince Edward Island British Columbia	1887-8 1, 1885	7,000.† $1,147,$	7,265, 1,046,	1,925, 257,		2,640, 480,	
and the Territories Cape of Good Hope	1888	3,812, †	1,230,†	747,†	•••	749,†	
Austria	1887	50,737,	101,844,	56,563,	88,462,1	327,483,	
Belgium	1887	16,504,	23,601,	3,588,	17,622,	116,491,	
Denmark	1888	3,663,	32,401,	22,608,	15,098,	11,038,	
France	1887	309,254,‡	220,312,	46,497,	65,111,	460,701,	
Germany	1888	92,966,	256,082,	99,647,	243,442,	862,354,	
Holland	1887	6,677,	11,750,	5,077,	13,350,	74,393,	
Hungary	1888	131,670,	54,772,	43,721,	40,894,	103,258,	
Italy	1888	101,033,	13,722,	6,567,	3,536,	24,613,	
Norway	1875	276,	8,896,	4,285,	1,016,	19,591,	
Russia in Europe	1887	269,085,	599,420,	162,498,	721,247,	305,224,	
Sweden	1888	3,672,	60,884,	13,107,	19,347,	41,292,	
United States	1887-8	403,162,	680,295,	55,076,	20,061,	130,006,	
	\$ 5			р Х. Т.	27 3 9		

Average yield of wheat in United Kingdom.

457. Until 1884 no official return was made of the produce of crops in the United Kingdom. Estimates more or less reliable have frequently been made by private persons, especially of the wheat yield. The London Statist's Annual Supplement of the 31st January, 1885, gives a statement originally taken from The Times, and evidently prepared with great care, of the assumed yield per acre of this crop in the eighteen years ended with 1883, and this has been supplemented by the official figures for the six years ended with 1889, published by the Agricultural Department of the Privy Council Office§:-

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* 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 Belgium, France, and Italy was stated in cwts., and that of Australasia in tons. All these have been converted into Imperial bushels upon the 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 969,447 of an Imperial bushel.

‡ Including also spelt (Triticum spelta). † Estimated.

§ Agricultural Produce Statistics of Great Britain, 1889 : Eyre and Spottiswoode, London.
		K	NGDOM, 18	66 то 188	39.		
		Bus	hels per Acre.			Busl	hels per Acre.
1866			27	1878		- • •	30
1867			25	1879	• • •		18
1868	• • •	•	34	1880	• • •		26
1869			27	1881		, 	$\overline{27}$
1870		• • •	32	1882			28
1871			27	1883			$\frac{1}{26}$
1872			23	1884			$\frac{1}{30}$
1873	- • •		25	1885			31
1874			31	1886			27
1875			23	1887			32
1876		• • •	27	1888			28
1877			22	1889	• • •		30
T() (2000		• • •	00

AVERAGE PRODUCE PER ACRE OF WHEAT IN THE UNITED

458. The average produce in the 24 years was about 27 bushels wheat yield in United per acre, which is much above the yield in any of the Australasian Kingdom and colonies colonies except in New Zealand. The yield in 1889 (30 bushels to the acre) was, it will be observed, exceeded in five previous seasons.

459. The acreable produce during several years in the countries Average named in a previous table has been calculated in the office of the Government Statist, Melbourne, and is given in the following table:-

yield of crops in British and Foreign countries.

AVERAGE PRODUCE PER ACRE OF SOME BRITISH AND FOREIGN COUNTRIES.

		Bushels* per Acre of—						
Country.	Wheat.	Oats.	Barley.	Rye.	Potatoes.			
The United Kingdom	$29 \cdot 9$	39.7	32.4		186.9			
Australasia	11.0	28.7	$22^{\cdot}2$	• • •	155.7			
Canada—								
Ontario	17.0	35.4	26.1		144.6			
Quebec, Nova Scotia and New Brunswick	9.9				124.3			
Manitoha	13.5	42.5	27.5		240.0			
Prince Edward Island	17.1	29.9	21.4		120.0			
British Columbia, and								
Cape of Good Hope	20.3	10.7	25·8	• • •	83.2			
Austria	17.6	22.0	20.2	17.7	118.7			
Belgium	20.4	38.3	36·2	25.7	236.8			
Denmark	26.5	32.7	28.9	22.9	100.3			
France	18.0	24.0	20.1	16.2	125.4			
Germany	19.5	27.1	23.4	17.0	119.6			
Holland	31.8	41•2	45 [.] 7	26·5	204.7			
Hungary	$19\cdot 2$	$21\cdot 2$	18.0	15.0	95.2			
Italy	8.6	12.5	7.7	8.9	142.3			
Norway	25.1	39.7	31.0	27.5	227.8			
Russia in Europe	9.3	17.2	13.0	$11\cdot 2$	$82\cdot 2$			
United States	10.8	25.2	19.0	9.8	55.2			
			ļ		ļ			

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* See footnote (*) to table following paragraph 456 ante.

Yield of wheat in Foreign countries and Australasia.

460. It will be observed that the yield of wheat per acre was 32 bushels in Holland, 30 bushels in the United Kingdom, 26 bushels in Denmark, 25 bushels in Norway, 20 bushels in Belgium and the Cape of Good Hope, 19 bushels in Germany and Hungary, 18 bushels in France and Austria, 17 bushels in British Columbia and Ontario. and $13\frac{1}{2}$ bushels in Manitoba, all of which were above the average of Australasia; but the wheat yields of the United States (slightly), Quebec, Italy, and European Russia were below the average of that group of colonies.

Yield of oats, Foreign countries and Australasia.

461. According to the figures, the yield per acre of oats is higher potatoes in in Australasia than in the Cape of Good Hope, Austria, France, Germany, Hungary, Italy, European Russia, or the United States, but lower than in any other of the countries named. The yield of potatoes in Australasia is above that in any of the other countries named except the United Kingdom, Manitoba, Belgium, Holland, and Norway.

Wheat crop of the world.

462. The following table contains a statement of the wheat crop in various countries of the world in 1888 and 1889, and the estimated wheat crop in the European countries in 1890. The figures have been taken from a carefully prepared paper on "The World's Wheat Crop and Wheat Values," read by Mr. J. W. Rush before the National Association of British and Irish Millers at the convention held in Edinburgh, on the 30th July, 1890* :---

WHEAT	Crop	\mathbf{OF}	THE	WORLD,	1888,	1889,	AND	1890.
	·		•					

				Bushels.				
	Countries.		-	1888.	1889.	1890. (Estimated.)		
	EUROPE.							
Austria	• • •	•••		49,584,	36,400,	44,000,		
Hungary		•••		137,664,	91,856,	136,000,		
Belgium	• • •	• • •		16,000,	18,000,	20.000,		
Bulgaria		• • •		36,000,	35,200,	32,000.		
Denmark	•••	• • •		3,840,	5,000,	6,000,		
France	• • •		[275,344,	314,000,	280,000,		
Germany	•••	•••		92,024,	85,000,	96,000,		
Greece	• • •	• • •		10,000,	11,000,	12,000,		
Holland	• • •	* * *		4,800,	6.000,	6,000,		
Italy	•••	•••	•••	101,040,	100,640,	109,200.		
Portugal		* * *		6,800,	8,000,	8,000,		
Roumania	•••	•••	••••	56,480,	43,496,	56,000,		

* See The Miller (London Journal) of the 4th August, 1890, page 219.

Countries		Bushels.				
		1888.	1889.	1890. (Estimated.)		
EUROPE—continued.						
Russia (including Poland)		312,000,	190,000,	240,000,		
Servia	• • • •	8,600,	6,000,	10,000,		
Spain		65,760,	73,600,	80,000.		
Sweden		3,696,	3,704.)	,		
Norway		400.	400.	4,000,		
Switzerland		2,000.	2.400.	2400		
Turkey (Europe)		40.000.	36,000.	32,000		
United Kingdom		74,488	75 880	72,000,		
	•••			12,000,		
Total for Europe	•••	1,296,520,	1,142,576,	1,245,600,		
Algeria		21,960,	15,760,			
Argentine Republic	•••	12,000,	24,000,	• • • •		
Australasia		26,200,	42,200,			
Asia Minor		36,000,	36,000,			
Canada		32,000,	30,000,			
Cape Colony		4,000,	4.400.			
Chile		12.000.	15.000.	• • •		
Egypt		8.000.	7.000.			
India		260.368.	237.144.	- • •		
Persia		22,400	22,000			
Svria	•••	14,000	12,000	•••		
United States	••••	415 864	490 560	-		
	• • •			• • •		
Total out of Europe		864,792,	935,264,*			
Grand Total		2,161,312,	2,077,840,			

WHEAT CROP OF THE WORLD, 1888, 1889, AND 1890. (000's OMITTED)—continued.

463. Supposing these figures to be correct, and the wheat to be value of world's worth four shillings per bushel, the total value of the world's wheat ^{world's} wheat crop. crop would be over four hundred and thirty-two millions sterling in 1888, and over four hundred and fifteen millions sterling in 1889.

464. In order to carry out experiments, devised for the purpose of Experimen-

ascertaining the suitability of the Victorian climate and soil for various ^{tal tarm,} Dookie. 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

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^{*} This total is 800 greater than the sum of the above figures.

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

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 1889 were £2,958 6s. 4d., and the expenditure £2,272 8s. 3d. Of the amount expended £511 19s. 1d. was paid for additional plant, £52 for horses, £321 14s. 3d. for sheep, and £93 for building. So far as possible, the provisions necessary for the students at the Agricultural College and the staff thereof, were obtained from the farm.

Since the erection of the new dairy, and the use of the De Laval Cream Separator, there has been no trouble in obtaining a sufficient supply of good butter. The farm is now fairly equipped as regards implements and machinery.

During the year the rain-fall recorded was 32.31 inches.

40 acres of Lucerne are doing well.

40	,,	Ensilage	· • •	yielded	$270 ext{ tons.}$
40	,,	Chevalier barley		. ,,	18 bus. per acre.
80	,,	Hay	• • •	"	120 tons.
50	,,	Steinwedel wheat		,,	16 bus. per acre.
40	,,	Port McDonnell wheat	· · ·	,,	12 ,, ,,

The balance of the cultivation paddocks was too wet for sowing, and the whole of the crops suffered from excessive wet.

Numerous experiments were conducted with varieties of wheat, barley and oats, grasses, clovers, sorghums, millets, mangolds, beets, turnips, etc.

Various manures were tested at their monetary value, as compared with stable, cow, pig, and sheep manure; also various methods of putting a crop of wheat in and sowing at different depths, and quantity of seed per acre.

There are 25 acres under vines, and the vintage of this year promises to be good, but the vines suffered for want of rain early in the year. Of the above there are 5 acres of various wine grapes, planted in 1880; 7 acres of various table grapes, planted in 1887; 5 acres of Gordo Blanco and Zante Currants, planted in 1888; and 8 acres of Red Hermitage, planted in 1889.

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

The valuation of the farm and its belongings at the end of 1889 was as follows :--

Farm a	nd improve	ments		• • •		£20,900	0	0
Buildin	igs					2,187	12	7
Horse s	stock		•••			571	10	0
Cattle,	Shorthorn					465	0	0
	Hereford		· · ·	- 		304	0	0
,,	Ayrshire					105	0	0
,,	Common		· - •			300	0	0
Pigs	•••		•••			199	0	0
Sheep					• • •	1.086	0	0
Implen	nents and m	nachinery	• • •	· • • [·]		1.720	16	7
Bees		•				46	0	0
Wine,	etc.					411	0	0
Furnit	ure, etc.		· • •			85	14	6
Dairy	••••	•••	•••	•••	•••	125	0	0

£28,506 13 8

The average cost of maintenance of 40 students per head per annum is £25 2s. 6d.

465. An Act for the establishment of Agricultural Colleges* was Agricultural colleges. passed towards the close of 1884. The following particulars respecting this Act and its operations have been supplied by Mr. D. Martin, the Secretary for Agriculture :---

This Act provides for the permanent reservation from sale of 150,000 acres of Crown lands by way of endowment of State Agricultural Colleges and Experimental Farms, which, together with other lands reserved as sites for such institutions prior to the passing of the Act, are to be vested in three trustees to be appointed by the Governor in Council. The Act also provides for the appointment of a Council of Agricultural Education, consisting of eleven members, three of whom are to be the trustees just mentioned, one to be the Secretary for Agriculture (who is to be the treasurer of the council), five to be elected annually by the governing bodies of Agricultural Societies in Victoria, and two to be appointed by the Governor in Council. The trustees, subject to regulations made by the Council of Agricultural Education, may lease lands for building purposes for periods not exceeding 33 years, and for other purposes for periods not exceeding 14 years, and upon a requisition of the same council may dedicate, as sites for Agricultural Colleges and Experimental Farms, any lands purchased by them or described in the Act. All moneys received by the council from the sale of stock or farm produce, or as fees from students at Agricultural Colleges and Experimental Farms, together with all other money coming to the council, are to form a fund to be called the Agricultural College Fund, which is to be expended in providing instruction for students, or in purchasing stock, seed, agricultural implements, and all other necessaries for the education of the students and the proper working of the Experimental Farms, etc. The council, subject to Ministerial approval, have the appointment of professors, teachers, officers, and servants for the Colleges and Experimental Farms. Most of the proceedings of the trustees and of the council have to be approved by the Governor in Council before coming into effect. The Act was amended in 1885, + so as to provide for five members being elected by members of Agricultural Societies in lieu of by the governing bodies of such societies; also for the elections to be held once in every three years, instead of being held annually.

Of the land intended as endowment, 132,236 acres have been reserved and vested in the trustees, and 125,226 acres of the land so vested have been leased for agricultural and grazing purposes. The total of the annual rents payable amount to £5,686 15s. 9d. The areas reserved under section 4 of Act No. 825, as sites for Colleges and Experimental Farms, amounted to 13,393 acres.

The first school was erected on the Dookie Experimental Farm Reserve. The buildings comprise lecture hall, dining hall, class rooms, teachers' quarters, sleeping accommodation for forty pupils, baths, out offices, etc. The school was opened on the 1st October, 1886. The full number of pupils for which there is accommodation is forty.

The course of instruction comprises chemistry, botany, entomology, geology, advanced English, arithmetic, mensuration, surveying, book-keeping, practical work on the farm, instruction in field operations, the use of farm implements and machinery, and the management of live stock.

No fee is charged for instruction, but a payment of £25 per annum has to be made for each pupil to cover the cost of maintenance.

A second school has been erected on the Longerenong Experimental Farm Reserve near Horsham, and was opened on the 1st March, 1889. It contains accommodation for thirty-five students. The course of instruction is the same as at Dookie.

* The Agricultural Colleges Act 1884 (48 Vict. No. 825).

† By the Agricultural Colleges Act 1885 (49 Vict. No. 871).

T 2

Breadstuffs available for consumption. 466. The following table shows, for 1840 and each subsequent year, the quantity of wheat grown in Victoria, and the quantity of wheat, flour and biscuit imported after deducting exports, or exported after deducting imports; also the residue of breadstuffs left for consumption during each of those years :—

BREADSTUFFS	AVAILABLE	FOR	CONSUMPTION.	1840	то	1889.
DIVERDOTOFFO	M (AIDADUE	LOW	CONSOLLION;	TOTO	ΞŪ	TOCO.

				Wheat, Flour, and Biscuit.*				
	Year.		wheat grown in Victoria.	Imported after deducting Exports.	Exported after deducting Imports.	Available for Consump tion .		
			Bushels.	Bushels.	Bushels.	Bushels.		
1840			12,600	57,771	***	70,371		
1841	• • •		50,420	116,350		166,770		
1842	* * *		47,840	119,004	***	166,844		
1843	***		55,360	58,616		113,976		
1844			104,040	98,581		2 02,621		
1845			138,436	74,699	***	2 13,135		
1846			234 ,734	43,928		278,662		
1847			345,946	36,871		382,817		
1848	• • •		34 9,730	64,726		414,456		
1849			410.220	76,092		486,312		
1850			525,190	55,564		580,754		
1851			556.167	216,811		772,978		
1852			733.321	1.208.006		1,941,327		
1853			498.704	1,499,994		1,998,698		
1854			154 202	1.385.465		1,539,667		
1855			250.091	1.985.496		2,235,587		
1856			1.148.011	2.236.406		3,384,417		
1857			1.858.756	1.958.905		3,817,661		
1858			1.808.439	1.504.760		3,313,199		
1859			1.563.113	1.957.610		3,520,723		
1860			2,296,157	1.565.423	•••	3.861.580		
1861	•••	1	3,459,914	1.522.517	<i>,</i> , , , , , , , , , , , , , , , , , ,	4.982.431		
1862			3 607 727	183 106		3,790,833		
1863	• * 2	-+7	3 008 487	191 107	• • •	3 199 594		
1864	•••	••7	1 338 762	1 868 990		3 207.752		
1865			1 800 378	1,000,030		3 700 310		
1866	• • •	• • •	2 514 997	1 754 600	•••	5 268 926		
1867			1,611,227	15100	•••	4 656 395		
1868	***		4,041,200	169 099	* • •	3 573 701		
1860		***	<i>d</i> , 1 1,000	710 590	•••	4 048 817		
1870	* • •		4,229,220	119,959	05 054	± c01 109		
1070	* 2 2	***	9,097,030	1 170 700	99,094	5,0 01,402		
1071	• • •	• • •	2,870,409	1,179,583		4,049,992		
10/2		••	4,500,795	389,963		4,890,790		
1073	* * *		ə,391,104	•••	138,088	ə,2ə3,010		
10/4	• • •	• • •	4,752,289		40,714	4,711,575		
1875	• - •	• • •	4,850,165	200,369	1 •••	5,050,534		
1876	•••	***	4,978.914	258,931		5,237,845		
1877	***	• • •	5,279,730		384,118	4,895,612		
1878	***		7,018,257		1,005,968	6,012,289		
								

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Note.—In 1889 the imports of breadstuffs amounted to 246,060 bushels, valued at £56,369, but the exports of breadstuffs amounted to 1,603,394 bushels, valued at £404,002. The balance in favour of exports was, therefore, 1,357,334 bushels, valued at £347,633.

* The quantities of flour and biscuit imported and exported are reduced to their equivalent in bushels, on the assumption that 1 bushel of wheat produces 45 lbs. of either of those articles.

Year.		Wheet	Wheat, Flour, and Biscuit.*					
		grown in Victoria.	Imported after deducting Exports.	Exported after deducting Imports.	Available for Consumption.			
			Bushels.	Bushels.	Bushels.	Bushels.		
1879		•••	6,060,737	• • •	957,384	5,103,353		
1880		• • •	9,398,858	• • •	3,578,733	5,820,125		
1881		• • •	9,727,369	••••	3,892,974	5,834,395		
1882	•••	• • •	8,714,377		3,321,532	5,392,845		
1883	•••		8,751,454		2,376,530	6,374,924		
1884			15,570,245	•••	8,232,605	7,337,640		
1885		•••	10,433,146		3,745,985	6,687,161		
1886			9,170,538		2,226,907	6,943,631		
1887		• • •	12,100,036		3,897,987	8,202,049		
1888		•••	13,328,765		4,373,959	8,954,806		
1889	•••		8,647,709		1,357,334	7,290,375		

BREADSTUFFS AVAILABLE FOR CONSUMPTION, 1840 TO 1889-contd.

467. It will be observed that in the last thirteen years and three Population previous ones, viz., 1870, 1873, and 1874, the colony has raised enough stuffs. breadstuffs for the consumption of its own inhabitants. In each of these sixteen years there was a surplus of Victorian-grown wheat remaining for export, the quantity in 1884, however, being more than twice as large as that in any of the other years, except 1888, whilst, owing to the drought, the quantity in 1889 was much less than in any other year since 1879. The following table shows, for each year, the mean population of Victoria, the quantity of breadstuffs available for consumption, and the probable manner of consumption, distinguishing the estimated quantity of wheat used for seed, or for the feeding of live stock, poultry, etc., from the wheat, flour, and biscuit used for food, the total quantity of the latter being shown as well as the quantity per head :---

POPULATION AND BREADSTUFFS, 1840 TO 1889.

Wheat, Flour, and Biscuit.*

and bread

	Mean	Quantity Available for Con-	Probable Manner of Consumption.			
Year.	Population.		For Seed,	For Food.		
		sumption.	etc.	Total.	Per Head.	
· ·	· · · · · · · · · · · · · · · · · · ·	Bushels.	Bushels.	Bushels.	Bushels.	
1840	8,056	70,371	3,880	66,491	8.25	
184 1	15,353	166,770	3,404	163,366	10.64	
1842	22,107	166,844	4,864	161,980	7.33	
1843	23,951	I13,976	9,348	104,628	4.37	
1844	25,418	202,621	13,839	188,782	7.43	

* The quantities of flour and biscuit imported and exported are reduced to their equivalent in bushels, on the assumption that 1 bushel of wheat produces 45 lbs. of either of those articles

POPULATION AND BREADSTUFFS, 1840 TO 1889—continued.

			-	W	heat, Flour, a	nd Biscuit. ⁺	
			;;;		Probable M	anner of Cons	umption.
Y	ear.		Mean Population.	Quantity Available for Con-	For Seed.	For Food.	
				sumption.	etc.	Total.	Per Head.
				Bushels.	Bushels.	Bushels.	Bushels.
1845	• • •	* • •	29 ,007	213,135	22,933	190,202	6.26
1846	• • •	* • 1	34,807	278,662	31,604	247,058	7.10
1847	• - •	***	40,635	382,817	35,359	347,458	8·55
1848			47,163	414,456	38,775	375,681	7.97
1849	• • •	•••	58,805	486,312	48,494	437,818	7.45
1850			71,191	580,754	57,020	5 23,7 3 4	7:36
1851	• • •		86,825	772,978	59,247	713,731	8·2 2
1852	• • •		132,905	1,941,327	33,646	1,907,681	14.35
1853			195.378	1.998.698	15,107	1,983,591	10.15
1854			267.371	1.539.667	25.654	1.514.013	5.66
1855			338,315	2.235.587	85.372	2.150.215	6.36
1856			380.942	3.384.417	160.310	3.224.107	8.46
1857			430.347	3.817.661	174.460	3 643 201	8.47
1858	9 8 8	••• [483,827	3,313,199	156 468	3 156 731	6.52
1859	* • *		517 390	3 520 723	214 185	3 306 538	6.39
1860	• • •	***	534.055	3 861 580	322 503	3 539 077	6.62
1861	* * *	• • •	539 824	4 982 431	393 844	4 588 587	8.50
1862	• • •	• • •	548 080	3 790 833	394 018	3 466 815	6.23
1863	• • •	***	562,960	3 1 9 9 5 9 4	908 784	9 000 810	5.15
1000	• • •	***	502,900	0,100,004	490,704	2,900,010	5.04
			280,4 20	3,207,732	250,080	2,907,074	0'04 5.47
1809			011,218	5,700,310	3 97,290	3,343,034	5.41
1866	* * *	• • •	629,038	5,268,926	417,170	4,891,790	
1867	•••	* * *	0+1,276	4,050,395	433,978	4,422,417	66.0
1868	* * 7		663,092	3,573,701	519,608	3,034,093	4.01
1869			687,202	4,948,817	577,028	4,371,789	6.36
1870	•••	•••	713,195	5,601,402	568,334	5,033,068	7.06
1871	• • •	• • •	737,005	4,049,992	669,218	3,380,774	4.59
1872	* • 3		753,198	4,890,758	653,128	4,237,630	5.63
1873	* * *	- 7 3	765,511	5,253,016	699,952	4,553,064	5.95
1874	• • •	• • •	777,656	4,711,575	665,872	4,045,703	5.20
1875	• • •		787,337	5,050,534	642,802	4,407,732	5.60
1876	• • •		796,558	5,237,845	802,834	4,435,011	5.57
1877		•••	808,605	4,895,612	1,129,128	3,766,484	4.66
1878			821,466	6,012,289	1,383,244	4, 629,04 5	5.64
1879	• • 1		834,030	5 ,103,353	1,414,376	3,688,977	4.43
1880	× • •	••	850,343	5,820,125	1,954,570	3,865, 555	4.55
1881	•••	* * *	868,942	5,834,395	1,853,458	3,980,937	4.58
1882	•••	•••	890,220	5,392.845	1,938,724	3,454,121	3.88
1883	* * *		910,982	6,374,924	2,208,784	4,166,140	4.57
1884		• • *	933,894	7,337,640	2,192,708	5,144,932	5.51
1885	• • •	* • •	958,595	6,687,161	2,040,164	4,646,997	4.85
1886	• • •		987,094	6,9 43,631	2,105,370	4,838.261	4.90
1887		•••	1,019,700	8,202,049	2,465.886	5,736,163	5.62
1888			1,062,050	8,954.806	2,434.382	6,520,424	6.14
1889		• • •	1,104,300	7,290,375	2,357.470	4,932,905	4.47
			-				
					•	•	•

. *

* The quantities of flour and biscuit imported and exported are reduced to their equivalent in bushels, on the assumption that 1 bushel of wheat produces 45 lbs. of either of those articles.

468. The figures in the last column but two (For Seed, etc.) are Allowance intended to represent the whole quantity of wheat used otherwise waste, etc. than for the food of human beings. This is estimated arbitrarily at 2 bushels per acre of land returned as being under wheat in the year following that to which the figures in any line relate. It is known that the proportion actually sown is generally much less than this; but as a certain quantity of wheat is used for feeding swine, poultry, etc., and some is wasted or becomes spoilt, the allowance made has been thought not too high. If $1\frac{1}{2}$ bushel per acre be considered a sufficient allowance for seed, the quantity in 1889 left for consumption, waste, etc., would be 5,522,280 bushels, equal to 5 bushels per head; or, if only 1 bushel per acre be allowed for seed, the residue would amount to 6,111,640 bushels, or $5\frac{1}{2}$ bushels per head.

469. The estimated average quantity of breadstuffs available for Consumption of food to each individual of the population is shown in the last column breadstuffs of the table. This will be found to vary in different years, ranging from over 14 bushels in 1852, and between 10 and 11 bushels in 1841 and 1853, to between 4 and 5 bushels in 1843, 1868, 1871, 1877, and in seven of the eleven years since 1878; but in only one year, viz., 1882, to less than 4 bushels per head. The proportion per head reached $5\frac{1}{2}$ bushels in 1884, which was the year of an exceedingly bountiful harvest, and to as high as $5\frac{2}{3}$ bushels and $6\frac{1}{7}$ bushels in 1887 and 1888 respectively, the low price of wheat in England having, probably, acted as a check upon exportations in those two years; but in 1889 it fell, owing to the drought, to less than $4\frac{1}{2}$ bushels.

470. The quantity of breadstuffs available for annual food-Average conconsumption per head has averaged $5\frac{2}{3}$ bushels over the whole sumption of breadstuffs. period of fifty years, but during the last ten years it averaged not quite 5 bushels, or two-thirds of a bushel less. In the present state of the Victorian population, it may be fair to assume that from $4\frac{1}{2}$ bushels to 5 bushels per head, irrespective of the quantity required

per head.

for seed, is amply sufficient to supply the wants of any given year.

471. In the United Kingdom, animal food, in consequence of its Breadstuffs available high price, is used much more sparingly than it is in this country, for consumption especially by the working classes, and therefore, as a natural conin United Kingdom sequence, the consumption of breadstuffs in proportion to the numbers of the population is, on the average, somewhat higher than it is here. The following table shows the estimated mean population of the United Kingdom during each of the twenty-two harvest years (or periods extending from 1st September to the 31st August) ended

with 1887-8; also the total number of bushels, and number of bushels per head, of grown and imported wheat available for consumption. after deducting seed, in each of the same years :--

BREADSTUFFS AVAILABLE FOR CONSUMPTION IN THE UNITED Кіндом, 1867 то 1888.

			Maan Donalation	Bushels of Wheat* available for Food.		
Year ended	31st August		Mean Population.	Total number (000's omitted).	Number per Head.	
1867		***	30,248,936	152,320,	5 ·03	
1868		* # *	30,523,478	155,200,	5 08	
1869	3 4 3	* * *	30,814,914	189,360,	6.14	
1870	¥ • .,	**3	31,108,133	176,560,	5.68	
1871	. 	* * *	31,410,776	176,400,	$5\ 61$	
1872	4	***	31,728,316	170,320,	5 ·37	
1873			32,028,317	174,640,	5.45	
1874	•••	* * 1	32,325,778	174,240,	5 ·39	
1875			32,641,568	202,720,	6.21	
1876		••	32,978,682	184,512,	5 ·59	
1877	~ ~ 1	** *	3 3,329,099	174,568,	5.24	
1878			33,681,904	191,480,	5 ·6 8	
1879	. • •	• • •	3 4,036, 5 46	2 09,93 6 ,	6.17	
1880			34,364,077	179,120,	5.21	
1881	T		34,775,970	201,992,	5.81	
1882	• • 1		35,410,040	210,592,	5·95	
1883	• - •		35,517,510	24 1,568,	6-80	
1884		* * *	35,838,516	191,520,	5.37	
1885	•••	= + z	36,179,000	208,000,	5.75	
1886	۰. ۲	* • •	36,519,700	206,887,	5 ·67	
1887		• • •	36,900,486	2 04,000,	5.23	
1888		•••	37,453,574	206,000,	5-50	

Average consumption of wheat in

472. As a result of calculations derived from the figures in the table, it appears that in the twenty-two years named the average United quantity of wheat available for consumption in the United Kingdom Kingdom. was 5.65 bushels per head, or about a bushel per head more than is apparently found sufficient for the requirements of the Victorian population.

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473. According to the Government Statistician of New South Consumption of Wales, the consumption of wheat per head is considerably greater wheat in New South in that colony than in Victoria, and even greater than in the United Wales. Kingdom, the quantity consumed per head being in 1887 as much as 7.6, in 1888, 7.4 bushels, but in 1889 only 5.3, the average quantity

> * The total number of bushels of wheat available for consumption has been taken from articles in the Supplement to the Statist, London Journal. The calculations have been made in the office of the Government Statist, Melbourne.

> † See Statistical Register of New South Wales for 1889, Part IV. Production: Potter, Sydney, 1890.

in the five years ended with 1889 being 6.7 bushels. According to the same authority, New South Wales has never grown nearly enough wheat for her own consumption, the quantity imported in 1889, after deducting the exports, being about 5,080,400 bushels, whilst only 1,450,503 bushels were grown in the colony. It should be noted, however, that the latter quantity was unusually low, in the previous year the quantity received exceeded $4\frac{1}{2}$ million bushels.

474. From somewhat similar calculations taken from the official consumption of returns of the United States, the estimated consumption of wheat breadstuffs per head in per head of the population of that country averaged, during the **United** five years ended with 1887-8, 5.48 Winchester bushels,* or about States. As no deduction has been made for the 531 Imperial bushels. wheat required for seed in the United States returns, the quantity available for food consumption is considerably less than that shown by the figures, and is probably about the same as in Victoria.

475. The quantity and declared value of the Victorian imports Imports and and exports of breadstuffs during the fifty-three years, 1837 to 1889, 1837 to are set down in the following table :---1889.

exports of breadstuffs,

Wheat, Flour, and Biscuit.		Quantity.	Value.
Imported, 1837 to 1889 Exported, ,, ,,		Bushels. 33,659,692 46,473,626	£ 14,043,264 11,355,830
Imports in excess of exports Exports in excess of imports	····	 12,813,934	2,687,434

IMPORT AND EXPORTS OF BREADSTUFFS, † 1837 TO 1889.

476. It will be observed that the quantity of breadstuffs exported $_{\text{Excess of}}$ quantity from the colony from the period of its first settlement to the end of exported, 1889 exceeded that imported during the same period by over $12\frac{3}{4}$ imported. of value 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 received has exceeded that of those sent away by over $2\frac{2}{3}$ millions sterling.

477. The following are the values of the net imports-i.e., the Net imports of agriculvalues of imports after the values of the exports have been deductedtural products.

* The Winchester bushel is smaller than the Imperial bushel by one thirty-second $(\frac{1}{32})$ part. † 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.

of certain vegetable productions during each of the six years ended with All the articles named are capable of being produced, and all, 1889. or nearly all, are to a certain extent now produced in the colony :--

Balance of Imports over Exports in-Articles. 1885. 1884.1886. 1887. 1888. 1889. £ Ë £ £ £ £ 36,249 126,990 | 147,989 86,474 69,669 296,207Oats 4,183 44,564 29,14895,357 15,359Barley and pearl barley . . . 9,903 2,0567,565 Malt 7,232 1,500 10,118 13,853 38,961Maize 18,956 7,498 7,908 Maizena and corn flour 8,599 5,289 13,6428,801 Beans, pease, and split 1,667 1,8434152,987. . . - - pease 2,7902,183 1,872 Arrowroot... 558 1.1051,4552,271 2,295 Macaroni and vermi-1,2982,4412.066686 celli 9,176 8,544 3,569 6,070 Starch 14.517 9,372 Fruit—fresh, bottled, 113,587 226,888 212,868 152,967146,678 234,800dried, currants, and raisins Jams, jellies, and pre-3,964 3,068 . . . • • • serves 8,973 Nuts, almonds, walnuts 4,5829,429 7.033 6,076 10,071 Peanuts 474 689 2,1291,615 1,439 · . . • • • · **.** . 2,2862,3473,845 3,064 Ginger 3,3221,552 • • • - - -38,886 Opium 37,850 33,493 28,72832,71329,955 • • • Hops 6,18513,500 28,57918,557 38,856 2,269 Chicory . . . - - -. . . Pickles 7,853 4,688 5,570 · . . 9,386 7,620 7.005. . . Mustard ... 9,789 8,304 19,26117,920 13,87216,160 . . . Oil, olive, and salad ... 18,496 11,427 15,204 8,953 18,642 13,557 linseed 31,121 38,040 47,581 31,484 31,144. . . 31,404" 24,238 castor... 35,766 10,797 34,48524,445. . . 31,700Linseed meal 888 446459 602• • • Tobacco, cigars, and 101,836116,212 128,618 258,191179,955 233,221snuff Flax (Phormium) 6,756 8,312 5,215 7,314 . . . 3,595 8,752 Hemp 36,20829,92749,793 ... 17,99433,098 43,636 - - •

NET IMPORTS* OF CERTAIN ARTICLES OF AGRICULTURAL PRODUCE, 1884 TO 1889.

Jute	9,716	3,449	1.126		2.636	1,165
Broom corn and millet	6,240	6,959	7.447	4.632	4,932	7,469
Bark	6,492	20,905	2.287	2,955	•	
Cork	19,193	13,867	19.811	1,403	935	758
Vegetables (preserved)	• • •	427	897		1.063	269
Canary seed	1,449	2,008	1.314	1,571	2.181	1,817
Grass and clover seed	7,063	14,667	11.333	13,390	10,901	16,538
Seeds, undescribed	• • •		11,310	15,402	8.831	10,928
Tares	114	109	31	81	267	185
Total	498,836	632,071	703,430	790,070	915,068	1,262,555

[#] The total imports and total exports of these articles during 1889 will be found in the first table in Part VI. "Interchange," ante, under Orders 14, 22, 23, 25, and 26.

478. It will be observed that malt and linseed meal are absent Decreased from the list for the last year; also that bark is absent from the list agricultural in the last two years, and chicory in the last four years, the latter having appeared only once, viz., in the column for 1885.

479. In addition to the articles named in the above table, eggs, of Net import which it might reasonably be supposed that Victoria would produce sufficient for her own consumption, were imported in 1889 to the number of 10,714,484, and to the value of £40,076; and exported to the number of only 45,256, and the value of only £169, the difference in favour of the former being 10,669,228 in number, and £39,907 in value. The value of the imports of eggs in 1888 exceeded that of the exports by £34,745, in 1887 by £30,498, in 1886 by £15,020, in 1885 by £10,200, and in 1884 by £3,958.

480. Of every thousand acres cultivated during the past season, 449 Proportion acres were placed under wheat, 90 under oats, 35 under barley, 18 under potatoes, 172 under hay, and 237 under other tillage. The following table shows the proportion that the land under different crops has borne to the total area under tillage during each of the last ten years :—

Year ended March.		Proportion to the Total Land under Tillage of that under—								
		Wheat.	Oats.	Barley.	Potatoes.	Hay.	Other Tillage.			
			per cent.	per cent.						
1881	• • •		48.97	6.72	3.43	2.25	12.51	26.12		
1882	•••	• • •	50.87	8.07	2.67	2.15	11.65	24.59		
1883			47.50	8.32	2.14	1.68	15.16	25.20		
1884	• • •	•••	49.84	8.49	2.11	1.81	13.67	24.08		
1885			47.19	8.08	2.68	1.66	14.62	25.77		
1886	• • •	•••	42.41	8.98	3.08	1.77	17.51	26.25		
1887			43.49	7.67	1.23	2.07	18.39	26.85		
1888	· · ·		47.86	7.72	1.59	1.87	17.15	23.81		
1889		• • •	47.46	7.70	3.26	1.68	16.04	23.86		
1890	•••	•••	44.87	9.00	3.42	1.79	17.19	23.70		
								1		

PROPORTION OF LAND UNDER EACH CROP TO TOTAL UNDER CULTIVATION, 1881 TO 1890.

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481. In addition to the principal crops of which mention has been Minor crops 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 the nature of certain

minor crops grown in Victoria rather than the extent to which those crops have been cultivated during the last six years :---

Minor Crops,* 1885 to 1890.

Nature o	f Crop.	1884-5.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.
	(90°05		-		12	34	3
Ambon anno	acres	•••			90	104	
Amper cane	sand lbs				280	120	750
	(a a r a g	6	3	•••	-00		100
Arrowroot	λ tops (noot)	197	41	•••		•••	**•
	$\left(\begin{array}{c} 10118 \\ 0 \end{array} \right) \left(\begin{array}{c} 1000 \\ 0 \end{array} \right) \dots \right)$	121	TT.	•••		•••	***
Artichokes	tong	2 20	• • •	•••	55	• • •	* + •
Dest commete		20 455		467	485	269	306
Deet, carrots,	tone	9 879	4.300	4 411	4 672	2 250	4 111
parsmps		3,012	Ŧ,000 2	T , TT	5	12	z ,111 7
Dragma maillat	acres		5			12 72	41
Droom-minet	and hereh	43			28	384	
	(seed, bush		20	•••	20	001	9
Buckwheat	hughola	2 58	30	•••		• • •	2 10
	(Dusheis		90	 Q	* * *		Ŧ
Canary seed	hughola		• • •	194	• • •	•••	* * *
Cauliflowers and	(Dushers		· 97	114			
caumowers and	dozona	1 200	18 500	27 360	68 345	62 830	11 800
cabbages		4,500	916	21,300	949	148	990
Chicory	tong	1 209	1 220	1472	1375	811	1 376
Dumph		1,003	1,400	1, 112	1,010	011	1,010
Dullan	acres	····	7	-		3	138
Flax	fibro cwt	7	9	•••	5	U U	3 550
	linseed hush	73	18	•••	7		507
	(acres		10	•••	2	2	7
French beans	$\frac{1}{1000}$ tons			•••		4	. 4
~ •	(acres	45	7	43	83	46	
Garden seeds	ewt	$\overline{74}$	14	215	196	66	
A 1	(acres		3	2	4	4	14
Gooseberries	? cwt		28	23	140	135	130
Grass and clover	cacres	2,329	2,942	4,667	4,638	1,541	3,390
seeds	d bushels	35,559	39,793	61,490	61,177	17,444	54,547
Crean needs	cacres	108	92	80	152	85	11
Green pease	(tons	36	141	98	234	117	7
Hong	(acres	1,737	896	730	685	761	829
110ps	∂ lbs	1,573,936	616,112	562,576	605,360	618,128	639,632
Kail (thousand	∫acres	••••					9
headed)	(tons		•••				225
Maize	facres	3,854	4,530	4,901	6,031	5,789	8,447
	(bushels	176,388	181,240	231,447	318,551	267,155	357,047
Mangel-wurzel	Sacres	1,413	1,346	1,257	1,191	897	984
	(tons	21,935	$24,\!129$	19,142	20,590	13,974	15,604
Medicinal herbs	acres			3		•••	3
Melons, vege-							
table marrows,	(acres			• • •		10	6
cucumbers,	dozens			•••		3,040	560
etc.†				_			
Mulberry trees	y acres		4	1	1	1	1
v	(number		•••	•••	1,000	1,000	1,000
		1	[

* Exclusive of those grown in gardens. † Previous to the year 1889, pumpkins, melons, vegetable marrows, and cucumbers were shown in one line.

MINOR CROPS,* 1885 TO 1890—continued.

Nature of	f Crop.	1884-5.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.
Mustard	acres	61	7	20	16	34	28
Olives	acres	287 13	15 14	100	80 18	112	105
0	acres	1.750	1.740	1.996	2.437	1.768	1.957
Unions	tons	11,816	10,209	11,625	11,774	4,430	10.815
Onium nonnies	acres	10	16	11	11	8	10
opium poppies	Ubs. of opium	190	200	139	178	86	169
Oranges and	acres	2	6	2	34	7	33
lemons T	(cases	 9	··· -	0			270
Osiers	$\frac{1}{1000}$	3 2	G	05	•••	0 11	5 19
_	acres	35 288	35 460	28.672	26 692	31 222	10 22 784
Pease and beans	bushels	846.859	761.351	583.269	732.060	361,724	528 074
Darma himat	cacres	119	153	69	107	158	252
rumpkinst	tons	837	1,447	536	850	9 59	1,251
Pyrethrum cin-	acres	•••	• • •				6
eraria folium ($\langle cwt. \dots \rangle$	···	•••				12
Rape for seed	Acres	47		44	70		1
	(Dusheis)	 961	 971	 930	940	597 994	170
Raspberries) cwt.	6 307	6 470	4 4 9 9	5384	5244	3 337
	(acres	0,001	0,110			0,410	9
Red currants	? cwt			•••			30
Dhuhanh	¢acres	8	11	20	10	22	3
Mubaro	{ tons	18	31	169	85	132	20
Rumax	acres						8
Rye	(acres		654	762	1,069	1,109	
Sanda (acmientru	(busnels	19,909	8,278	11,200	14,900	10,744	10,707
ral & garden)) acres	•••			•••	• • •	252
	(acres	76	55	35	68	66	40
Strawberries) cwt	1,468	941	243	616	613	267
Sunflowers for	(acres	2		6	8		
seed	¿bushels		••••	140	128		•••
Teazles	∫acres	2					•••
· · · · · · · · · · · · · · · · · · ·	(number	4,000	 1 066	 9 ∩91	1.066	 1 695	
Tobacco	vacres	1,402 7 803	13 734	12,001	11 853	13 355	900 4 1 2 3
	(acres	21	34	26	45	42	28
Tomatoes	$\partial \operatorname{cwt}$.	1.278	4,800	2,280	6,914	3,240	960
M	(acres	209	253	443	303	379	424
iurnips	<i>i</i> tons	1,600	2, 179	2,767	4,102	4,56 0	4,984
Vetches and	(acres	26	1	•••	1		
tares for seed	(bushels		40				
V.	(acres	9,042	9,775		11,195 1167.054	12,886	15,662
vines	<pre> wine, galls. bounder</pre>	700,752	1,003,827 2 975	900,041 2 999	1,101,314 2 250	1,209,44Z 2 00/1	1,070,090 5 985
Walnute	Coranuy, "	.	0,010	0,200	4	2,004	7
······································							

* Exclusive of those grown in gardens.

† It is estimated there are over 100 acres planted with oranges and lemons, but such plantations are seldom distinguished separately, being included under orchards.

[‡] Previous to the year 1889, pumpkins, melons, vegetable marrows, and cucumbers were shown in one line.

*

Minor crops not fully returned. 482. In 1888-9 a falling-off took place in the cultivation of most of the minor crops in consequence of the drought which occurred in that year. A recovery took place in the year under review, but this is not fully shown by the figures, the reason being that a column for market gardens was for the first time inserted in the column used in the collection of the agricultural statistics of 1889-90, and this has in some instances led the collectors to believe it was only necessary to return the garden as a whole, not to distinguish the particular crops grown therein.

Hops.

483. 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. The maximum was reached in the following year, when 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 quality produced; a gradual improvement, however, has taken place since 1887-8, both in the area under, and produce of the crop referred to.

Raspberries. 484. Raspberries as a field crop are extensively grown in the more elevated parts of the colony, especially about the ranges in which the River Yarra and its tributaries have their source. The quantity returned as raised in 1889-90 was 3,337 cwt., or about 1,912 cwt. less than in 1888-9, and also considerably less than in any of the previous five years. Since the establishment of jam factories, the fruit is in great demand, and much more would be purchased were it forthcoming.

Tobacco.

485. 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; 955 acres were placed under it in 1889-90, and the yield amounted to 4,123 cwt. The land placed under tobacco was less than in the previous year by 730 acres, and the quantity raised less than in that year by 9,232 cwt. A considerable falling-off has taken place in the area under this crop since 1886-7.

Tobac**eo** erop in various countries.

486. In 1888, the tobacco crop of the United States is estimated to have amounted to 5 million cwt., which, with the exception of the ^s crop of 1885, which slightly exceeded it, is the largest tobacco crop

ever raised in that country. The average crop during the five years ended with 1887 was 4,418,862 cwt., which figures, together with the figures for several European countries and for Australasia during the latest year for which information is obtainable, were as follow :----

TOBACCO CROP IN VARIOUS COUNTRIES.

		ewt.			ewt.
United States	••••	4,418,862	Italy		120,748
Austria-Hungar	y	1,277,218	Holland (1884)		58,583
Russia (1881)	• • • • • • • • • • • • • • • • • • • •	930,797	Australasia (1889-90)		*34,480
Germany		758,373	Turkey	•••	17,553
France	•••	421,731			-

487. The annual consumption of tobacco in Victoria ranges from Consump-2.61 lbs. to 3.55 lbs. per head of the population, the average during a series of years being nearly 3 (2.93) lbs.⁺ This is a larger average than that obtaining in twelve of the following countries, the information respecting which, except that relating to the Australasian colonies, has been derived from a paper read by Dr. O. J. Broch before the Statistical Society of Paris, on the 15th June, 1887.[‡] Attention is called to the very high average consumption of tobacco in Holland and the United States of America :—

Average Annual Consumption of Tobacco per head in Various Countries.

			lbs.					lbs.
Holland	• •	• • •	 6·92	Norway	•••	•••	•••	2.29
United States	i		 4.40	Canada	•••			2.11
Austria-Hung	ary		 3.77	France	• • •		•••	2.05
Denmark	· ·		 3.70	Sweden	•••			1.87
New South W	Vales		 3.23	Tasmania	•••		•••	1.85
Queensland		•••	 3.49	New Zeala	nd			1.75
Western Aus	tralia		 3.26	Spain			•••	·1·70
Switzerland			 3.24	United Kir	ngdom		• • •	1.41
Belgium .			 3.15	Italv				1.34
Germany .			 3.00	South Aust	ralia			1.32
Victoria			 2.93	Russia				1.23
Finland		• • •	 2.73			•••		

488. Beet for the manufacture of sugar has been as yet only Beet sugar.

grown in Victoria experimentally, and upon a small scale; but ordinary beet, mangolds, and root crops generally, which have for years past been cultivated to a considerable extent, succeed so well that there is every reason to believe sugar beet could be grown to advantage, did not the low price of sugar, consequent upon the heavy subsidies by which the industry is fostered in several European

* In the previous year the yield was 70,486 cwt.

† In 1887, the proportion was 2.61 lbs., in 1388, 3.31 lbs., and in 1889, 3.55 lbs. per head.

‡ See Journal de la Société de Statistique de Paris, vingt-huitième année, page 237; Berger-Levrault, Paris, 1887. The consumption is there given in kilogrammes, which have been turned into lbs., on the assumption that 1 of the former is equal to 2.204 of the latter. countries, prevent sugar-making from being carried on at a profit. The following statement, however, of the average quantity of beet sugar made annually during the five years 1880 to 1884 in the different countries in which that product is manufactured may be useful and interesting at the present time :---

Beet-roo	t Sugar	PF	RODUCED AN	NUALLY I	n Vari	ovs	COUNTRIES.
		To	ns of Beet Sugar made annually.				Tons of Beet Sugar made annually.
Germany		- -	656,674	Holland	d		19,679
Austria-Hung	ary .	••	470,318	Other of	countries	•••	9,839
France		••	399,471				
Russia			279,436		Total	• • •	1,909,212
Belgium			73,795				·

Cane sugar.

CANE SUGAR PRODUCED IN VARIOUS COUNTRIES, 1881 TO 1885.

Countr	ies.		1881.	1882.	1883.	1884.	1885.
			tons.	tons.	tons.	tons.	tons.
Australia			26.475	34,500	51.500	59.869	87.24
Barbados			45.067	46,360	45.836	53,722	56,200
Brazil			194.516	131.397	226,709	268.335	190,000
Cuba			449.067	538.388	412.890	560,934	631.967
Egypt	• • •		32,000	26,377	21,597	37.587	45,035
Guadaloupe	• • •		42,275	57,511	51.619	55,257	41,131
Guiana (British)		• • •	92,311	124,102	116.636	125.322	96,058
" (French	and	Dutch)	8,988	9,794	10,193	7,228	5,430
India (British)	• • •		32,710	72,479	72,489	82,749	54,349
Jamaica			18,166	38,968	26,558	29,868	25,361
Java			249,393	295,083	301,970	338,886	396,372
Louisiana			121,867	71,373	137.327	128,443	94,375
Manilla		. 	210,160	153,780	212,719	122,925	203,490
Martinique	• • •	4 2 7	42,090	47,888	46.857	49,370	38,780
Mauritius	•••		118,210	117,722	116.612	120,539	127,540
Natal		* • =	8,718	8,000	9.783	17.172	16,000
Porto Rico	• • •	* * *	61,715	80,066	77.632	98,665	70,000
Réunion	•••		27,373	25,059	33,020	37,800	37,973
Trinidad	•••		44,375	56,265	55.420	61.875	64,634
Other countries*	• • •	•••	35,000	80,972	76,705	290,985	310,701
Total	•••	••••	1,860,476	2,016,084	2,104,072	2,547,531	2,592,647

Sugar crop of the world, 1886-7. 490. The following is a statement of the sugar crop of the world in 1886 and 1887, cane sugar, whether grown in British possessions or foreign countries, being distinguished from beet sugar, all of which is obtained from the latter :—

* China, Peru, and Hawaii.

	Description of Sugar.	1886.	1887.	
Cane sugar ,, ,, Beet sugar	from British possessions "Foreign countries 	••••	tons. 572,000 2,021,000 2,506,000 5,099,000	tons. 542,000 2,161,000 2,137,000 4,840,000

SUGAR CROP OF THE WORLD, 1886 AND 1887.

491. According to the following figures, Victoria, although not Consumption of consuming so much sugar per head as three of the other Australasian colonies, would appear to consume much more per head than any countries. European country, the average quantity being $90\frac{3}{4}$ lbs., or nearly 22 lbs. more per head than the United Kingdom, which consumes more than twice as much per head as any country on the European It must, however, be remembered that in Victoria 15 Continent. million pounds of sugar annually, or nearly 15 lbs. per head, are used in the manufacture of beer, which is very much more than many countries consume altogether :---

AVERAGE ANNUAL CONSUMPTION OF SUGAR (CANE AND BEET) PER HEAD IN VARIOUS COUNTRIES.*

	lbs.			lbs.
New Zealand	118 [.] 77	Sweden		17.52
South Australia	102.11	Belgium		15.74
Western Australia	93.51	Germany		15.01
Victoria	··· 90.75	Austria-Hungary		13.23
Tasmania	90.49	Norway		11.37
United Kingdom	68.99	Finland	• • •	11.22+
Queensland	62.93	Portug a l		9.56
New South Wales	60.95	Roumania	•••	7.71
Argentine Republic	50.04	Russia		7.69
Denmark	29.69	Spain	• • •	5.11
Holland	28.37	Servia		4 ·41
Switzerland	22.81	Italy		3.20
France	22.61	•		

sugar in

Victoria and other

492. In 1889-90 the area under vines (15,662 acres) exceeded that vines. returned in 1888-9 by 2,776 acres, and was much larger than in any The quantity of wine returned was 1,578,590 gallons, previous year. or more than that in 1888-9 by nearly 370,000 gallons, and was also much larger than that in any previous year. The wine industry received

* See Dr. Broch's paper, page 233, there given in kilogrammes, each equal to 2 204 lbs.

† Mr. K. F. Ignatius, of Helsingfors, in the Statistical Journal of Paris for February, 1889, page 72, points out that Dr. Broch has understated the consumption of sugar in Finland, by assuming that a leiviskâ is the equivalent of a kilogramme ; whereas the former is equal to $8\frac{1}{2}$ times the latter. Therefore the average consumption of sugar per head in Finland is 11.22 lbs. as here stated, instead of 1.32 lbs. as stated by Dr. Broch and quoted in the last issue of this work.

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V

a temporary check some years since, in consequence of an outbreak of the disease called *phylloxera vastatrix*, but this was 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. An account of the visitation of the phylloxera in Victoria, and of the measures taken for its suppression, will be found in the last issue of this work.*

Phylloxera in New South Wales. 493. Several years since an outbreak of phylloxera occurred in the Camden district of New South Wales. The disease soon spread and extended into the district of Seven Hills. At an early period the Government of Victoria urged the Government of New South Wales to take steps to prevent the phylloxera from spreading, and an Act was accordingly passed with that object. This Act having been found to be ineffective, an amending Act was passed, with the result that the work of destruction of the diseased vineyards was proceeded with. The total area found to be infected was 54a. Or. 34p., viz.:-31a. 2r. 33p. in the Camden district, and 22a. 2r. 1p. in the Seven Hills district. The vines have been cut down and burnt, and the roots have been taken out and also burnt; the ground has been trenched and any particles of root found were destroyed by fire. It is alleged that no trace of phylloxera can now be found in the vineyards dealt with.

Phylloxera in France and other countries. 494. The phylloxera undoubtedly came originally from the United States, where it was first discovered in 1854 by Mr. Asa Fitch upon some vines in the State of New York. It did not, however, spread much until 1863, when it made its appearance in France, and rapidly extended over the vineyards of that country. It is calculated by M. François Bernard that vineyards covering 1,000,000 hectares (2,470,000 acres) have been entirely destroyed by it, and that 200,000 hectares (494,000 acres) in addition are doomed to a like fate; moreover, large areas not yet invaded by the disease are in imminent danger of being so. The disease reached Austria-Hungary in 1875, Australia in 1877, Italy in 1879, the Crimea and Bessarabia in 1880, Turkey and Algeria in 1885, and the Cape of Good Hope in 1886. In the United States the ravages of the phylloxera were for a long time

* Victorian Year-Book, 1888-9, Volume II., paragraph 478.

confined to the country situated to the east of the Rocky Mountains, but the insect has now penetrated to the westward, and attacked the vineyards of California. Persistent efforts have been made in France to cope with the evil, and numerous so-called "specifics" have been tried. Vines, moreover, have been extensively uprooted and replaced by vines of other species, which it is hoped may prove impervious to the attacks of the insects. These measures appear to have been attended with some success, as the wine-crop which, from an average of 1,200,000,000 gallons prior to the advent of the phylloxera, had fallen to 600,000,000 gallons in 1885, rose to 800,000,000 gallons in 1889.

495. The following is a statement of the area under vines, Wine and the quantity of wine produced annually in the various wine production producing countries of the world. The figures have been partly countries. taken from a paper entitled Statistique Vinicole Universelle, read before the Statistical Society of Paris,* on the 10th August, 1889, by M. François Bernard :—

C	ountry.			Year.	Area under Vines.	Wine Produced. (000's omitted.)
Algeria Australasia Austria-Hungary Azores, Canaries, Cape of Good Ho Chile and La Plat France Germany	Madeira ppe ta	•••	•••• ••• ••• ••• ••• •••	1888 1888-9 1888 1888 1889 1886	Acres. 217,716 27,046 1,562,127 4,801,680 180,310	Gallons. 72,073, 2,692, 277,379, 3,300, 4,491, 44,000, 809,512, 99,000,
Greece	•••			1888	185,250	38,720,
Holland Italy Portugal Roumania Russia Servia Spain Switzerland Tunis Turkey and Cypt United States	···· ···· ···· ···· rus	· · · · · · · ·	•••• ••• ••• ••• ••• ••• ••• •••	1885 1882-1888 1887 1886 1888 1888	4,759,275 503,880 253,629 4,310,404 110,656 8,151 222,300 98,800	81,994, 607,838, 94,160, 33,000, 66,000, 44,000, 350,000, 24,200, 308, 57,200, 33,000,
		Total	•••	• • •	•••	2,742,867,

ANNUAL FRODUCTION OF WINE IN VARIOUS COUNTRIE	ANNUAL PRODUCTION	OF	WINE	IN	VARIOUS	COUNTRIES
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* See Journal of that Society for 1889, page 257. The figures are there given in hectares and hectolitres, the former of which have been reduced to acres on the assumption that 1 hectare is equivalent to 2.47 acres, and the latter to gallons, on the assumption that 1 hectolitre is equivalent to 22 gallons.

V 2

Wine consumed in various countries. 496. The wine made in Victoria, added to that imported after deducting that exported, amounts on the average to rather over a gallon annually per head. This shows a larger consumption of wine in this colony than in the United Kingdom, where it is less than half a gallon per head, but smaller than that in Germany, Switzerland, Austria-Hungary, and France, the wine consumption in the last named of which amounts to as much as $16\frac{1}{2}$ gallons per head. The following are the figures for these and some other countries:—

ANNUAL CONSUMPTION OF WINE PER HEAD IN VARIOUS COUNTRIES.

	Gallons.		Gallons.
France	16.52	Queensland	[.] 69
Austria-Hungary	4.84	Holland	•49
Western Australia	2.52	United Kingdom	•43
Switzerland	2.11	United States	39
South Australia	1.47	New Zealand	•27
Germany	1.32	Tasmania	·24
Victoria	1 ·01	Sweden	·2 0
New South Wales	•S3	Canada	•14

Consumption of tea in various countries. 497. 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 Government Botanist has given it as his opinion that many parts of the colony—especially the fern tree gullies are well suited for its cultivation. The following is a statement of the quantity of tea consumed annually per head in various countries:—

ANNUAL CONSUMPTION OF TEA PER HEAD IN VARIOUS COUNTRIES.

	Annual Consumption of Tea per Head. lbs.		Annual Consumption of Tea per Head. lbs.
Australia	7.66	Portugal	
New Zealand	7.23	Switzerland	•10
Tasmania	5.35	Norway	•09
United Kingdom	4.70	Germany	· 07
Canada	3.69	Belgium	07
United States	1.40	Sweden	•03
Holland	1.16	France	•03
Russia	•61	Anstria Hungany	Uu ഹര
Denmark	•37	Snain	02
Persia	13	oham	01

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Consumption of tea in Australasia and elsewhere. 498. From these figures it appears that the average consumption of tea is much larger in British than in Foreign Countries, and that Australia stands at the head of the list with an annual consumption

of $7\frac{2}{3}$ lbs. per head of the population. It will also be observed that after British dominions the United States is the largest tea consumer, and next to it Holland, after which no country has so large a consumption as 11b. per head.

499. No return is made of the nature of the crops grown or the Gardens and orchards. quantity of produce raised in gardens and orchards. The following, however, is the extent of land returned under this description of culture in the last two years :---

LAND UNDER GARDENS AND ORCHARDS, 1889 AND 1890.

				Acres.
L 8 88-9		 ••••	• • •	27,533
L889-90		 •••	•••	29,243
Increa	ase	 •••		1,710

500. Ensilage was returned as having been made on 231 farms Ensilage. situated in 78 shires in 1889-90, the principal crops used being maize, oats, and grass, but returns were obtained besides of ensilage made from rye, pease, beans, lucerne, carrots, cabbage, thistles, weeds, and "orchard rubbish." The total quantity made was set down as 8,294 tons; it is probable there was much more, but no returns of ensilage having been asked for in previous years the enquiry was new to the farmers, and was perhaps sometimes overlooked by the collectors. The largest returns of ensilage were obtainable from the following shires :-- Marong, where 1,383 tons were made on 13 farms; Lowan, 404 tons on 13; Hampden, 388 tons on 11; Buln Buln, 368 tons on 8; Goulburn, 300 tons on 3; Dundas, 285 tons on 3; Warragul, 242 tons on 10; Numurkah, 236 tons on 10; and Euroa, The number and capacity of the silos 226 tons on 4 farms. was not given.

501. Land in fallow is included in the area under tillage. The Land in fallow. number of acres in this condition in 1890 was 379,701, or 47,115 more than in the previous year.

Irrigation, 1885 to 189**0.**

502. The extent of land subjected to irrigation in 1889-90 was only about a twelfth of that in the previous year. The year before that (1887-8) was also a year of abundant rainfall, but as the rain was not so general over the whole colony as it was in the year under review, the extent of land it was found necessary to irrigate was more than four times as large as that irrigated in 1889-90. The following table contains a statement of the acreage under the various crops returned as under irrigation in each of the last six years:—

Crops subjected to		Number of Acres subjected to Irrigation.					
Irrigation.		1884-5.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.
Wheat	•••	3,322	8,109	14,034	7,206	16,403	60
Oats		187	502	1,416	297	1,899	58
Barley	• • •	41	237	349	- • •	863	27
Maize		19	10			75	37
Pease and Beans	• • •	3	11	3	1	2	•••
Potatoes		29	22	93	12	46	98
Turnips	* * 1		5	7	1	•••	5
Mangel-wurzel	• • •	11	13	6	1	9	3
Beet, Carrots, etc.	• • •	18	15	11		7	11
Onions	•••			1	1		
Chicory	• • •	30	28	30	20	30	31
Hay	• • •	1,924	3,939	4,633	1,172	4,004	58
Green Forage	• • •	33	89	155	37	483	123
Artificial Grasses		1,003	206	251	108	171	570
Hops	• • •	357	254	60	48	116	387
Tobacco	• • •			52			
Pumpkins	• • •			4			
Tomatoes	• • •	1	2	2	1		
Vines		20		56	37	55	34
Gardens and Orchar	ds	48	37	178	51	411	596
Total	• • •	7,046	13,479	21,342	8,993	24,574	2,098

IRRIGATION, 1885 TO 1890.

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Irrigation. 503. In consequence of the copious rainfall which took place in 1889, irrigation was but little practised in that year. In 51 municipalities, however, certain crops covered 271,766 acres, of which 2,098 acres, or less than 1 per cent., were subjected to irrigation. The following table shows the extent of land under these crops, and their gross and average produce; the tillage and produce on unirrigated and on irrigated land being distinguished :---

IRRIGATION IN CERTAIN MUNICIPALITIES, 1889-90.

	In Municipalities practising Irrigation.					
Crops.	Extent ur on La	nder Crop nd—	Gross Pr Lan	oduce on d—	Produce per Acre on Land-	
	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	Irrigated.
GRAIN CROPS.	acres.	acres.	bushels.	bushels.	bushels.	bushels.
Wheat	218,578	60	2,562,645	800	11.72	13.33
Oats	7,355	58	211,919	1,360	28.81	23.45
Barley, malting	398	24	8,724	288	21.92	12.00
" other …	429	3	10,338	180	24.10	60.00
Maize	2,859	37	97,825	1,790	34.21	48.38
ROOT CROPS.	acres.	acres.	tons.	tons.	tons.	tons.
Potatoes	3.316	98	10.529	487	3.18	4.97
Mangel-wurzel	8	3	130	40	16.25	13.33
Carrots	6	11	172	$2\overline{20}$	28.67	20.00
Chicory	69	31	444	310	6.43	10.00
Turnips	422*	5	4,981*	60	11.80	12.00
HAY, GRASS, ETC.	acres.	acres.	tons.	tons.	tons.	tons.
Hav	17 025	58	26 670	83	1.57	1.43
Green Forage	850	123	20,010	00	101	1 10
Artificial Grasses	10,955	570		•••	••••	• • •
OTHER TILLAGE.	acres.	acres.	cwt.	cwt.	cwt.	cwt.
Hops	302	387	2.026	2,998	6.71	7.75
Grapes	366	34	4.878	933	13.33	27.44
Gardens	758	86		• • •		• • •
Orchards	5,972	510		• • •	•••	• • •
	1	•	1		1	I

504. An examination of the last two columns will show that irri- Yield of gation was attended with beneficial results in the case of all the crops irrigated named in the table except oats, malting barley, mangel-wurzel, carrots The improved yield of all the other crops was considerable; and hay. thus, whilst in certain shires the yield per acre of wheat was $11\frac{3}{4}$

crops on land.

bushels, barley (not malting) 24 bushels, potatoes 3 tons, chicory $6\frac{1}{2}$ tons, and hops 6³/₄ cwt. on unirrigated land, in the same shires on irrigated land the yield per acre of wheat was $13\frac{1}{3}$ bushels, barley (not malting) 60 bushels, potatoes 5 tons, chicory 10 tons, and hops $7\frac{3}{4}$ cwt. The yield per acre of grapes was $13\frac{1}{3}$ cwt. on unirrigated, and $27\frac{1}{2}$ cwt. on irrigated land, and with reference to this crop it may be remarked that although the quantity of wine would undoubtedly be increased

* There being no turnips returned as grown on unirrigated land in the shires in which irrigation was practised, these figures relate to other parts of the colony.

by the larger quantity of grapes available, the proportion of wine to a given quantity of grapes is but slightly, if at all, affected by irrigation, the proportion in the past season being 5.51 gallons to the cwt. of grapes grown on unirrigated land. and 6.05 gallons to the cwt. of grapes grown on irrigated land.

Statute for promoting irrigation.

505. Towards the close of 1883, a measure* was passed in which express provision was made, for the first time, for the construction of irrigation works on a large scale. To accomplish this object, it was provided that certain areas might, at the request of the residents, be proclaimed "Irrigation Areas," to which Trusts (the members of which were to be elected by the ratepayers) might be appointed to carry out the irrigation schemes proposed for the various districts and approved of by the Governor in Council. The commissioners of these Trusts were granted power, under certain restrictions, to borrow money, in the open market, for the purpose of constructing the works included in the scheme, for the repayment of which a sinking fund was to be provided; also to levy rates upon all lands capable of irrigation within the area under their jurisdiction, in order to provide the annual interest on the loan and the necessary payment to the sinking fund, and to defray the current expenses attendant upon the operations of the trust. These trusts were essentially private corporations, having no direct connexion with, or responsibility to, the Government, and not being in any respect under State control. By the Water Conservation Act 1885, however, the Government was authorized to advance moneys by way of loan to these bodies.

'*rrigati*on Act 1886. 506. These measures were repealed, so far as the irrigation clauses were concerned, on the 16th December, 1886, by "an Act to make

better provision for the supply of water for irrigation, and also for mining, manufacturing, and other purposes." The principal provisions of this Act, which is entitled *The Irrigation Act* 1886 (50 Vict. No. 898), have been described as follow by an officer of the Water Supply Department:—

* Victorian Water Conservation Act 1883 (47 Vict. No. 778).

† The aggregate amount borrowed was never to exceed 70 per cent. of the gross value of the land within the area.

THE IBBIGATION ACT 1886.

This measure repeals all previous legislation dealing with the question of irrigation, except as to acts done and irrigation trusts heretofore constituted.

It also contains the important declaration that the right to use the waters of the rivers, streams, etc., of the colony shall be deemed to be vested in the Crown until the contrary is proven by establishing any other right.

Provision is likewise made for the construction of "national works" by the Government.

National works are declared to be such by the special Act authorizing their being proceeded with They are defined as works that, in the opinion of the Minister of Water Supply, "are of such magnitude, affect such sources of water supply, and command such large areas of country, that it is advisable that they should be constructed by and retained under the direct control of the State."

Some important enlargements have been made in the powers which may be exercised by trusts under this Act as compared with those given to trusts previously constituted.

To enable the necessary funds to be raised to carry out schemes of supply, the issue of debentures by trusts is provided for, whilst loans of Government moneys for a like purpose may, with the approval of Parliament, be granted.

Act 1888.

507. On the 14th December, 1888, The Irrigation Act 1888 (52 Irrigation Vict., No. 983), was passed. This Act provides for the extension of the right of voting at the election of Commissioners of Irrigation and Water Supply Trusts under The Irrigation Act 1886, to lessees entitled to acquire the freehold in leased land within the district of the Trust for which the election is held, makes some further provision as to the election of Commissioners, and deals with riparian rights as regards streams improved by National Works.

508. On the 25th November, 1889, The Irrigation Amendment Irrigation Amend-Act 1889 (53 Vict., No. 1,047), was passed. This Act is entitled ment Act 1889. An Act to amend the Irrigation Act 1886, and to extend the provisions of the same, and for other purposes. It is divided into six parts :--

Part I. deals with Urban Divisions. Section 13 of Part I. provides that Trusts in their discretion may use the powers of The Waterworks Conservation Act 1887, within its Urban Divisions.

Part II. provides for the creation of special Irrigation and Water Supply Districts for Trust areas of not more than 10,000 acres, and enlarges the franchise in the election of commissioners to such districts.

Part III. deals further than in the principal Act with the interest upon public loans to Irrigation and Water Supply Trusts, and payment by Trusts for water supply from National Works.

Part IV. provides for the drainage of lands for the purpose of its improvement.

Part V. refers to miscellaneous matter. It gives general power to the Governor to make Orders in Council for the purposes of the Act, and provides for the Board of Land and Works carrying out repairs to works neglected by Trusts.

Part VI. relates to penalties and procedure, with respect to the illegal diversion of water and the neglect of municipal officers to supply a copy of municipal roll to Trusts.

Irrigation and Water Supply Trusts. 509. Under this Act there were, on the 30th June, 1890, 27 Irrigation and Water Supply Trusts, having jurisdiction over 2,683,557 acres of land, having an irrigable area of 1,716,983 acres, of which 503,438 acres are capable of being irrigated annually. The present value of the irrigable lands, on a low basis of calculation, was set down as $\pounds 6,554,305$, and the annual rateable value of the same was $\pounds 282,973$. The aggregate borrowing power of the Trusts is limited to $\pounds 1,677,360$, of which the Government have agreed to advance $\pounds 1,240,858$, the balance to be obtained in the open market; whilst the amount actually advanced to the 30th June, 1890, was $\pounds 457,145$.

National Irrigation Works. 510. The more important works connected with irrigation 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 on such works to the 30th June, 1889, was £111,378. The following is an account of such works, and of the progress already made in their construction, as furnished by the Victorian Water Supply Department:—

GOULBURN DISTRICT NATIONAL WORKS.—The chain of works by which the water of the Goulburn River will be impounded and conveyed for the irrigation of this district, is the most important of the schemes contemplated by the Government, and is as follows :—

Goulburn River Weir.—This will constitute the headwork with off-takes on the west and east sides of the river, for the maximum quantities of 100,000 and 20,000 cubic feet of water per minute respectively. It is situate about 8 miles south of the township of Murchison.*

The contract for the weir was signed in April, 1887, and was to have been completed by the 30th of June, 1889. But the construction was delayed by the unusually high and protracted floods of the winters of 1887 and 1889, whilst further delay has been due to the difficulties attending the construction of a work of such magnitude in a river, the flow of which is considerable even in its lowest state. The catchment basin of the river above the weir is nearly 4,000 square miles, or $2\frac{1}{2}$ million acres. The masonry work is now almost completed, and the ironwork of flood-gates, piers, bridging, and gearing in great part erected. The floods of the present winter season have been over the weir, a depth of $3\frac{1}{2}$ feet, flowing over the crest for a considerable time, but no damage has been caused. The work still to be done should be completed about the middle of September should no interruption be occasioned by further floods. The contract amount will be somewhat exceeded by reason of it having been considered advisable:—

- 1st. To provide additional passage way for floods.
- 2nd. To lower and widen the off-takes.
- 3rd. To provide hydraulic as well as hand power for the working of the floodgates; and
- 4th. To supply a small electric lighting plant to facilitate the proper regulation and management of the gates at night time.

The claims for land submerged by the weir and resumed, have been much in excess of anticipations. They are, however, in process of settlement.

* For a further description of the Weir, see Victorian Year-Book, 1888-9, Vol. II., paragraph 496.

Besides the main object of the weir, raising the level of the river to supply the off-take by gravitation, it will to some extent, by means of the flood gates, serve the purpose of equalizing the summer flow of the river. About 550 million cubic feet of the storage will be available for dry seasons.

Works West of the River.—These comprise 24 miles of main channel, from the weir to the proposed reservoir at Waranga Swamp, to convey 100,000 cubic feet of water per minute; the proposed Waranga Reservoir to contain a total of 9,000 million cubic feet, whereof about 7,750 million cubic feet, or 48,000 million gallons, will be available; 60 miles of main channel thence to the Campaspe River, to carry about 50,000 cubic feet of water per minute at the off-take from the reservoir.

Contracts for the construction of 14 miles of the main Western Irrigation Channel from the weir, are in progress; and it is believed that these will be completed by the date stipulated, viz., 30th November, 1890. The first 7 miles down to the pumping station of the Echuca and Waranga Waterworks Trust should be so far completed as to be able to give a supply of water by September next. The first off-take of the Rodney Trust is near the 8th mile, and the regulator and works necessary to give a supply at this point are expected to be completed by November. A contract for the 15th mile of the main channel has just been arranged, and as the off-take for the principal supply to the Rodney Trust is situate on this section, the time for its completion has been fixed for the 31st December next, in order to give the Trust their full supply by that date. Generally, the progress made with channel contracts has been satisfactory.

Contracts for further sections of works in this district would have been in progress had sufficient guarantees been given by the landholders, that the stored water would be utilized and paid for to such an extent as to warrant the construction. The scheme is being re-considered with a view to arrange a modification to meet the wants of those who have proved their readiness to avail themselves of it; at the same time keeping in view the carrying out of the works on the larger scale designed, as soon as the Government have evidence that it will be justified.

The Waranga Reservoir on the scale for which tenders were received, will cost about £26 per million cubic feet of available storage. It included lower channel works at inlet and outlets, particularly the main outlet, which is through a spur about 2 miles across, with a view of saving about 16 miles of main channel and the consequent loss of elevation. Omitting this, the actual cost of reservoir, including all necessary works, would be under £20 per million cubic feet of available capacity. The cost in relation to capacity as compared with that of reservoirs generally is extremely low, thus showing the unusual advantages of the site.

The trial surveys for the main channel from the proposed Waranga Reservoir to the Campaspe River have been carried forward about 30 miles. They will be completed so that the construction may be proceeded with whenever it may be necessary. A trial survey is being made of Reedy Lake, a natural basin lying to the west of the river, some miles above the weir, and having a considerable local drainage area. The object is to ascertain whether it would be possible to raise the level of the lake, store therein the water discharged from the drainage area in winter, and hold it in reserve to supplement that available from the weir, in summer.

Works East of the River.—These are 31 miles of main channel, from the weir to the Broken River, near Shepparton, to convey 20,000 cubic feet of water per minute. The course for the main channel on the east side of the river is determined, and the permanent survey has been carried forward nearly as far as it is proposed to make it a national work. The construction will be commenced as soon as possible after the landowners' petition has been received and the necessary guarantee provided by the constitution of the East Goulburn Irrigation Trust.

BROKEN RIVER WORKS.—These consist of a weir on the Broken River, at a point about two miles north from Benalla; a channel thence to the Mokoan Swamp; a reservoir at the Swamp to store about 2,700 millions of cubic feet for the summer supply of the Broken River and Broken Creek districts; and the clearing, sectioning, and grading of the Stockyard Creek, so that it may act as a supply channel from the Reservoir to the Broken River at Goorambat. The general character of the works has been determined. The total cost, including land, is estimated at $\pounds 86,000$. Negotiations are in progress with the various Trusts interested, relative to the quantities of water to be taken by each, and price to be paid for same. When these are completed the work will be proceeded with.

CAMPASPE NATIONAL WORK.—This is intended to be a storage and regulating reservoir on the Campaspe River, near Langwornor. The proposed weir, 80 feet high in the centre and 900 feet long at the top, is to be immediately below the junction of that river with the Coliban. It will probably be of concrete masonry, or of concrete combined with rubble; and the reservoir will have a capacity of 785 millions of cubic feet. Its purpose will be to maintain a constant and nearly uniform flow in the river, so as to provide for the service of the Irrigation Trusts lower down. The permanent surveys are complete, and two designs have been prepared for the weir, one of solid concrete, the other of concrete and rubble combined. No decision has yet been come to as to what design shall be adopted; nor can anything be said as to when the work is likely to be undertaken. Only one Irrigation Trust has yet been formed in the Campaspe Valley, and the use of stored water is not at present contemplated in connection with its scheme.

LODDON NATIONAL WORK.—This work will consist of a regulating reservoir on the Loddon River, the weir and dam being situated about half-a-mile above Laanecoorie. It will be a compound structure, the portion in the river channel being a weir of concrete masonry, with automatic tilting gates for the discharge of excessive floods; with an extension on the left bank in the form of an earthen dam, protected in rear from erosion by flood waters by a heavy berm or banquette of materials not liable to The face of the bank will be protected, up to six feet below the permanent scour. water level by broken stone, and above that by pitchers of cement concrete. The capacity of the reservoir will be 576 millions of cubic feet. The work is now under contract; two-thirds of the concrete is completed, and the outlets are nearly so. Not much has been done towards the earth bank owing to the frequency and duration of floods since the commencement of the work. It is expected that the whole will be finished by the end of the ensuing summer.

Kow SWAMP NATIONAL WORKS.—These will consist of a direct cut, from the head of the Gunbower Creek to the Kow Swamp, advantage being taken as far as possible of the creek channel; a reservoir with outlet and regulating weir at the Kow Swamp, and a channel and branch thence to the Loddon. It is intended for the service of the lands in the lower part of the Loddon Valley. 12 miles of the channel and the regulating headworks have been let, and tenders are about to be called for the remainder. It is anticipated that the whole work will be completed by June, 1891.

EAST WIMMERA WORKS.—Further survey and examinations have been made during the year. The project for a reservoir at Hall's Gap has been abandoned on the ground of its inordinate cost. The proposed National works are a reservoir at Lake Lonsdale, channels thereto from Fyan's, Mokepilly, and Pleasant Creeks, channel from the reservoir to Glenorchy and Glenorchy Weir.

WEST WIMMERA WORKS.—Surveys for a work for the supply of the Western Wimmera have been carried out. The site and character of the work is under consideration.

WEBRIBEE NATIONAL WORKS.—Surveys have been made for a reservoir on the

Werribee above Ballan, and a channel thence to the distribution areas. The design of the works is in preparation.

By this consolidation the legislation affecting Water Trusts has Act. been much simplified; the Irrigation Act, No. 898 of 1886, already referred to, deals with Trusts formed for irrigation purposes, and the Act above referred to (No. 946) deals with Trusts formed to secure domestic and stock supplies. On the 25th November, 1889, Act 53 Vict. No. 1049, was passed. This Act is cited as The Water Conservation Act 1889, and read as one with the 1887 Act. The 1889 Act provides for one or more ridings of any municipal council being constituted a waterworks district, and for the power to postpone the operations of Act No. 946 with regard to sinking fund formed to liquidate loans to Waterworks Trusts.

512. Under the Water Conservation Acts just referred to 41 Waterworks Waterworks Trusts have been formed and were in existence on the works 30th June, 1890, of which 16 had works in progress, whilst the remaining 25 had control of 12 rural water supply works, and 25 urban supplies. Several of these trusts are almost identical with the municipal councils. The amount of loans authorized to be advanced to these bodies was £916,958, of which £762,380 had been paid up to the 30th June, 1890. The rural schemes have numerous weirs, dams, and tanks, supplying an area of 4,034,200 acres, of an annual rateable value of £534,054; whilst the estimated cost of the works was £466,765. The urban works have a storage capacity of over 288 million gallons, and were estimated to cost £350,547; they supply a population of 33,800, who possess property of the annual rateable value of £275,588. The works in process of construction will supply water to 17 towns containing about 12,000 inhabitants, who occupy property of an annual rateable value of $\pounds 63,360$; their estimated cost is about £95,100. There are 11 urban schemes—which will cost about £228,500-at present under consideration, by means of which it is proposed to supply a population of about 35,300 persons, who occupy property valued at about £280,000 per annum.

and watertrusts.

513. Prior to the constitution of the Waterworks Trusts extensive Waterworks works for the storage and supply of water for domestic, mining, and, under Goto a limited extent, for irrigation purposes, had been constructed by the Government and by Local Bodies in various parts of the colony. The most important of these is the Yan Yean reservoir, together with the subsidiary reservoirs at Jack's Creek, Morang, Preston, Essendon, Caulfield and Kew, by means of which Melbourne is provided with a supply of fresh water at a high pressure. The Yan Yean is an artificial lake situated 22 miles from the city, and 595 feet above its level, which covers an area of 1,360 acres, or rather more than two square miles.

To meet the increased demand for water consequent upon the growth of the city and suburbs, a new channel has been formed for the purpose of turning into the reservoir other considerable streams of pure water, by which means all fear of the supply becoming exhausted in seasons of drought will be at an end. The following table contains a list of such of these works as are under Government control; also a statement of the estimated storage capacity, and the total cost of each scheme:—

Scheme Name of Town or	Reservoir or Source of	0		
District supplied.	Where situated.	Storage Capacity.	Cost.	
Melbourne and Suburbs	Yan YeanJack's CreekMorang (pipe head)Preston (storage)Essendon (storage 1),. $(,, 2)$ Caulfield $(,,)$ Kew	Gallons. 6,400,000,000 60,000,000 3,000,000 15,000,000 6,000,000 1.000,000 10,000,000 3,000,000	£ } 3,000,000	
COLIBAN SCHEME.				
Taradale {	Malmsbury Taradale Expedition Pass	$\begin{array}{c} 3,255,000,000\\ 65,000\\ 120,000,000\end{array}$		
Castlemaine and Chewton-	Red Hill Old Post Office Hill Barker's Creek Specimen Caller	$\begin{array}{c c} 1,250,000\\ 2,000,000\\ 629,135,000\\ 2,010,000\\ 0,010,000\\ \end{array}$		
Fryerstown Maldon	Crocodile Gully Green Gully Big Hill	2,618,000 5,407,000 1,500,000 68,000,000		
Sandhurst	Big Hill Tank Crusoe Valley New Chum Tank Solomon's Gully	300,000 320,000,000 23,000	1,069,255	
Sandhurst District	Spring Gully Upper Grassy Flat Lower Grassy Flat	1,250,000 150,000,000 58,860,000 26,800,000		
Eaglehawk	Sparrow Hawk	1 500 000		

WATERWORKS UNDER GOVERNMENT CONTROL.

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Raywood	Lightning Hill		7,000,000	
Sebastian	Raywood Sebastian	•••	2,500,000	
Lockwood and Marong	Green Gully		3,500,000	/
1	Upper Stony Creek	• • •	354,000,000	
	Lower Stony Creek	- • •	143,000,000	1
Geelong and suburbs	Anakie (pipe head)	•••	900,000	> 357,338
	Lovely Banks	•••	6,000,000	
· · · · · · · · · · · · · · · · · · ·	Newtown lank	• • •	500,000)
	Total		11,659,347,200	4,426,593

514. The total expenditure to the 30th June, 1890, on the con-Revenue and expendistruction of the Melbourne Water Works was £3,104,747. The gross ture of Melbourne revenue received since the opening of the works at the end of 1857* Waterworks. has amounted to £2,949,310, whilst the expenses of maintenance and management amounted to only £393,260. During 1889-90 the revenue of the waterworks amounted to £193,274 as against £188,212 in the previous year; and the expenditure on maintenance and management to £26,128, as against £22,643 in the previous year. The net revenue in 1889-90 was thus £167,146, being equivalent to 5.73 per cent. of the mean capital cost; + as compared with £165,569, or 6.40 per cent. in 1888-9. A reference to a previous table[‡] will show that the loans borrowed for the construction of the works now bear an average nominal rate of only 4.05 per cent.

515. The following interesting account of the progress of the Progress of works of the Melbourne Water Supply was prepared, in May of the Water present year (1890), by Mr. W. Davidson, C.E., the Inspector-General Works. of Public Works:—

MELBOURNE WATER SUPPLY.

The sources of the water supply for the City of Melbourne and its suburbs are in the section of the Main Divide, known as the Plenty Ranges. The central mass of these ranges is Mount Disappointment, situated nearly due north of Melbourne, and distant therefrom about 33 miles. It rises to an altitude of 2,700 feet, and is plainly visible from any elevated part of the city. On the south-eastern slopes of Mount Disappointment the eastern or main branch of the Plenty River and its tributaries, the principal of which is the Running Creek, take their rise, while from the long low saddle extending east from the base of the mount proceed Jack's Creek, the Joey, and Yellow Creeks. These are the sources from the southern slopes, within the watershed of the Yarra, which are at present drawn upon for Melbourne use. The other streams from the southern side of Mount Disappointment, as the western branch of the Plenty, Bruce's Creek, etc., which, in connexion with the creeks previously mentioned, were formerly diverted into Yan Yean reservoir, are now abandoned so far as city purposes are concerned.

The northern slopes of the Plenty Ranges are in the Goulburn watershed. Two permanent creeks, tributaries or head waters of the King Parrot Creek, and known as the Wallaby and Silver Creeks, have been diverted into the southern or Yarra watershed, their waters commingling with those of the utilized creeks therein, and passing along with them to Yan Yean reservoir.

The water-gathering areas are in extent as follow :---

Southern slopes, including the watersheds of the Plenty (eastern branch), Running Creek, Jack's Creek, etc. Northern slopes, being the watershed of the Wallaby and								
Silver Creeks					11,500			
	Total	•••	•••	•••	22,000			

* Although the works were commenced in 1853, they were not opened until the 31st December, 1857. The information in this paragraph is compiled from a Return furnished by the Yan Yean Water Supply Department.

- † Or the mean of the capital cost at the beginning and end of the year.
- ‡ See table following paragraph 376, in Volume I.

This does not include the immediate catchment area of the Yan Yean reservoir, to be hereafter referred to.

In addition to actual watersheds, a number of reservations have from time to time been made in the Plenty Ranges for the preservation of timber and other reasons in the interests of Melbourne Water Supply. These extend both over the southern and northern slopes for several miles, and are of an aggregate area of 54,000 acres.

The whole of the watersheds, excepting part of the reservoir catchment basin, and of course the timber reservations, are unalienated Crown lands, totally unoccupied or settled upon in any way. In fact, but for operations of paling-splitters and timbercutters, many years ago, they might be said to be in their primeval condition.

Mount Disappointment and its main spurs extending northwards are of granite, overlaid for the most part with a rich volcanic chocolate soil. The southern spurs and the eastern saddle are almost entirely silurian country, with poor soil.

The timber ranges from the mountain ash (Eucalyptus Amagdalina) in the greater altitudes and volcanic soil, to blue gum (Eucalyptus Globulus) and messmate in soils less rich, and stunted gums and stringy-barks on the poor silurian spurs.

The works for the diversion of the northern streams into the southern watershed consist of a series of weirs and open aqueducts. The most remote of these is the weir on Silver Creek. Its object is merely to raise the water level sufficiently to command an outlet in the southern end of the work and forming the head of the Silver Creek aqueduct. The weir is 125 feet long on the crest, and 11 feet high at creek bed. It is built of granite rubble masonry in cement mortar. The bed of the creek being composed of granite detritus and silt, the foundations of the weir consist of sheet piling and concrete. Silver Creek aqueduct is a contour channel, with an inclination of 3 feet per mile, designed to carry 12,000,000 gallons of water per day. Its top width is 7 feet 1 inch, and its depth in the centre is 2 feet 7 inches. It is eight miles long, lined throughout with granite pitchers, set in cement mortar. In its course there are two tunnels of 29 chains and 6 chains length respectively. The Silver Creek water is delivered by this channel into the pool formed by the Wallaby Creek weir.

The objects to be served by this weir are similiar to those of the Silver Creek weir. The construction is similar, excepting that in the latter case the foundations are on rock.

The Wallaby Creek aqueduct conveys the combined waters of the Wallaby and Silver creeks. Its carrying capacity is 33,000,000 gallons per day. The gradient is also 3 feet per mile; width on top, 12 feet; depth in centre, 4.5 feet; lined as is Silver Creek, with granite pitchers, in cement. It follows a long spur from Mount Disappointment for a distance of five and a half miles, and delivers over the Dividing Range, by a series of cascades, into the head of Jack's Creek, in the southern watershed. Excepting during actual rainfall, the volume of Jack's Creek is infinitesimal, but the average quantity derivable from Wallaby and Silver Creeks amounts to about 10,000,000 gallons per day, and rises in wet weather to 33,000,000 gallons. The northern water being delivered into Jack's Creek is allowed to find its way down the bed thereof for a distance of four miles to Toorourrong Flat, in which it joins with the eastern branch of the Plenty.

Formerly, water for the replenishment of Yan Yean reservoir was taken from the Plenty River, at a point about two miles south of Whittlesea township; and there is no doubt the streams converging on such point were much polluted by the drainage of the township and from 14,000 acres of country devoted to agriculture and stockraising of all kinds.

To obviate this state of things the "clear water channel" was constructed about six years ago. Its object is to intercept the combined Wallaby, Silver, and Jack's Creeks and the Plenty waters before they entered on alienated or settled or cultivated lands, and to carry them in their unpolluted condition to Yan Yean reservoir. This has been effected by the construction of a dam across the Plenty Valley, a few chains below its confluence with Jack's Creek. This dam is 15 chains long, and impounds water covering an area of about 36 acres, and forming "Toorourrong reservoir." Again is the object of the dam to raise to a proper level and divert into an aqueduct

the combined waters. The aqueduct commencing at the southern end of the dam is known as the "clear water channel." Its carrying capacity is 120,000,000 gallons per day, being 13.5 feet wide on top, by a depth in centre of 4.75 feet, with a gradient of 7 feet 6 inches per mile. It is four and three-quarter miles long, lined throughout with pitchers, as in the other aqueducts. In it are introduced numerous drops or artificial waterfalls, the highest being 17 feet. The clear water channel terminates by joining the old inlet-channel to Yan Yean. It is constructed entirely through alienated and settled land, but side or local drainage is guarded against and provided for. Where the clear water channel passes through the outskirts of the small township of Whittlesea, it is roofed over with galvanized iron for a distance of half-a-mile.

From the junction of the clear water channel the water proceeds by the old inletaqueduct and tunnel for a distance of two and a half miles to Yan Yean reservoir.

The site of Yan Yean reservoir was originally a lagoon, formed by the dispersion over 800 acres of flat land, of the drainage waters from the southern slopes of Sherwin's Range. A dam of 49 chains in length and 30 feet in height, with a topwater or by-wash level of 25 feet above the lowest point in the bottom—the by-wash being 602 feet above low water, Hobson's Bay—impounds 6,400,000,000 gallons of water, covering an area of 1,360 acres, and of a mean depth of 17 feet. Of this quantity, which the reservoir contains when full, 5,400,000,000 gallons are available for being drawn off, the balance is below "draw-off" level. The longest straight line on the reservoir is from north to south, it is two and a half miles. The water margin at top-water level is ten and a half miles in length.

Yan Yean reservoir is situated within an immediate drainage area, known as the catchment basin, of about 4,500 acres, of which 700 acres are alienated and in occupation, while a great portion of the balance is utilized for commonage purposes.

On the 700 acres of alienated land, which are situated north of Cades Lane, at from a quarter of a mile to one and a half mile distant from the reservoir, a combined system of cultivation and grazing is practised, and the drainage from this land in time of rain can only pass to the reservoir. This is the only area not absolutely within the control of the Water Supply Department, and affords the only source of doubt that can exist as to the purity of the Yan Yean water.

The commonage area can be resumed by the Department when considered necessary. It is at present leased to the Whittlesea Shire Council at a nominal rent, but under very stringent conditions for its care and the maintenance of its cleanliness, for the depasturing of cattle and horses only.

From Yan Yean reservoir the water for use in Melbourne is taken in an open masonry aqueduct to the Pipe Head reservoir, at Morang: length, six and threequarter miles; carrying capacity, 33,000,000 gallons per day; capacity of Pipe Head reservoir, 3,000,000 gallons.

From the Pipe Head the water is conveyed by three mains to Preston reservoir. Two of these are of 30-inch diameter, the third being 27-inch, and their joint delivery power is just equal to that of the aqueduct, viz., 33,000,000 gallons per day. But this does not exactly indicate the possible maximum rate of delivery to the population of Melbourne, as will be hereafter shown.

Preston reservoir is an artificial basin of 16,000,000 gallons capacity. Its altitude is 327 feet above sea-level. From it are taken to Melbourne districts watermains, as follow :—Two of 30 inches diameter, four of 24 inches diameter, and one of 18 inches diameter. These mains are together capable of delivering water at the rate of 57,000,000 gallons per day.

From these mains the water is conveyed to the consumers by sub-mains and reticulating mains, ranging from 12 inches diameter to 3 inches diameter, of a total length of 1,150 miles.

Water is not drawn off from the mains at an uniform rate throughout the whole period of 24 hours. During the night there is invariably a surplus in the mains. To utilize this to some extent, service reservoirs have been constructed at Caulfield, Essendon, and Kew, of an aggregate holding capacity of 21,000,000 gallons.

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The following figures, being the average daily consumption for each of the last five years, will indicate the rapid increase in the demand for water in Melbourne:-

1885-13	3 millions	of gallons.
1886 - 14	3 ***	5 3
18-7-16	1 4 ,,	• •
1888 - 20	<u>2</u> 3 ;;	9 9
1889 - 22	<u>2</u> 3 :>	3 3

The maximum quantity of water used in one day was on the 21st January, 1890, a very hot day, the temperature on the 19th being 101.2° , on the 20th 99.5°, and on the 21st 99.5°, when the consumption reached $40\frac{1}{2}$ millions of gallons, and then there were some people in the high outlying suburbs who could not obtain as much water as they required.

It thus appears that with an intake at Preston of 33 millions of gallons, and a stored surplus in Preston and the other reservoirs of 37 millions of gallons, this rate could not be maintained for more than five days, and that on the exhaustion of the stored surplus, the supply would of necessity be reduced to the capacity of the Yan Yean-Morang Aqueduct or 33 millions of gallons per day. During the exceptionally long period of very hot weather last summer it was feared that this would occur, but before the service reservoirs were quite empty the weather changed, and, the consumption falling well below the 33 millions, enabled them to be refilled.

The estimated population supplied from the Yan Yean exceeds 400,000, therefore the average daily consumption per head was 56 gallons last year, and the maximum last summer was over 100 gallons.

For the effective supply of the high suburbs to the east of Melbourne there is now being laid a main of 32 inches diameter direct from Yan Yean, which will be capable of delivering at Surrey Hills (which is the highest suburb within the Water Supply radius, being 420 feet above sea level) 10,000,000 gallons daily.

The cost of the Yan Yean system of water supply up to date amounts to about £3,000,000.

In view of the great increase in the numbers of tenements and population in Melbourne and suburbs during the past ten years, it appeared to be doubtful if an abundant supply of water of high quality would continue to be available from the neighbourhood of Mount Disappointment. To meet any possible deficiency from this source, the Watts scheme was inaugurated about four years since. The object of the scheme is to convey water from the Watts River, four miles above the township of Healesville, by an aqueduct 41 miles in length, to Preston reservoir.

The complete scheme, as designed, comprises the erection of a dam, about 100 feet high, across the valley of the Watts, to form a storage reservoir : and the construction of 41 miles of aqueduct, consisting of $25\frac{1}{2}$ miles of open channel, lined either with cement concrete or brickwork set in cement; twelve tunnels of an aggregate length of $6\frac{1}{4}$ miles; and $9\frac{1}{4}$ miles, in fourteen sections, of inverted syphons, consisting of double lines of wrought-iron pipes 4 feet 6 inches in diameter.

The aqueduct, when completed, will be capable of carrying 50,000,000 gallons per day. At present only one line of pipes is laid for each syphon, and the open channel is only lined sufficiently to carry 25,000,000 gallons per day, though the excavation is all taken out and the tunnels are completed to the full size required to deliver 50,000,000 gallons per day. A weir has also been constructed across the Watts to divert the water therefrom into the aqueduct, and supplementary channels are being formed to bring into it also the waters of the Graceburn and Coranderrk Creeks. The minimum supply to be obtained from these three streams has been ascertained by gaugings, extending over a number of years, to be never less than 25,000,000 gallons per day. The work, as now being carried out, and which will be finished in about five months, that is before next summer, will cost about £600,000. The complete scheme, including the erection of the dam above mentioned, to form the Maroondah reservoir, will cost an additional £350,000.

The Watts country is chiefly porphyritic, overlaid with rich volcanic soil, growing the largest timber known in Australia of the classes referred to in connexion with
Mount Disappointment, together with dense undergrowth, and a great profusion of treeferns, etc. The Watts water is of very high quality and of exceptional brightness. Those small areas within the watershed, which have been alienated, have been resumed, the township of Fernshaw has been bought up, and now the whole of the Watts Valley above the off-take is public property and under departmental control.

It is not anticipated that it will be necessary to proceed with the construction of the Maroondah Reservoir and the completion of the Watts Aqueduct, as designed to carry 50,000,000 gallons, for some few years to come, as the 25,000,000 gallons per day, which will be available by next summer from this source, together with the 33,000,000 now available from Yan Yean, and the 10,000,000 to be derived from the new main before described, will give 68,000,000 gallons per day in addition to what may be stored in Preston and other service reservoirs.

The water supply district, as defined by Act of Parliament, is bounded by a circle of ten miles radius, with Melbourne Post Office as a centre, outside of which it is ruled to be illegal to supply water.

Box Hill and Oakleigh are just on the margin, but inside of this boundary, while populous Mentone is hopelessly outside.

			Source of Sample.				
			Yan Yean Reservoir.	!	Tap in Melbourne.		
Date of collection	•••	• • •	7/9/89	•••	9/9/89		
Temperature of water		• • •	11 [.] 3° c.		13 [.] 2° c.		
Appearance in 2-ft. tub	е		Darkish-yellow		Same.		
Odour at 40° c.	••••		Normal		Normal.		
Reaction	•••	•••	Faintly alkaline		Same.		
			In parts per million.		In parts per million.		
Total solids	••••		82.5		$\overline{82.5}$		
Hardness	~ * *		18.2		18.2		
Chlorine			20		20		
Nitrogen as nitrates		• • • •	·142		$\cdot 161$		
Free ammonia	. <i>.</i> .	• • •	·026		·016		
Albuminoid ammonia	• • •	• • •	$\cdot 192$		·120		
Oxygen consumed in fo	our hours		3.946		3.260		
Nitrates		•••	Absent	•••	Absent.		
Phosphates	• • •	•••	Absent		Absent.		

Water was turned on in Melbourne, from the Yan Yean Reservoir, on the 31st The population of Melbourne and suburbs was then 104,000. December, 1857.

The Yan Yean, Morang, and Preston reservoirs are connected with the head office by telephone, as are also the residences of the engineer and chief turncock; the head office is also connected with the general telephone system of Melbourne.

PRINCIPAL EVENTS IN THE HISTORY OF THE YAN YEAN WATERWORKS. Year.

1853.—Yan Yean works commenced.

- 1857.-Yan Yean works opened, 31st December.
- 1862.—Meter charge reduced from 4s. to 3s. per 1,000 gallons.
- 1863.—Meter charge further reduced from 3s. to 1s. per 1,000 gallons.
- 1863.—Preston Reservoir commenced.
- 1863.—South Yarra Waterworks purchased.
- 1868.—New Main from Preston (No. 2) commenced.
- 1873.-New Main and Aqueduct from Yan Yean commenced.
- 1874.—New 18-inch Main to Coburg from Preston commenced.
- 1874.—Rate reduced from 1s. to 8d. in the £, 1st July.
- 1877.—New Main from Preston (No. 3) commenced.
- 1878.—Plenty River Bridge washed away; cutting off water supply from the city. 1878.—Water Supply Inquiry Board appointed.
- 1879.—Pipe casting industry commenced in Australia.
- 1881.—Essendon Service Reservoir (No. 1) commenced.

1882.—New Main from Preston (No. 4) commenced.

- 1882.—Wallaby Creek works commenced.
- 1883.—Clear Water Channel commenced.
- 1883.—Essendon Service Reservoir (No. 2) commenced.
- 1883.—Caulfield Service Reservoir commenced.
- 1884.—Silver Creek works commenced.
- 1886.—Watts (Maroondah) River works commenced.
- 1886.—Wrought iron pipe industry commenced in Australia.
- 1886.-New wrought iron Main from Pipe Head Reservoir to Preston commenced.
- 1886.—Kew Service Reservoir commenced.
- 1886.—New Main from Preston (No. 5) commenced.
- 1889.—Rate reduced from 8d. to 6d. in the £, 1st January.
- 1889.—New Main from Preston (No. 6) to South Melbourne commenced.
- 1890.-New High Level Main from Yan Yean Reservoir commenced.
- 1890.—Purchase of Freehold Land abutting on Yan Yean Reservoir.

Coliban scheme. 516. The Coliban Scheme provides water for domestic and mining purposes, as well as for irrigation to a limited extent, to the Sandhurst and Castlemaine districts. The chief reservoir of this scheme, which is near Malmsbury, has a capacity of 3,255 million gallons. The cost of the works to 30th June, 1890, was £1,069,255; whilst the gross revenue during the year 1889-90 was £21,277, and the expenses of maintenance and supervision £11,637. The net revenue was thus £9,640, being equivalent to '901 per cent. of the capital cost, as compared with £9,236 or '863 per cent. in 1888-9. The deficiency in 1889-90, after allowing interest on the capital cost at the rate of $4\frac{1}{2}$ per cent., was £38,483.

Geelong Waterworks. 517. The Geelong Waterworks provides 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 497 million gallons, and the whole scheme has cost, up to the 30th June, 1890, £357,338. The gross revenue for 1889-90 was £9,581, and the cost of maintenance, £3,094. The net revenue was thus £6,487, or 1.815 per cent. of the capital cost, as against £6,600, or 1.846 per cent., in 1888-9. After allowing interest on capital at $4\frac{1}{2}$ per cent., the deficiency for 1889-90 was £9,593.

Goldfields reservoirs.

518. There are 24 goldfields reservoirs having an aggregate roirs. capacity of nearly 563 million gallons, the largest, at Beaufort, containing about 86 million gallons. These cost £62,488, and were originally constructed by the Government chiefly for mining purposes. They are for the most part leased to municipalities at a nominal rental, but it appears that many of these bodies do not keep them in proper repair. The Secretary for Water Supply in one of his recent reports suggested that such of those as are required by the municipalities should be sold absolutely to them, and that the others should be destroyed so as to prevent them becoming sources of danger by bursting in times of heavy rainfalls or floods. One of these reservoirs, Commissioner's Gully, was abandoned in the year 1889-90.

519. Prior to the establishment of Waterworks Trusts, advances Waterworks were made from the Government loan account to various municipalities Bodies. to enable them to construct waterworks for their respective districtsthe principal to be gradually repaid into a sinking fund. The number of such municipalities was 22, which possessed 21 reservoirs, having a total capacity of nearly 1,400 million gallons, as well as other sources of supply. These works cost £688,081, nearly all of which was advanced from loans, and supply a population of about 77,600. The chief of these reservoirs are the Ballarat reservoirs, now under the Ballarat Water Commission, having an aggregate capacity of nearly 639 million gallons-the Gong Gong reservoir alone containing 427 million gallons; the Beechworth reservoir at Lake Kerferd, with 191 million gallons; the Clunes reservoir at Newlyn, with 207 million gallons; and the Talbot reservoir at Evansford, with 200 million gallons.

520. By the following summary of the total storage capacity and Capacity and cost of total cost of reservoirs or other works for the conservation of water reservoirs. referred to in the foregoing tables and paragraphs, it is shown that the former amounts to over fourteen thousand million gallons, and the latter to close on six millions sterling :---

Waterworks under		Storage Capacity.	Cost of Schemes.	Expenditure from Loans to 30th June, 1889.
Government-		Gallons.	£	£
Melbourne		6,498,000,000	3,000,000	1,646,455
Coliban		4,656,947,200	1,069,255	1,069,255
Geelong		504,400,000	357,338	357,338
Goldfields		563,000,000	62,488	Nil.
Local Bodies		1,500,000,000	688,081	632,573
Waterworks Trusts-			,	•
Urban Works*		293,000,000	350,547*	710 407
Rural ,,	• • •	+	466,765	5 719,497
Total		14,015,347,200	5,994,474	4,425,118

CAPACITY AND COST OF WATERWORKS. (Exclusive of National and other Irrigation Works).

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521. Intimately connected with the subject of the water supply of Sewerage of Greater Melbourne is that of its sewerage. Although some years since sewers Melbourne. were constructed under two of the principal streets (Swanston and Elizabeth streets) for the purpose of carrying off the storm and other waters which had previously been allowed to flow along the open street channels, no complete system of sewerage for the metropolitan area has yet been adopted. Recognizing the necessity of making provision for

* Inclusive of works in progress. See also paragraph 512 ante. † Rural works consist mainly of weirs, dams, and tanks.

the disposal of the sewage of Melbourne other than that afforded by the Yarra and Saltwater rivers, which had become so polluted as to be a menace to the health of the inhabitants, the Government in 1889 engaged Mr. James Mansergh, C.E., an eminent English engineer who had made the drainage of towns his special study, to make a complete examination of Greater Melbourne, and to formulate a scheme for its efficient drainage. After nearly two months' stay Mr. Mansergh returned to England, and was long engaged in considering the subject and drawing up his report thereon. That report, which was completed on the 1st August, 1890, and laid before Parliament in the following month, deals with a district around Melbourne, embracing 18 urban municipalities, viz., 8 cities, 5 towns, and 5 boroughs, besides the greater portion of 6 shires, and containing an area of 80,500 acres, with a population of 430,600 inhabitants; whilst the scheme submitted is capable of providing for a future population of nearly 1,700,000. In the course of his investigations Mr. Mansergh came to the conclusion "that there is no spot within a practicable distance of the metropolis where its sewage can be got rid of into its natural outfall-the river or the sea-without being so treated as to remove the solid impurities which it contains "-i.e., either on land or by chemical treatment. Mr. Mansergh recommends the construction of certain main sewers, the more important of which will convey the sewage to two pumping stations wherefrom it will be forced to high levels and allowed to flow by gravitation to two sewage farms situated on opposite coasts of Port Phillip Bay, at some distance from the city, where, after the solid matter has been deposited and rendered fit for use in cultivation, the effluent water will become clarified in percolating through the soil, and ultimately by means of subsoil drainage pipes find its way into the Bay. Mr. Mansergh calculates the capital cost of the scheme within the first eight years at about 5 millions sterling, and the ultimate cost at £5,816,500, and that it would take five years to execute the main works, and at least eight years to completely sewer the whole district. The gross annual charge, including an allowance of £191,651 for repayment of principal and interest in 50 years, is set down at £223,192 at the end of the fifth vear, of which at least £81,140 will be defrayed from the water revenue, leaving a net charge of $\pounds 142,052$ to be provided for from the proceeds of a rate of 4.86d.* in the £ levied on all rateable property. It is also estimated that, after the payment of the principal in the time stated, the water revenue will alone be sufficient to pay the whole of the working cost.

* At the end of the eighth year the rate will apparently be at a maximum, viz., 5¹d. † See Report on the Sewerage and Sewage Disposal of the proposed Melbourne Metropolitan District, dated 1st August, 1890, by James Mansergh, C.E., etc. : Parliamentary Paper, No. 182, Session 1890.

522. Throughout Victoria, the duration of leases of farms from Leases and private persons was returned in 1889-90 as averaging from 2 to 6 farms. years; the extreme figures being 1 year and 14 years. The average rental of agricultural land per acre was stated to be from 6s. to 22s. 5d.; the extreme figures being 2s. and 90s. The average rental of pastoral land per acre was stated to be from 2s. to 10s.; the extreme figures being 1s. and 40s. It may be mentioned that 3s. 6d. per annum for as much land as will carry one sheep 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.*

523. Each collector is required to furnish a statement of the price Prices of of the principal articles of agricultural produce in his district at the agricultural produce. 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 twenty-one years :---

Duri Februar Marc	ng yand h.	Wł	ieat.	0	ats.	Ba	rley.	M	aize.	Hay.	Potat	oes.	Turn	ips.	Mange	olds
		per b	ushel.	per b	ushel.	per b	ushel.	per t	oushel.	per ton.	per t	on.	per t	on.	per	ton.
	i	s.	<i>d</i> .	s.	<i>d</i> .	<i>s</i> .	d.	s .	d.	<i>s</i> .	s.	d.	<i>s</i> .	d.	<i>s</i> .	<i>d</i> .
1870	•••	4	3	3	7	4	0	4	10	77	75	0		•	40	0
1871	• • •	5	4	3	9	4	11	5	3	76	70	0		•	36	0
1872	• • •	4	8	2	$11\frac{1}{2}$	3	$6\frac{1}{4}$	4	2	64	65	6]		28	1
1873	• • •	4	9	3	5^{-}	4	1	3	10	81	67	4			24	5
1874	• • •	5	9	5	6	5	3	5	9	88	118	3			31	4
1875	•••	4	5	4	3	4	6	4	8	89	89	0			28	0
1876	• • •	4	7	3	3	3	10	4	8	82	87	0			23	8
1877		5	10	3	7	3	10	4	4	93	114	0			31	6
1878	• • •	5	1	4	6	4	4	5	4	87	115	0			37	3
1879	• • •	4	2	3	6	4	1	4	2	75	92	4			25	6
1880	• • •	4	$0\frac{1}{2}$	2	3 1	4	8	3	$6\frac{1}{2}$	63	69	11			$\cdot 24$	11
1881	• • •	4	$1\frac{3}{4}$	2	3	4	11章	5	0	60	4 6	3		•	24	0
1882		5	0	3	3	3	6	5	4	76	70	0		•	25	4
1883	• • •	4	9	3	1	4	1	4	7	81	75	4		•	30	5
1884	•••	3	8	2	8	3	6	4	8	67	74	8	35	5	29	5
1885	•••	3	4	3	0	3	6	4	5	74	80	0	40	0	34	0
1886	• • •	3	10	2	10	3	3	4	1	74	100	0	48	6	24	6
1887	• • •	3	9	2	9	3	3	4	4	73	80	0	54	0	28	4
1888		3	4	2	7	3	6	4	2	59	65	0	27	0	24	0
1889		4	7	3	10	4	2	4	10	102	163	2	46	6	30	7
1890	•••	3	8	2	10	3	2	4	1	62	83	4	58	3	28	5

PRICES OF AGRICULTURAL PRODUCE, 1870 TO 1890.

years.

524. The drought which occurred in 1888, together with the Prices of agricultur failure of crops in other parts of the world, caused the prices of all produce. 1889-90 and

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

articles of agricultural produce to rise considerably in 1889, but the promise of improved yields, consequent upon the plentiful rainfall which took place in that year, caused a fall in price in 1890 to nearly the same rate which prevailed in 1888, the only exception being turnips, which fetched higher prices in 1890 than they did in either of the other six years named.

Years of highest and lowest prices

525. It will be observed that the price of wheat was highest in ¹ 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 wheat was lowest in 1885 and 1888, that of barley in 1890, that of oats and potatoes in 1881, that of maize in 1880, that of mangolds in 1876, and that of hay and turnips in 1888.

Price of wheat in London. 526. The wholesale price of wheat per Imperial quarter* in London during 1889 varied from 28s. 8d. in July to 30s. 10d. in January—the average for the year being 30s. The price has fallen off considerably since 1883, and in 1889 was even lower than that in 1886, which at the time was by far the lowest recorded since 1761, when it was 26s. 9d.† The following statement of the average *Gazette* prices (wholesale) during the six years ended with 1888 has been taken from an official source,‡ and that of the average prices in 1889 and the first seven months of 1890 has been taken from the London *Statist*:—

Month.		18	S3.	18	84.	18	85.	18	86.	18	87.	18	88.	188	8 9 .	18	90.
		s.	d.	<u>s</u> .	<i>d</i> .	s.	d.	s.	<i>d</i> .	s.	d.	<u> </u>	\overline{d} .	s.	$\overline{d}.$	s.	d.
January		40	$\underline{2}$	38	7	33	7	29	10	35	8	31	1	30	10	30	0
February	• • •	40	11	37	3	32	8	29	5	33	3	30	4	30	õ	29	11
March		42	3	37	7	31	10	29	10	32	10	30	4	30	4	29	10
April		41	11	37	5	34	1	30	7	32	9	30	4	30	0	29	-9
May		43	2	37	9	36	8	31	10	33	9	31	5	29	10	32	0
June		42	10	37	2	33	Ĝ	31	7	35	1	31	6	28	10	32	10
July	•••	42	2	37	0	33	8	31	2	34	4	31	10	28	8	33	2
August		43	$\overline{6}$	36	11	33	5	32	5	32	6	35	$\tilde{0}$	30	7		••
September	U - • •	41	10	33	9	31	3	31	10	29	ĩ	35	10	30	5		
October		40	5	32	3	30	11	29	11	$\frac{-0}{29}$	$\overline{2}$	31	-5	29	4		
November		40	3	31	5	30	11	31	?	30	5	31	10	30	2		
December	• • •	39	6	31	1	30	6	33	2	31	Ő	31	$10 \\ 0$	30	1		••
	5																
The Year	•••	41	7	35	8	32	10	31	0	32	6	31	10	30	0	•	••

AVERAGE PRICE PER QUARTER OF WHEAT IN LONDON.

rice of 527. Another official authority§ gives the highest, lowest, and wheat, barley, and average *Gazette* price of wheat, barley, and oats in England and bats in England Wales as follows, during each of the eleven years ended with 1888:—

The Imperial quarter is equal to 8 bushels.
† See Supplement to *The Statist* for 1887.
‡ Giffen's Statistical Abstract for the United Kingdom, 1874 to 1888.
§ Report on the Agricultural Returns of Great Britain, dated September, 1889, issued from the Privy Council Office, page 120.

AVERAGE PRICE OF WHEAT, AND	BARLEY, WALES.	AND	Oats	IN	England
--------------------------------	-------------------	-----	------	----	---------

				Average	Price per	Quarter.			
Year.	wheat.			Barley.		Oats.			
	Highest Weekly.	Lowest Weekly.	The Year.	Highest Weekly.	Lowest Weekly.	The Year.	Highest Weekly.	Lowest Weekly.	The Year.
1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} s. \ d. \\ 46 \ 5 \\ 43 \ 10 \\ 44 \ 4 \\ 45 \ 4 \\ 45 \ 1 \\ 41 \ 7 \\ 35 \ 9 \\ 32 \ 10 \\ 31 \ 1 \\ 32 \ 6 \\ 31 \ 11 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} s. \ d. \\ 30 \ 9 \\ 24 \ 0 \\ 25 \ 7 \\ 26 \ 11 \\ 25 \ 10 \\ 25 \ 6 \\ 27 \ 1 \\ 24 \ 10 \\ 22 \ 4 \\ 20 \ 5 \\ 18 \ 8 \end{array}$	$\begin{array}{c} s. \ d. \\ 40 \ 2 \\ 34 \ 0 \\ 33 \ 1 \\ 31 \ 11 \\ 31 \ 2 \\ 31 \ 10 \\ 30 \ 8 \\ 30 \ 2 \\ 26 \ 7 \\ 25 \ 4 \\ 27 \ 10 \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} s. \ d.\\ 20 \ 7\\ 19 \ 2\\ 20 \ 2\\ 19 \ 5\\ 19 \ 1\\ 19 \ 1\\ 19 \ 1\\ 18 \ 10\\ 18 \ 1\\ 16 \ 7\\ 14 \ 7\\ 15 \ 5\end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

528. The value of the agricultural produce raised in Victoria Value of during the year ended 1st March, 1890, may be estimated at over $raised_{agricultural}^{3}$ millions sterling. The following table shows the means whereby such an estimate is arrived at :--

VALUE OF AGRICULTURAL PRODUCE,* 1889-90.

Name of Crop.	Gross Produce and Price.	Estimated Value
WheatOatsBarleyOther cerealsGrass and clover seedPotatoesOnionsOnionsOher root cropsOther root cropsHayGreen forageTobaccoGrapes, not made into wineWineBrandyHopsOther cropsGarden and orchard produce	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	\pounds 2,107,549 799,689 289,929 157,820 10,909 654,600 40,556 13,760 43,223 2,065,794 388,990 11,544 29,714 315,718 2,643 26,651 9,360 877,290 7,845,739

* 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.

Value of agricultural produce in various countries.

314

529. 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*:—

			uD.		
					Millions of \pounds .
United States	- • •			• • •	604
Russia				• • •	509
Germany				• • •	456
France			•••	• • •	444
Austria		• • •	•••		322
United Kingdo	om		• • •		266
Italy	- 	• • •			178
Spain			•••		13 6
Australia			- 	• • •	76
Canada	• • •		• • •		58
Argentine Rep	oubllc	• • •	• • •	•••	$19\frac{1}{5}$

ANNUAL VALUE OF AGRICULTURAL PRODUCE IN VARIOUS COUNTRIES.

Specific weight of crops. 530. 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 1889-90, ranged from 55 lbs. to 67 lbs.; oats, from 35 lbs. to 50 lbs.; barley, from 40 lbs. to 60 lbs.; and maize, 40 lbs. to 60 lbs. In the same year, taking the districts as a whole, the average weight per bushel of wheat was 60 lbs.; of oats, 41 lbs.; of barley, 52 lbs.; and of maize, 55 lbs.

Rates of agricultural labour. 531. The following figures show the average rates paid for agricultural labour in the last two years. Rations are allowed in all cases in addition to the wages quoted, except in the case of threshers, hoppickers, and maize pickers :--

RATES OF AGRICULTURAL LABOUR, † 1889 AND 1890.

Description of Labour.	1888-9.	1889-90.

			4	<i>s</i> .	<i>d</i> .	s.	<i>d</i> .
Ploughmen, per	week			22	3	22	1
Farm labourers,	>>		•••	19	0	19	9
Married couples,	3 3		•••	26	1	25	8
Females,	37			11	3	11	9
Mowers,	"	•••		32	0	32	6
,, per acre	• • •	• • •		5	1	5	2
Reapers, per week	• • •	• • •	· • •	30	5	30	4
,, per acre		***		12	9	14	9
Threshers, per bush	el (withou	at rations))	0	$8\frac{3}{4}$	0	9
Hop-pickers, "		,,		0	31	0	3]
Maize-pickers, per b	ag	"	:' • • • • ₽	0	$5\frac{3}{4}$	0	5
					1		

* Page 168. † See also table of Wages at the end of Part "Interchange" ante.

532. The number and power of steam engines used on farms, and Plant and improvethe value of farming plant and improvements, were returned as follow ments on for the year under review and the previous one :---

STEAM ENGINES, IMPLEMENTS, AND IMPROVEMENTS ON FARMS, 1889 AND 1890.

	1888-9.	1889 -90.
Steam engines, number	640	654
" horse-power	5,006	4,870
Value of farming implements and machines	£2,782,848	£2,779,309
" improvement on farms	£15,242,103	£ 15,729,676

533. The following figures, which have been obtained by means of Machine labour. averages struck from the returns of the collectors in all the districts, show the rates paid for machine labor in the last two years :---

MACHINE LABOUR, 1889 AND 1890.

Average Rates paid for-	1888-9.	1889-90.	
Machine reaping, per acre { With binding , mowing, , , threshing, per 100 bushels : With winnowing Without winnowing	s. d. 7 7 4 7 4 8 21 5 12 7	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	

534. Information as to the numbers of live stock kept was Live stock, obtained at the census of 1881, and since that time the figures have 1890. been brought on by estimates furnished by the municipal authorities. The following are the census numbers, and the numbers in March, 1890, as derived from the municipal estimates alluded to :---

LIVE STOCK, 1881 AND 1890.

			Cattle.				
Period.	Horses.	Milch Cows.	Exclusive of Milch Cows.	Total.	Sheep.	Pigs.	
3rd April, 1881 (enu- merated)	275,516	329,198	957,069	1,286,267	10,360,285	241,936	
March, 1890 (esti- mated)	329,335	368,047	1,026,162	1,394,209	10,882,231	249,673	
Increase	53,819	38,849	69,093	107,942	521,946	7,737	

Goats, asses, and mules. 535. Besides the live stock returned at the census, as shown in the table, 68,426 goats, 135 asses, and 78 mules were then enumerated. No attempt has been made to bring these numbers on to any later period.

Estimates not quite reliable. 316

536. The estimates for 1890, as compared with the numbers returned at the census, show an increase in all kinds of stock. Too much reliance, however, must not be placed on any statement of the numbers of live stock, except such as is derived from the returns of a general census.

Stock per square mile 537. Speaking roughly, there are now in Victoria 4 horses, 16 head of cattle, 124 sheep, and 3 pigs, or, taking the different kinds together, 147 head of stock of these descriptions, large and small, to the square mile.

Dairy produce. 538. No complete returns of dairy produce have ever been obtained in Victoria, but in 1889-90 it was ascertained that 31,775 milch cows produced on the average 42,285 gallons of milk daily, or about $15\frac{1}{2}$ million gallons annually, from which over 2,200,000 lbs. of butter, and 1,790,000 lbs. of cheese were made in the year. The following estimate of the value of the dairy produce of the colony has been compiled according to the method adopted by Mr. D. Wilson, Government Dairy Expert, in his paper on "The Dairy Industry," published in *Bulletin* No. 9 of the Victorian Department of Agriculture :—

VALUE OF DAIRY PRODUCE OF VICTORIA, 1889-90.

Nature of Produce.

 Milk consumed, at ³/₄-pint per head, per diem, 38,256,500 gallons at 8d. Butter made from 89,786,250 gallons of milk, at an average of 2¹/₂ gallons to 1 lb. butter, 35,914,500 lbs. at 8d. Cheese made from 17,957,250 gallons of milk, at an average of 1 lb. per 	£ 1,275,216 1,197,150 448,931
gallon of milk, 17,957,250 lbs. at 6d.	
Total	2,921,297

NOTE.—The total milk yield is estimated—allowing 1 gallon of milk per diem to each milch cow in the colony—at 146,000,000 gallons, and it is reckoned that after taking into account the human consumption, five-sixths of the remainder is made into butter and one-sixth into cheese.

539. Information respecting the numbers of poultry kept is not Poultry. obtained except at the taking of a census. The following is a statement of numbers of the different kinds, according to the returns of the censuses of 1871 and 1881:—

Year of Census.	Number of Owners of Poultry.	Geese.	Ducks.	Fowls.	Turkeys.	Pea Fowls	Guinea Fowls.	Pheasants	Ostriches.
1871 . 1881	81,347 97,152	83,025 92,654	137,355 181,698	1,636,782 2,328,521	69,75 6 153,078	970 1,701	3,542 2,307	199 40	16
Increase Decrease	15,805	9,629	44,343 	691,739 	83, 322 	731 	1,235	159	 16

POULTRY, 1871 AND 1881.

540. It is seen that in ten years an increase of nearly 16,000 took Increase or decrease of place in the number of keepers of poultry, also a fair increase in all poultry. the different kinds of poultry except guinea fowls. Pheasants and ostriches, although not strictly speaking poultry, were returned in 1871, but no ostriches at the latter period; moreover, pheasants fell off in number from 199 in 1871 to 40 in 1881.

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

Possessions.				Numbe	er of—	
		Year. Horses.		Cattle.	Sheep.	Pig s.
The United Kingdom		1889	1,945,386	10,272,765	29,484,774	3,905,8 65
Malta		1887	7,171	10,673	14,609	
Cyprus		1886	53,243	54,658	289,837	
India*	• • •	1887-8	888,039	46,089,178	$25,\!880,\!571$	518,70 0

LIVE STOCK IN BRITISH POSSESSIONS.

	00
Mauritius 1884 12,000 15,000 30,000 30,000	
Cape of Good Hope 1888 295,370 1,502,845 14,463,445 166,8	35
Natal 1888 49,548 655,932 609,805 45,5	69
Canada 1881 1,059,358 3,514,989 3,048,678 1,207,6	19
Newfoundland 1884 5,436 19,884 40,326	
Jamaica 1888 67,635 113,649 14,399	
Falkland Islands 1888 2,173 8,169 582,419	
Australasia† 1888–9 1,486,819 9,209,801 96,580,640 1,171,6	97
Fiji 1888 684 6,754 6,996 1,9	03
Ť	

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

† For particulars relating to each colony, see third folding sheet ante, and Appendix A. post.

Live stock in Foreign countries. 542. 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).

	1 	Number of—				
Country.	Year.	Horses.	Cattle.	Sheep.	Pigs.	
EUROPE.						
Austria	1880	1,463,	8,584,	3,841,	2,721,	
Belgium	1880	272,	1,383,	365,	646,	
Bulgaria	1887	•••	• • •	6,872,	394,	
Denmark	1888	376,	1,460,	1,225,	771,	
France	1887	2,909,	13,395,	22,880,	5,979,	
Germany	1883	3,522,	15,787,	19,190,	9,206,	
Greece	•••	108,	164,	3,465,	180,	
Holland	1887	274,	1,526,	804,	490,	
Hungary	1884	1,749,	4,879,	10,595,	4,804,	
Italy	1881-2	660,	4,783,	8,596,	1,164,	
Norway		152,	1,017,	1,686,	101,	
Portugal	1870		625,	2,977,	971,	
Roumania	1888	554,	2,260,	4,807,	770,	
Roumelia (Eastern)	1883	44,	371,	1,859,	107,	
Russia (European)	1883	17,881,	23,628,	46,725,	9,362,	
Servia	1882	123,	827.	3,621,	1,068,	
Spain	1878	310,	2,353.	16,939,	2,349,	
Sweden	1887	481,	2.331,	1.378,	571,	
Switzerland	1886	98.	1.211.	338.	394.	
ASIA.				1		
Japan	1885	1.548.	1.060.			
Java and Madura	1885	518.	4.530	1		
Russia in Asia	1874-83	1.070.	3.716.	10.612.		
AFRICA.		-, • • • • •				
Algeria	1886	175	1 1 98	9 358	87.	
Egypt	1887	21	462	958	0.,	
Orange Free State	1881	132	465	5 056	•••	
		10m ,	100,	0,000,		
Angentine Depublic	1000	~ 000		~~~~~	000	
Argentine Republic	1588	э,000,	23,000,	80,000,	300,	
Drazii			30,000,	•••	• • •	
Costa Alca	1884		206,	•••		
Guadaloupe	1880	6,	10,	14,	14,	
Nices and	1885	118,	494,	460,	• • •	
INICATAGUA	1884	•••	400,			
raraguay	1887	62,	730,	32,	12,	
United States	1889	14,214,	52,802,	44,336,	51,603,	
Uruguay	1885	635,	5,924,	17,050,	100,	
veneznela	1883	292,	2,927,	3,491,	977,	

Live stock 543. The following summary of the live stock of the world was world. 543. The following summary of the live stock of the world was published by Mr. J. R. Dodge, statistician to the Department of Agriculture of the United States*:--

> * See Report No. 59 (new series) for January and February 1889, Government Printing Office, Washington.

Countries.	Horses.	Cattle.	Sheep.	Pigs.	Mules and Asses.	Goats.
Europe Asia Africa North America South America Australasia Oceania	$\begin{array}{c c} 33,253,\\ 4,195,\\ 656,\\ 14,918,\\ 5,992,\\ 1,440,\\ 1,\end{array}$	97,240, 70,402, 4,018, 55,093, 57,659, 8,966, 3,	$186,557, \\36,649, \\28,959, \\46,174, \\101,090, \\97,912, \\3,$	$\begin{array}{r} 44,719,\\ 519,\\ 304,\\ 51,530,\\ 1,388,\\ 1,208,\\ 20,\end{array}$	3,727, 1,182, 600, 2,311, 1,512, 	$19,513, \\1,227, \\5,340, \\15, \\3,017, \\25, \\1,$
Total	60,455,	293,381,	497,344,	99,688,	9,332,	29,138

LIVE STOCK OF THE WORLD (000'S OMITTED).

544. The numbers of live stock slaughtered in Victoria are fur-Live stock nished 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 for 1888 and 1889, those for the latter year being in all cases larger than those for the former :---

Year.		Cattle and Calves.		Sheep and Lambs.	Pigs.	
1888			249,475	2,366,525	144,528	
1889	•••		250,822	2,383,946	145,724	
Inc	rease		1,347	17,421	1,196	

LIVE STOCK SLAUGHTERED, 1888 AND 1889.

545. The purposes to which the carcasses of the slaughtered Purposes animals were appropriated in 1889 were returned as follow :---

for which stock was slaughtered

PURPOSES FOR WHICH LIVE STOCK WAS SLAUGHTERED, 1889.

		Numbers Slaughtered for—					
Description of Live Stock.	The Butcher and Private use.	Preserving or Salting.	Boiling down for Tallow or Lard.	Total.			
Cattle and Calves . Sheep and Lambs .	250,254 2,357,162	$548 \\ 25,518$	20 1,266	250,8 22 2,383,946			
Pigs		70,789		145,724			
Total	. 2,682,351	96,855	1,286	2,780,492			

546. In the 10 years ended with 1888, the returns show the Stock average number slaughtered annually for preserving and salting to ^{slaughtered} have been of cattle 723, of sheep and lambs 79,812, and of pigs ^{preserving.} 49,734. These numbers, as regards pigs, are much below, but as regards cattle and sheep, are much above the numbers slaughtered for the same purposes in 1889.

Wool produced, 1888 and 1889. 547. The quantity of wool produced in Victoria during the year 1889 may be set down as 56,954,721 lbs.* valued at £2,449,368, These figures represent the excess of exports over imports during the year, to which is added the quantity and value of wool used in Victorian woollen mills. In the previous year, the quantity produced, similarly estimated, was 54,143,961 lbs., valued at £2,577,107.

Wool produced in Anstralasian colonies, 1885 to 1888. 548. The following is a statement of the quantity and value of wool produced in the various Australasian colonies in 1888 and the three 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 as to the origin of the wool made at the Customs, 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, 1885 TO 1888.

		·······		
Colony.	1885.	1886.	1887.	1888.
QUANTITY.	lbs.	lbs.	lbs.	lbs.
Victoria	53,390,100	57,439,634	48,420,119	54,143,961
New South Wales	$165,\!857,\!466$	171,228,430	216,650,129	236,638,426
Queensland	42,472,071	28,700,546	47,482,926	50,675,289
South Australia	45,329,646	40,991,388	42,198,632	41,650,088
Western Australia	4,968,000	6,139,917	6,675,713	8,475,240
Tasmania	5,774,142	8,300,180	9,846,830	7,134,438
New Zealand	87,470,035	92,741,733	90,776,881	87,291,513
Total	405,261,460	405,541,828	462,051,230	486,008,955
DECLARED VALUE.	£	£	£	£
Victoria	2,960,890	2,778,160	2,400,515	2,577,107
New South Wales	7,122,366	6,947,526	8,925,516	9,167,534
Queensland	1,779,682	1,413,908	2,368,711	2,258,365
South Australia	1,411,872	1,227,007	1,323,879	1,334,589
Western Australia	248,400	332,519	333,785	423,762
Tasmania	260,480	319,227	422,531	317,423
New Zealand	3,240,630	3,200,499	3,453,278	3,386,504
Total	17,024,320	16,218,846	19,228,215	19,465,284

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Wool produced in each colony. 549. It appears by the figures that Victoria, in 1888, did not produce a fourth as much wool as New South Wales, and produced not quite two-thirds as much as New Zealand. She, however, produced rather more than Queensland, and a third more than South Australia. Western Australia, notwithstanding the immense extent

^{*} The quantity of Victorian wool exported in 1889, according to the Customs returns, was 118,817,873 lbs., or considerably more than the total quantity given above as produced in Victoria.— (See footnotes on pages 100 and 101, ante.) There is no doubt, however, that, in order to obtain the higher price generally realized in England and elsewhere for Victorian wool, much wool produced outside the colony is entered at the Customs as Victorian.

of her territory, produced but little more than the island of Tasmania. The wool clip was much larger in 1888 than in any of the other years in New South Wales, Queensland, and Western Australia, but was exceeded in one or more of the years in the other colonies.

550. The figures also show that the wool produced in the Austral- wool proasian colonies, in 1888, was more by nearly 24 million pounds than in 1887, by nearly $80\frac{1}{2}$ million pounds than in 1886, and by nearly 81 million pounds than in 1885; and, further, that the value of such wool was greater in 1888 than in 1887 by £237,000; than in 1886 by £3,247,000; and than in 1885 by over £2,440,000.

551. The following statement of the wool produced in one year in Wool produced in various countries has been computed, except as regards Australasia, various countries. from figures given in the Third Annual Report of the Statistical Institute of Holland*:---

		lbs.		lbs.
Australasia (1888)		486,009,000	Italy (1874)	21,378,800
Russia (1878)		390,548,800	Asiatic Turkey and Persia	13,224,000
Argentine Republic (188	32)	244,666,040	Natal (1881)	12,496,680
United States (1882)		233,073,000	Austria (1881)	10,909,800
United Kingdom (1882)	• • •	127,942,200	Portugal	10,358,800
France (1879)	• • •	90,319,920	Belgium (1865)	4,408,000
Spain (1878)		66,120,000	British North America (1881)	3,570,480
Germany (1881)		54,879,600	Sweden (1870)	3,306,000
Cape Colony (1881)		$42,\!427,\!000$	Other countries	96,976,000
Uruguay (1880)	• • •	41,369,080		· · · · · · · · · · · · · · · · · · ·
Hungary (1380)		35,682,760	Total 2,	011,066,800
British India (1881-2)	• • •	21,400,840		····

WOOL PRODUCED IN VARIOUS COUNTRIES.

552. The average price per lb. of Victorian wool in 1889, based Fall in price of wool. upon its declared value before leaving this colony, as obtained from the Customs returns of exports, was not quite $10\frac{1}{2}$ d., as against not quite $10\frac{1}{8}$ d. in 1888, nearly $10\frac{5}{8}$ d. in 1887, $11\frac{3}{8}$ d. in 1886 and 1885, and $12\frac{7}{8}$ d. in 1884. There was thus a rise of nearly $\frac{1}{2}$ d. per lb. as compared with 1888, but a slight fall $(\frac{1}{8}d.)$ as compared with 1887, a fall of nearly 1d. per lb. as compared with 1886 or 1885, and of $2\frac{1}{2}d$. per lb. as compared with 1884. This would appreciate the wool produced in Victoria during 1889 by £84,600, as compared with a similar quantity in 1888; but depreciate it by £282,000 as compared with a similar quantity in 1887; by £197,500 as compared with a similar quantity in 1886 or 1885; and by £535,600 as compared with a similar quantity in 1884.⁺

duce of four years compared.

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* See Bijdragen van het Statistich Instituut, Amsterdam, 1887, page 19; there given in kilogrammes, each of which has been assumed to be equal to 2.204 lbs. † See also Part "Interchange," ante, where the export value of all wool-not Victorian wool only—is dealt with.

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Χ

Price of Wool in Melbourne. for all descriptions of wool included in the one total, so that it is possible that a variation in the quality or condition may to a certain extent account for the difference in the declared value. 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:—

AVERAGE PRICE PER LB. OF WOOL IN MELBOURNE, 1885 TO 1890.

				Gr	easy.	Washed.*			
	Year.			Merino.	Crossbred.	Fleece or Washed.	Scoured.		
				<i>d</i> .	<i>d</i> .	<i>d</i> .	d.		
1884 - 5				$10\frac{1}{2}$	9	20	19		
1885 - 6				8 <u>1</u>	8	16	15		
1886 - 7				$10\frac{1}{2}$	9	17	18		
1887 - 8			1 • = •	$9\frac{1}{2}$	8	$15\frac{1}{2}$	16		
1888 - 9			• • • •	$10\frac{1}{2}$	10	18	$17\frac{1}{2}$		
1889-90				$1]\frac{1}{2}$	11	$18\frac{1}{2}$	$19\frac{1}{2}$		

Price of Australian wool in London. 554. The average price in 1888 of Australian wool in London, as officially computed from the returns of imports by the Agricultural Department⁺ of the Privy Council, was $\frac{1}{4}$ d. lower than in 1885 and 1887, 1d. higher than in 1886, but much lower than in any other previous years. The following are the results obtained for the twentyfour years ended with 1888:—

AVERAGE PRICE OF AUSTRALIAN WOOL IN LONDON, 1865 TO 1888.

		per lt).				per lb.
		s. d					s. d.
1865	· • •	1 7	<u>3</u> 8	1877		• • •	13
1866	• • •	1 8-	$\frac{13}{16}$	1878			$1 \ 2^{\frac{1}{2}}$
1867	• • • •	1 7:	$\frac{1}{2}$	1879			$1 2\frac{1}{2}$
1868		1 3	$\frac{15}{16}$	1880		• • •	$1 \ 2\frac{3}{4}$
1869		1 2	$\frac{15}{16}$	1881	· 		$1 2\frac{1}{2}$
1870	•••	1 3	14	1882		• • • •	$1 0^{\bar{1}}_{\bar{2}}$
1871		1 2	<u>1</u> 4	1883		• • •	$1 0^{-1}_{2}$
1872	· · ·	1 3		1884		• • •	$1 0\frac{1}{2}$
1873	•••	1 3	$\frac{1}{4}$	1885			$0 \ 10^{\frac{1}{2}}$
1874		1 2	<u>5</u> 1	1886			$0 9\frac{1}{4}$
1875	···	1 4	$\frac{1}{4}$	1887			$0 \ 10^{\frac{1}{2}}$
1876	• • •	1 3	<u>1</u> 4	1888		• • •	$0 \ 10\frac{1}{4}$

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Price of wool 555. The Supplement to the Statist (London journal) of the of each Australasian colony in London. 555. The Supplement to the Statist (London journal) of the greasy wool produced in four of the Australian colonies during the eight years ended with 1887. The wool is described as "good average

greasy" in the case of Victoria; "average greasy" in the case of New South Wales and South Australia; and "superior greasy" in the case of New Zealand. The average price of "good to superior" Victorian wool is also given:—

Average Price of the Wool of each Australian Colony in London, 1880 to 1887.

		Prices per lb. on 31st December.									
Year.	Year.		Greasy Wool, the Produce of—								
		Victoria.	New South Wales.	South Australia. Zealand. Australia Crossbree (Superfine		Australia Crossbred (Superfine).	Wool, the Produce of Victoria.				
		d.	d.	d.	<i>d</i> .	<i>d</i> .	<i>d</i> .				
1880		13	. 11	10	$13\frac{1}{2}$	$14\frac{1}{2}$	$23\frac{1}{3}$				
1881		12	$10\frac{1}{2}$	$9\frac{1}{2}$	$12\frac{1}{2}$	14	$\frac{1}{22}$				
1882	· · ·	$12\frac{1}{2}$	$10\frac{1}{2}$	9	121	$13\frac{1}{2}$	$22\frac{1}{2}$				
1883	· · · ·	$12\frac{1}{2}$	10	9	$12rac{1}{2}$	$13\frac{1}{2}$	22^{2}				
1884	. <i>.</i> .	11늘	$9\frac{1}{2}$	8	12	$13\frac{1}{2}$	$22\frac{1}{2}$				
1885		$9\frac{1}{2}$	8	$6\frac{1}{2}$	10	$11\frac{1}{2}$	17				
1886	• • •	10	8	$6\frac{1}{2}$	$10\frac{1}{2}$	12^{-}	18				
1887	•••	10	8	$6\frac{1}{2}$	11	$12\frac{1}{2}$	18				

556. The following is an estimate of the gross value of pastoral value of produce raised on holdings of all descriptions in 1889-90:—

VALUE OF PASTORAL PRODUCE, 1889-90.

Nature of Produce.							
	£						
Milk, butter, and cheese, from 368,047 milch cows kept, @ £8 10s.	3,128,399						
Estimated value of stock produced in 1889 :							
Cattle, 368,047, viz., 245,365, @ £8, and 122,682 (calves), @ 30s.	2,146,943						
Sheep, 2,720,558, @ 7s. 6d	1,020,209						
Pigs, 74,902, (a) £2 10s	187,255						
Horses, 16,467, @ £8	131,736						
Excess of exports over imports of wool, Customs value	2,333,440						
Estimated value of wool used in the colony for manufacturing purposes,	115,928						
1,738,929 lbs., @ 1s. 4d.							
Total	9,063,910						

Note.—The principle on which the numbers of "stock produced" have been estimated is as follows :---It has been assumed that the increase of cattle amounted to one to every milch cow. and that one-third of the calves born were slaughtered for veal, the remainder taking the place of the older cattle slaughtered. 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, to have taken place during a series of years on nearly 3³/₄ millions of sheep on 34 stations situated in various parts of the colony. The increase of pigs and horses has been arbitrarily estimated at 30 and 5 per cent. respectively 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, etc., as this is supposed to be included in the value of stock produced.

X 2

557. Australian-killed fresh meat was delivered in London for the Australasian in London. first time in the year 1880, when the supply consisted of 60 carcasses fresh meat of beef and 555 of mutton. New Zealand fresh meat was first The following, according to the Agricultural delivered in 1882. Department of the Privy Council,* are the quantities delivered from Australasia in the eight years ended with 1888:-

AUSTRALIA	N AND	NEW 2	EALANI	D-KILLED	FRESH	MEAT	DELI	VERED
		IN L	ONDON,	1881 то	1888.			
			Cwt.					Gwe.
1881			11,300	1885				230,400
1882			34,540	1886			-	294,220
1883			93,420	1887		• 4a	• • •	302,140

... 222,560 1888398,9601884558. In the same eight years the average prices of beef and mutton in London, by the carcass, are quoted as follow + :--

. . .

- - -

meat in London.

Price of

AVERAGE WHOLESALE PRICE OF BEEF AND MUTTON IN LONDON, 1881 то 1888.

			Beei per lb.	Mutton per lb.
1881			$4\frac{1}{2}$ d. to $7\frac{1}{4}$ d.	5d. to 9d.
1882	• • •		$4\frac{3}{4}$ d, Sd.	5 ¹ / ₃ d. ,, 9 ¹ / ₃ d.
1883			5d, 8d.	$5\frac{3}{4}$ d $9\frac{3}{4}$ d.
1884			$\frac{1}{1}$ d, $7\frac{3}{1}$ d.	5d. $$ $8\frac{3}{4}$ d.
1885			$3\frac{3}{4}d.$, $6\frac{3}{4}d.$	$4\frac{1}{4}$ d, $7\frac{1}{4}$ d.
1886			$3\frac{1}{3}$ d, $6\frac{1}{4}$ d.	4d Sd.
1887			$3\overline{d}$. $\overline{.}$ $5\overline{\underline{3}}\overline{d}$.	3 1 d 7d.
1888		:	$3\frac{1}{4}$ d. , $6\frac{1}{4}$ d.	3 <mark>≩</mark> d, 7 <u>≩</u> d.
		(

Rabbits.

559. Tame rabbits were kept in Victoria during the early years of the colony, but rabbits were first turned out upon an extensive scale by a landed proprietor in the Western district. They bred rapidly, and for several years there was a demand for specimens in most districts of the colony for breeding purposes. At that time no one seems to have thought of the nuisance they might eventually become, and of the large expenditure which would be necessary to keep down their numbers. There are now few parts of Victoria which are not infested with them, ‡ although, in consequence of the vigorous efforts which have been made by the Government. by Shire Councils, and by private individuals, to suppress the evil, there are not so many as formerly. It is found, however, that if efforts are relaxed they breed so rapidly that they soon become as

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1883

* Report dated September, 1889, page 108. * Report dated September, 1889, page 108. *† Ibid.*, pages 114 and 115. ‡ It is estimated that their ravages extend over 40 millions out of the 56 millions of acres in the colony of Victoria.

numerous as ever. Some persons have advocated the introduction of animals hostile to rabbits, such as ferrets, weasels, or the mangouste (Indian ichneumon*), but where this has been tried it has been found that the introduced animals have been so destructive to poultry that the rabbits were the lesser evil of the two; it was also discovered that, as a rule, these animals only attack rabbits when hungry, and cease to do so as soon as they become satiated, consequently it would have been necessary to introduce immense numbers to cope with the multitude of rabbits with which the colony is infested. The most successful way of destroying rabbits has been found to be poisoning either with phosphorized oats, or wheat, or with arsenic mixed with bran or chaff, or else with the fumes of bisulphide of carbon, which, being placed in their burrows, speedily effects the desired object if all the entrances are properly stopped. They are also largely trapped and shot, in which case their flesh is available for food. The following account of the steps which have been taken to exterminate the rabbits has been supplied by the branch of the Department of Crown Lands under which the Rabbit Suppression Acts are administered :--

RABBIT EXTERMINATION.

The first *Rabbit Act* came into force on the 28th December, 1880. Its principal provisions are :—

Owners or occupiers are liable for destruction of rabbits on their land.

Licensees, part 2 Land Act 1869 and section 49 Land Act 1869, deemed owners. Pastoral tenants not deemed owners or occupiers, and were exempted (altered by Act 813).

Crown liable for all unoccupied Crown land and land held under pastoral licence, but not liable to be served with notice by shire council to destroy rabbits, nor to be summoned in default of compliance (altered by Act 813).

The enforcement of the provisions of the Act (*re* the destruction of vermin on all private lands) entrusted to the shire councils with power to compel destruction of log, brushwood fencing, and stone walls when deemed to be harbour for vermin. Occupier failing to clear land after notice, council to clear and recover expenses in any court of competent jurisdiction.

The second Act No. 721 in force on the 24th December, 1881, repealed section 7 of Act 683, conferred power on inspectors of the councils to serve notices and to enter and destroy (if not complied with after 14 days) and recover costs.

Under the third Act No. 813 in force the 12th December, 1884:-

All licensees are owners and liable to be served with notices to destroy and be summoned in default of compliance after 14 days, shire to do the work and recover. It also places the Board of Land and Works in the same position, rendering it liable to be called upon to clear unoccupied Crown lands of rabbits, dead timber, and other harbour.

Gives power to Board of Land and Works to arrange with any shire to destroy rabbits on Crown lands on terms to be agreed upon.

Enables shires to recover expenses incurred in clearing private holdings before two justices in lieu of court of competent jurisdiction.

Authorizes shire council inspector to act on his own authority in lieu of waiting directions of shire council.

* Herpestes mangos of Desmarest.

Provides that any person having a live rabbit in his possession be liable to a penalty up to ± 100 on conviction.

Provides that it shall be the duty of every shire council to take simultaneous action to destroy vermin on any day appointed by the Governor-in-Council, and continue such action till district is certified as clear. Any shire not complying may be proclaimed an infested district by Governor-in-Council, and a local committee appointed to attend to the matter, with power to perform all duties. Expenses not recoverable from an owner to be a debt due by council, and if not paid may be satisfied out of municipal subsidy.

Gives power to proclaim any animal a natural enemy of the rabbit and protect it.

The foregoing is a brief extract of the principal features of the present Rabbit Acts, and for further information it may be stated there are about 102 shires and boroughs in the colony of Victoria more or less infested with rabbits, but in many of them the pests have not, up to the present, increased to a sufficient extent to cause any damage. Active operations to destroy the vermin on Crown lands were not taken until towards the latter end of 1881. During the first two years the operations extended to only about 20 shires; but to such an extent had the evil spread, that it was early found imperative to extend the scope of operations, and at the present time the Department is working Crown lands in upwards of 40 shires.

The amounts expended on rabbit extermination are as follow :---

1879 80		$\pm 1,280$	1885-86	£24,833
1880-81		\pounds £2,600	1886-87	\dots £21,065
1881 - 82		£12,890	1887-88	$\dots \pounds 20,551$
1882 - 83	• • •	£9,883	1888-89	£17,621
1883 - 84		£10,063	1889–90	£24,000*
1884 - 85		$\pounds 22,177$		

These amounts include expenditure on labour, inspectors' salaries, materials, cartage, etc., and for working unoccupied Crown lands.

The pests have of late years been largely diminished, and operations on the whole attended with marked success. The greatest obstacle in the way of effectually clearing land of the pest is found in the difficulty of enforcing simultaneous and continuous action; when once this difficulty is overcome by the whole operations being placed in the hands of the Government, with sufficient powers to enforce the working of all the infested lands at one time, the rabbits will soon be effectually destroyed, and a moderate expenditure suffice to keep them within a very small limit.

A few years ago, on one estate alone, upwards of $\pounds 15,000$ was expended in efforts to clear the land from the pest.

It is estimated that, including the expenditure of private individuals, shire councils, and the Government, loss by depreciation in grazing capabilities of land and destruction to crops, the colony has sustained a loss of about three millions by the introduction of these four-footed rodents; but the damage has been immensely reduced during the last five years, and at present is not great, though any relaxation of efforts would in two or three years result in the animals being as numerous as ever. Phosphorized wheat and oats, bran and chaff and arsenic, strychnine water, arsenic and carrots, have been amongst the most successful poisons, but where burrows abound, and can be got at, bisulphide of carbon is the most deadly and effective enemy of the rabbit, and never fails to destroy them when properly used, unless the soil be of too porous a nature to hold the gas; in this case digging out is the best remedy. In concluding, it may interest some persons who are not fully aware of the prolific nature of rabbits, to state that in three years, under favourable circumstances, two pairs of rabbits, if undisturbed in any way and sufficient food abounded, would increase to the enormous number of five millions, which fully shows the necessity that exists for continuous and vigorous action to destroy them.

Exports of rabbit skins. 560. In the thirteen years ended with 1889, nearly 39 millions of rabbit skins, valued at $\pounds 258,000$, have been exported from Victoria.

* Approximate figures.

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 :---

	Rabbit Skins H	Exported.	- 		Rabbit Skins Exported.		
Year.	Number.	Value.	Year.		Number.	Value.	
1877 1878 1879 1880 1881 1882 1883 1884	700,565 711,844 1,036,372 3,309,408 4,473,108 4,929,432 4,245,596 4,963,371	£ 5,790 6,206 7,322 21,674 32,217 37,538 30,364 37,243	1885 1886 1887 1888 1889 Total	· · · · · · · · · · · · ·	$\begin{array}{r} 3,424,259\\910,609\\2,663,314\\3,967,533\\3,429,015\\\hline\\38,764,426\end{array}$	£ 23,548 6,800 16,294 20,759 12,303 258,058	

EXPORTS OF RABBIT SKINS, 1877 TO 1889.

561. The number of couples of rabbits received at the Melbourne Rabbits sent to market fish market, the number sold, and the number condemned during the in Melbourne.

RABBITS SENT TO MELBOURNE MARKET.

			Number of Couples of Rabbits.				
Yea	r.		Sold.	Condemned.	Total.		
 1886-7			346,856	4,460	351.316		
1887-8		• • • •	418,618	2,272	420,890		
1888-9			474,384	13,458	487,842		
1889-90			606,568	11,567	618,135		
Tot	al		1,846,426	31,757	1,878,183		

562. For some time past experiments have been in progress in Destruction various parts of Australia upon a method of destroying rabbits by by disease disease. The proposition last under consideration was that of M. Pasteur, the eminent French physician and chemist, who proposed to infect the rabbits with the rabbit itch or scab, a complaint resulting

* Mr. E. Shaw, the manager of the Denton Mills Hat Factory, reports that during the three years ended with 1888, about 600 dozen rabbit skins had been used weekly in that establishment. This would give a total of 374,400 skins yearly, or 1,123,200 in the three years.

from the presence of a parasite called *sarcoptes cuniculi*, and believed to be identical with chicken cholera. To test this method the Government of New South Wales appointed a Royal Commission, which held numerous sittings and took a large amount of evidence upon the subject. An account of the report of this Commission, which was unfavourable to M. Pasteur's scheme, was published in the last edition of this work.*

abbit fence between Victoria and South Australia.

563. With the view of keeping the rabbits and wild dogs on the South Australian side of the border from crossing into Victoria, a fence of wire netting has been erected by the Victorian Government, commencing at about $36^{\circ} 45'$ south latitude and extending north to the Murray, a distance of 150 geographical miles. From the commencing point of this fence the Government of South Australia has fenced south for about 36 miles along the Victorian frontier, but it is not known whether it intends to continue the fencing to the sea. As the distance from the Murray to the sea is 282 miles, the portion undertaken by Victoria covers more than one-half of the whole.

tabbit Suppression Bill.

564. An Act⁺ was passed on the 25th November, 1889, to amend and consolidate the law providing for the destruction and suppression of rabbits and other vermin. It provides for the supply of wire netting to the settlers wherewith to erect rabbit proof fences, the amount to be paid back in ten annual instalments, without interest. All the settlers have to do is to apply to the shire councils for the wire netting, the estimated cost per mile being $\pounds 18$ or $\pounds 20$. The councils will be held responsible for the repayment, and are to collect the moneys advanced and account for the same to the Government. It has been suggested that the applicants should join in groups to fence in their holdings, it being relatively cheaper to fence in a large block than a number of small ones. In introducing the measure, the then Minister of Lands, the Hon. J. L. Dow, stated that whilst the annual expenditure of Victoria on rabbit destruction was about £20,000, that of New South Wales was about £90,000, and that of South Australia was over £40,000; but that the magnitude of the evil was not disclosed by these figures, which simply represented what was spent on Crown lands. In addition, there was the large expenditure incurred by private individuals in attempting to keep

* See Victorian Year-Book, 1888-9, Vol. II., paragraph 545. † The Vermin Destruction Act 1889 (53 Vic. No. 1,028).

their land clear. The sum of £150,000 was placed upon the estimates 1889-90 to be expended on the purchase of wire netting in accordance with the provisions of the Act.

565. In 1890, as compared with 1889, whilst a decrease of 7 Flour mills. occurred in the number of mills, and of 32 in the number of pairs of stones employed, there was an increase of over 400 in the horse-power of machinery; and of 31 in the sets of rollers in use. The wheat operated upon fell off by 1,700,000 bushels, and the flour made by over 37,000 tons*; but, on the other hand, the other grain operated upon increased by 142,000 bushels. The hands employed were fewer by 11, and a decrease of £72,584 took place in the estimated value of machinery, lands, and buildings :----

Year ended Number		r Mills	Mills employing—			Ame Hors	ount of se-power	Nu	Number of Num		
March.	March. OI Mills.		Steam-power.		power.	Mac	of hinery.	of stones.		Rollers.	
1889 1890	$114\\107$	107 100		7777	$\begin{array}{c c}7 & 3,17\\7 & 3,58\end{array}$,174 ,585	$\begin{array}{c} 301\\ 269 \end{array}$		396 427	
Increase Decrease	7	7		•••		411 			 32	31	
Year ended	Number		ted ⁻	upon.	Flo)1)r	Appr	oxii	mate total	Value of—	
March.	Hands employed.	Wheat.	0	ther.	ma	de.	Machine and Pla	ery nt.	Lands.	Buildings.	
1889 1890	803 807	bushels. 8,903,320 7,203,602	bu 23 37	ushels. 4,149 6,280	ton 184 146	ns.* ,056 ,828	£ 323,40 303,23)4 32	£ 153,325 122,007	£ 247,500 226,406	
Increase Decrease	4	1 699 718	14	2,131			20.17	72	31,318	21.094	

FLOUR MILLS, 1889 AND 1890.

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566. In 1881 the statistics were collected by the census sub-value of materials enumerators, and consequently it was possible to obtain more complete used and produced. information than is supplied in ordinary years by the collectors employed by the local bodies, especially in regard to the values of materials operated upon and articles produced, which, in the case of the flour mills, were as follow :---

* A ton of flour is considered to be equivalent to 2,000 lbs.

FLOUR MILLS, 1880-81.

Value of materials operated upon ,, articles produced	••••	$\pounds 1,412,099 \\ 1,651,351$
Increased value	j• • •	£239,252, or 17 per cent.

567. The number of breweries returned was 2 more in 1890 than Breweries. in 1889; whilst the hands employed in breweries increased by 146. and the horse-power of machinery increased by 235; moderate increases also took place in the materials used and beer brewed, the latter being more by over 253,000 gallons than that in the previous year; although the value of lands was less by £53,575, a higher value by over £84,000 was set down for the machinery, plant and buildings :—

BREWERIES, 1889 AND 1890.

		E en	Breweri aployin	es g—	r of		Ma	terials use	d.
Year ended March.	Number of Breweries.	Steam- power.	Water- power.	Manual Labour only.	Amount of Horse-powe Machinery.	Number of Hands employed.	Sugar.	Malt.	Hops.
1889 1890	68 70	52 57	1 1	$15\\12$	538 773	$1,106 \\ 1,252$	15,674,848 15,975,568	bushels. 813,160 841,841	lbs. 1,003,925 1,038,073
Increase Decrease		5		3	235	146 	3 00,720 	28,681 	34,148
						App	proximate Tota	al Value of	
Year ended	March.		Beer	made.	M ar	achinery 1d Plant.	Lands.	* B	uildings.
1889 1890		••••	gallons. 19,798,272 20,051,346			£ 72,928 06,233	$ \begin{array}{c} $		£ 349,108 399,851
Increase			253,074			33,305			50,743

Decrease ...

568. The value of the sugar, malt, and hops used, and of the Value or materials beer made, were returned for the census year, but not since. The used and produced. following are the figures given :--

BREWERIES, 1880-81.

53,575

Value of materials used ,, of beer made	••	•••	••••	£442,885 780,501
Increase	d value		• • •	£337,616, or 76 per cent.

* The figures in this column apply to purchased lands only. One brewery in 1889 and 1890 was upon Crown lands; in this case no valuation of the land has been given.

569. The beer made in Victoria during 1889-90 amounted to Consump-20,051,346 gallons; and the quantity imported, after deducting per head. exports, was 1,534,185 gallons. These numbers gave a total consumption of 21,585,531 gallons, or an average of $19\frac{2}{5}$ gallons per head. The consumption of beer per head in 1888-9 was as much as 20 gallons, in 1887-8 $18\frac{2}{3}$ gallons, in 1886-7 $17\frac{1}{2}$ gallons, and in the two previous years no more than 16 gallons.

570. The following is a statement of the quantity of beer brewed Beer brewed in one year in the United Kingdom, four countries of Europe, and the countries. United States :--

BEER BREWED IN VARIOUS COUNTRIES* (000'S OMITTED).

		gallons.				gallons.
United Kingdom (1885)		989,890,		Austria-Hungary (1884))	Ž72,624,
Holland (1884)		932,228,		Belgium (1885)	• • •	206,074,
United States (1888)	•••	819,640,	ļ	France (1883)	• • •	189,618,

571. The average annual consumption of malt liquor per head in Consumpof beer in various countries may be set down as follows, the figures being various generally calculated over a series of years :---

ANNUAL CONSUMPTION OF BEER PER HEAD IN VARIOUS COUNTRIES.

		gallons.			g	allons.
United Kingdom	1	 28.74	Tasmania	•••		10.02
Germany		 19.38	New Zealand		• • •	9·5 9
Holland		 19.05	Switzerland	•••	• • •	8.15
South Australia		 20.04	Austria-Hungary	•••	•••	6· 83
Victoria	• • •	 19.36	France	•••	• • •	4.53
New South Wale	es	 11.94	Canada			3.05
United States		 10.74	Sweden	••••		2.52
Queensland		 10.23				

572. The brickyards and potteries were fewer by 8 in 1890 than Brickyards in 1889, and the hands employed by 7; but the horse-power of potteries. machinery employed was increased by 505. The number of bricks made was smaller than in the previous year by $1\frac{1}{4}$ million; and there was also a decrease of nearly £1,700 in the value of pottery made. The plant and buildings show an increased value of about £49,000, whilst the value of lands was less by £2,240. The following are the comparative figures of the two years:—

* Computed, in most cases, from figures given in the *Bijdragen van het Statistisch Instituut*, 1887, page 15, there stated in hectolitres, each of which has been assumed to be equal to 22 Imperial gallons.

	Number of	Number of in u	f Machines 1se.	Brick	yards em	Amount	Number of		
Year ended March.	Brick- yards and Potteries.	For tempering	For making	Mac work	ehines ed by—	Manual	of Horse- power of Machinery.	Hands employed.	
	Clay.		Pottery.	Steam.	Horses.	Labour.			
1889 1890	$\begin{array}{c} 241 \\ 233 \end{array}$	$\begin{array}{c} 236\\ 237\end{array}$	$\begin{array}{c} 130\\117\end{array}$	75 78	$\begin{array}{c} 102\\82\end{array}$	64 73	1,879 2,384	3,2 5 0 3,2 43	
Increase Decrease		1	 13	3	 20	9 	505 	7	
		à à à à à		Ap	proximat	e Total Va	lue of—		
Year ended N March. Bri		icks made.	Potter made.	r l a	lachinery nd Plant.	Land	s.* Bu	Buildings.	
1889 1890	27	7,896,807 6,650,844	£ 71,92 70.24	.0	$\begin{array}{c c} & \pounds \\ 7 & 256,471 \\ 0 & 293,560 \end{array}$		$\begin{array}{c c} & 2 \\ 62 \\ \end{array} \begin{array}{c} 2 \\ 2 \end{array}$	£ 210,242 222,206	
Increa Decrea	se	1,245,963	1,68	57	37,089	2,2	240	11,964 	

BRICKYARDS AND POTTERIES, 1889 AND 1890.

Tanneries, fellmon-

573. The establishments for tanning and wool-washing were more geries, etc. numerous by 1, and the tanpits by 73, in 1890 than in 1889, although a decrease of 11 took place in the number of hands employed; whilst the returns show an increase of about £45,800 in the value of plant, lands, and buildings connected with that industry. Notwithstanding the slight increase in the number of establishments, the work done as a whole was in excess of that in the previous year; for although the hides tanned were fewer by 5,856, the skins tanned were more numerous by 385,759, the skins stripped by 689,415, and the wool washed, other than that stripped from skins, was more by 167,274 The following are the particulars for the two years :---lbs.

> TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS, 1889 AND 1890.

Victo

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	,t mente	Establishments employing—					of ver of y.	ft .) f	
Year ended Mar	ch.	Number (Establish	Steam- power.	Wind- power.	Water- power.	Horse- power.	Manual Labour only.	Amount c Horse-pov Machiner;	Number c Hands employed	Number (Tan Pits.
1889 1890		$\begin{array}{c} 136\\ 137\end{array}$	$\begin{array}{c} 65\\ 68\end{array}$	2		7 11	62 57	724 825	1,587 1,576	3,571 3,644
Increase Decrease	• •	1	3	 2	1	4	 5	101 	 11	73

* The figures in this column apply to purchased lands only Twenty-three of the brickyards in 1889 and thirty-one in 1890 were on Crown lands.

TANNERIES,	F'ELLMONGERIES, A	and W	OOL-WASHING	ESTABLISHMENTS,
	1889 and	1890 -	-continued.	

	Number	Tanned of		Other Wool	Approximate Total Value of-			
Year ended	i unioci		Number of Skins		ury 1t.		<u></u>	
March.	Hides.	Skins.	Stripped of Wool.	Washed.	Machine and Pla	Lands. *	Building	
				lbs.	£	£	£	
1889	354,000	1,382,815	1,752,553	9,275,923	87,154	102,966	115,505	
1890	348,144	1,768,574	2,441,968	9,443,197	107,535	105,607	138,296	
Increase		385,759	689,415	167,274	20,381	2,641	22,791	
Decrease	5,856		•••		•••			

574. An estimate of the value of the materials used and articles value of materials produced in tanneries, fellmongeries, and wool-washing establishments used and produced. was obtained at the census of 1881, but no later information exists respecting these values. The following are the figures :---

TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS, 1880-81.

Value of materials use " articles produce	ed	 $\pounds 1,008,531$ 1,406,274
Increased va	lue	 £397,743, or 39 per cent.

575. An Act⁺ to encourage the growth of the several species of wattle Cultivation acacia, locally known as "wattle," the bark of which is of great value Bill. for tanning purposes, was passed on the 25th November, 1889. The Act allows selections of 1,000 acres each for wattle cultivation, to be taken up on a 21 years' lease at a rental of not less than 2d. per acre per annum for the first seven years, not less than 4d. for the next seven years, and not less than 6d. for the third period of seven years, the right being given to select 320 acres of the area as a freehold. It is stipulated that the planting of one-fifth of the area must be made each year after the first, so that the whole may be covered by the end of the sixth year. The tree being of exceedingly quick growth, the bark is fit for stripping in 5 or 6 years. It is a peculiarity of the wattle that whilst its timber, which is valueless, becomes finer on good land, its bark producing properties are said to be greatest on

The figures in this column apply to purchased land only Six of the establishments in 1889, and seven in 1890 were on Crown lands. In these cases no valuation of the land is given. *The Wattle Trees Cultivation Act* 1889 (53 Vict. No. 1,037).

poor arid soils. Large areas of land suitable for the growth of the wattle have been thrown open for selection under this Act.

Woollen mills.

576. The number of woollen mills returned was 1 less in 1890 than in 1889, and a decrease of 31 also occurred in the number of hands employed, and of £44,600 in the value of plant, lands, and buildings; but, notwithstanding this, there was an increase of 85,375 lbs. in the quantity of wool used, of 8,846 in the number of yards of tweed, cloth, and flannel made, and also increases in the number of blankets and shawls manufactured.

Year ended		Number	Number	Horse-	Quantity of	Goods Manufactured : Quantity of—		
March	•	Woollen Milts.	of Spindles.	of power of Woo ndles. Machinery. used		Tweed,Cloth, Flannel, etc.	Blankets.	Shawls.
	<u></u>				lbs.	yards.	pairs.	number.
1889	• • •	8	23,644	806	1,653,554	1,030,322	2,248	233
1890	•••	7	23,190	775	1,738,929	1,039,168	2,362	658
Increase					85,375	8,846	114	425
Decrease	•••	. 1	+0+	31	• - •		•••	•••

WOOLLEN MILLS, 1889 AND 1890.

Year ended March.		Hands e	employed.	Approximate Total Value of-				
		Males.	Females.	Machinery and Plant.	Lands.	Buildings.		
1889 1890	•••		$\begin{array}{c} 431\\ 423\end{array}$	$\begin{array}{c} 410\\ 387\end{array}$	£ 156,136 129,109	£ 12,317 7,481	£ 64,847 52,108	
Decrease	e	••••	8	23	27,027	4,836	12,739	

Value of articles

577. The value of the raw material used in woollen mills, and of the articles produced, was returned for the census year, but not since, used and produced. the difference in favour of the manufactured articles being then £79,298. The following are the figures :---

WOOLLEN MILLS, 1880-81.

Value of materials used	•••	£89,412
" articles produced …	•••	168,710
Increased value		£79,298, or 89 per cent.

578. The manufacture of cotton has not yet been introduced into Cotton Australia, but statistics of its manufacture elsewhere may not be ture in uninteresting. The following is a statement of the number of spindles in use in the United Kingdom, the Continent of Europe, the United States, and India in each of the four years ended with 1888:—

Spindles for Manufacturing Cotton in Use in Various Countries, 1885 to 1888.

	Number of Spindles.						
-	1885.	188 6.	1887.	1888			
	43,000,	42,700,	42,740,	42,740,*			
	22,750,	22,900,	23,180,	23,380,			
	13,250,	13,350,	13,500,	13,525,			
•••	2,145,	2,260,	2,420,	2,490,			
-	81,145,	81,210,	81,840,	82,135,			
	····	1885. 43,000, 22,750, 13,250, 2,145, 81,145,	Number of1885.1885.1886 $43,000,$ $42,700,$ $22,750,$ $22,900,$ $13,250,$ $13,350,$ $2,145,$ $2,260,$ $81,145,$ $81,210,$	Number of Spindles. $1885.$ $1886.$ $1887.$ $43,000,$ $42,700,$ $42,740,$ $22,750,$ $22,900,$ $23,180,$ $13,250,$ $13,350,$ $13,500,$ $2,145,$ $2,260,$ $2,420,$ $81,145,$ $81,210,$ $81,840,$			

(000's omitted.)

579. The following are the quantities of cotton consumed in the World's consame countries during the ten years ended with 1887-8. The figures of cotton. express substantially the world's consumption of that staple in the years named :--

WORLD'S CONSUMPTION OF COTTON, 1879 TO 1888. (00,000's omitted.)

			Quantity of Cotton Consumed in—							
Years.		United Kingdom.	Continent of Europe.	United States.	India.	Total.				
			lbs.	lbs.	lbs.	lbs.	lbs.			
1878-9	• • •		1,137,2	1,038,4	713,6	104,9	2,994,1			
1879-80	• • •		1,340,0	1,100,0	792,4	120,6	3,353,0			
1880-81			1,428,8	1,182,4	847,2	148,6	3,607,0			
1881-2			1,456,0	1,279,2	878,8	155.8	3,769,8			
1882-3			1,497,6	1,352,0	950,0	179,0	3,978,6			
1883-4			1,466,4	1,352,0	897,6	208,3	3,924,3			
1884-5			1.373.2	1,302,0	763,6	233,9	3,672,7			
1885-6			1,451,2	1,386,0	911,2	252,1	4,000,5			
1886-7			1.477.6	1,456,0	969,2	284.7	4,187,5			
1887-8			1,536,4	1,508,0	1,012,0	300,0	4,356,4			

* According to a return published in *The Manufacturer and Inventor* (a London industrial newspaper), of the 20th October, 1890, the number of textile factories in the United Kingdom is 7,190, in which 48,409,733 spinning spindles or throwing spindles, 5,231,329 doubling spindles, and 822,489 power looms are used; whilst the number of bands employed was 1,084,631, viz., 428,082 males, and 656,549 females.

Soap and candle works. **3**36

580. Thirty-three soap and candle works were returned in 1890 as against 32 in 1889, and the hands employed increased by 20. The weight of soap made in the year under review was, moreover, greater by 8,420 cwt. than that in the previous year, but the weight of candles made was less by 1,086 cwt. than in 1889, whilst the valuation placed upon the machinery, lands, and buildings was higher by £10,355 than in that year:—

	ents.	Establish- ments employing-		or of		ŕ		Appro	Approximate Total Value of—		
Year ended March.	Number of Establishun	Steam- power.	Manual Labour only.	Amount of Horse-power Machinery.	Number of Hands employed.	Soap made.	Candles made.	Machinery and Plant.	Lands.*	Buildings.	
1889 1890	3 - 33	22 24	10 9	$\begin{array}{c} 436\\ 532 \end{array}$	379 399	cwt. 151,150 159,570	cwt. 52,085 50,999	£ 83,280 70.090	± 65,545 76,560	£ 38,530 51,060	
Increase Decrease	1	2	 1	96 	20 	8,4 20	1,086	13,190	11,015 	12 ,53 0 	

SOAP AND CANDLE WORKS, 1889 AND 1890.

NOTE.—In addition to the other manufactures, 6,240 cwt. of soda crystals were made in 1889, and 8,880 cwt. in 1890.

Value of articles used and produced. 581. 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 census, with the following result. No later information exists on these points :---

SOAP AND CANDLE WORKS, 1880-81.

Value of raw materials used ,, articles produced	•••	 £288,340 450,924	
Increased value	•••	 £162,584, or	56 per cent.

Tobacco

582. The tobacco manufactories returned were 3 more in 1890

manufactories. than in 1889, and the hands employed increased by 144, viz., 75 males and 69 females. The tobacco manufactured, however, fell off by 236,407 lbs.; and the snuff manufactured by 1,349 lbs.; on the other hand there was an increase of over 5 millions in the number of cigars made, and of $2\frac{1}{2}$ millions in the number of cigarettes made. The value of lands, buildings, and plant in use was set down as greater by £39,705 in 1890 than in 1889:—

* The figures in this column apply to purchased land only. Two of these establishments in both years were on Crown lands. In these cases no valuation of the land is given.

		ts.	Es me ple	tabl ents oyir	ish- em- 1g—	orse- hinery.	Numl Ha empl	ber of nds oyed.	Quantity	of –	Number	Appro V	ximate alue of-	Total
Year end March.	ed	Number of Establishmen	Steam- power.	Gas-power.	Manual Labour.	Amount of H power of Mac	Males.	Females.	Tobacco Manufactured	Snuff Manufactured	of Cigars Manu- factured.	Machinery and Plant.	Lands.	Buildings.
1889 189 0	•••	13 16	4 4	1 1	8 11	53 59	518 593	178 247	lbs. 1,303,862 1,067,455	lbs. 2,882 1,533	9,129,600 14,320,340	£ 34,725 38,550	£ 46,000 74,250	£ 46,070 53,700
Increase Decrease	••	3	••	•••	3 	6 	75 	69 	236,407	 1,349	5,190,740	3,825	28,250	7,630

TOBACCO MANUFACTORIES, 1889 AND 1890.

Norg.-In addition to the other manufactures, 3,775,000 cigarettes were made in 1889, and 6,266,000 in 1890.

583. According to the census returns, the value of the articles Value of raw and produced in tobacco manufactories in 1880-81 showed an excess over manufacthat of the raw materials used of £72,870, which is equivalent to an materials. increase of value by the process of manufacture amounting to 58 per The following are the figures :--cent.

TOBACCO MANU	FACI	ORIES,	1880-81.	
Value of materials used	• • •		£126,450	
", articles produced	•••	• • •	199,320	
Increased value	•••	•••	£72,870,	or 58 per cent.

584. Six distilleries were returned in 1890, as against eight in Distilleries. 1889; moreover, a decrease took place of 12 in the number of hands employed, of 26,000 gallons in the quantity of spirits made, and of £95,000 in the value of plant, lands, and buildings. The following are the figures for the two years :---

		r of	loyed.		Appro	Approximate Value of—			
Year ended March.	Number of Distilleries.	Amount of Horse-powe Machinery.	Number of Hands empl	Spirits made.	Machinery and Plant.	Lands.	Buildings and Improve- ments.		
1889 1890	8 6	199 127	$\begin{array}{c} 105\\93\end{array}$	gallons. 451,459 425,431	£ 133,000 76,500	£ 80,000 52,500			
Decrease	2	72	12	26,028	56,500	27,500	11,000		

DISTILLERIES, 1889 AND 1890.

585. According to the following figures, the average consumption Consumption of of spirits per head is greatest in Holland, next in Queensland, spirits in Western Australia, and the United States in the order named. various In countries. all of these countries the consumption per head appears to be greater, Y

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whilst in the other countries named it appears to be less, than in the colony of Victoria:---

ANNUAL CONSUMPTION OF SPIRITS PER HEAD IN VARIOUS COUNTRIES.

	Gallons.		Gallons.
Holland	2.08	Switzerland	$\dots 1.04$
Queensland	1.59	Germany	•95
Western Australia	1.46	France	•85
United States	1.34	New Zealand	•78
Victoria	1.32	Austria-Hungary	•63
Sweden	1.27	United Kingdom	•59
Canada	1.19	Tasmania	•59
New South Wales	1.15	South Australia	\dots $\cdot 49$

Other manufactories,

586. The manufactories and works, exclusive of those of which already been made-viz., flour mills, breweries, works, etc. mention has distilleries, brickyards, potteries, tanneries, fellmongeries, woolwashing establishments, woollen mills, soap and candle works, and tobacco manufactories—were more numerous by 173 than those returned in 1889. It will be observed that the establishments employing water power decreased by 2, whilst there was an increase of 79 in those worked with the aid of other machinery-especially steam and gas, and of 96 in those worked by manual labour only. The males employed increased by 1,563, and the females employed by 1,128; whilst the value of lands, buildings, and plant shows an increase of £858,800. The totals of the two years are subjoined :--

MANUFACTORIES, WORKS, ETC., 1889 AND 1890.

(Exclusive of Flour Mills, Breweries, Distilleries, Brickyards, Potteries, Tanneries, Fellmongeries, Wool-washing Establishments, Woollen Mills, Soap and Candle Works, and Tobacco Manufactories.)

Vear ended		Number of		Manufactories, etc., employing-						
March	·	Manufactories, Works, etc.	Steam.	Water.	Gas.	Wind	Horse- power.	Manual Labour only	power of Machinery.	
1889 1890		2,355 2,528	1,035 1,071	21 19	262 301	$\frac{1}{2}$	21 24	$ 1,015 \\ 1,111 $	$17,129 \\ 18,623$	
Increase Decre a se	•••	173	36	2	39		3	96		
.		Number	of Hand	s		Appro	ximate 7	Fotal Value o)f—	

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Year end	ed	empl	oyed.	Approximate rotat value of—				
March.		Males.	Females.	Machinery and Plant. Lands.*		Buildings.		
1889 1890	••••	$39,156 \\ 40,719$	6,565 7,693	£ 4,247,534 4,637,043	£ 3,803,940 3,937,624	£ 2,743,101 3,078,688		
Increase	• • •	1,563	1,128	389,509	133,684	335,587		

NOTE.-Exclusive of stone-breaking and tar-pavement works, which numbered 19 in 1889. These works being carried on in connexion with quarries, it is found impossible to separate them therefrom. See table following paragraph 591 post.

* In the case of establishments standing upon Crown lands no estimate of the value of the land is given. The number of such establishments was 203 in 1889 and 197 in 1890.

587. By summarizing the returns of manufactories and works of Manufacall descriptions, including not only such as are embraced in the fore- all descripgoing table, but also those excluded therefrom-viz., flour mills, breweries, distilleries, brickyards, potteries, tanneries, fellmongeries, wool-washing establishments, woollen mills, soap and candle works, and tobacco manufactories-it is found that during 1889-90 the total number of establishments increased by 162, those of them which use steam or gas by 78; at the same time the hands employed increased by 2,944, the amount of horse-power by 2,745, and the value of machinery, lands, and buildings, by £819,753. The returns of the two years are contained in the following table :---

MANUFACTORIES, WORKS, ETC., 1889 AND 1890.

(Including Flour Mills, Breweries, Distilleries, Brickyards, Potteries, Tanneries, Fellmongeries, Wool-washing Establishments, Woollen Mills, Soap and Candle Works, and Tobacco Manufactories, as well as all other Manufactories, Works, etc.)

Year ended March.	Total Number of Establish- ments.	Number of Establish- ments using Steam or Gas Engines.	Horse-power of Machinery.	Number of Hands employed.	Approximate Value of Lands,* Buildings, Machinery, and Plant.		
1889 1890	2,975 3 137	1,639 1 717	24,938 27 683	54,488 57,432	£ 14,792,311 15,612,064		
Increase	162	78	2,745	2,944	819,753		

Nore.—Exclusive of stone-breaking and tar-pavement works, which numbered 19 in 1889. These works being carried on in connexion with quarries, it is found impossible to separate them therefrom.

588. The manufacturing establishments of all kinds respecting Names of which returns are obtained are named in the following table, and their tories. numbers are given for 1880-81 and 1889-90. For the former, which was the census year, are also given the approximate values of the materials used and articles produced, and for the latter the number of hands employed and the approximate value of lands, buildings, machinery, and plant. The establishments are generally of an extensive character, the exceptions being in cases where the existence of industries of an unusual or interesting nature might seem to call for notice, or where machinery worked by steam, gas, or water is used. No attempt is made to enumerate mere shops, although some manufacturing industry may be carried on thereat. Were this done, the "manufactories" in the colony might be multiplied to an almost indefinite extent :---

manufac-

tories of

tions.

* In the case of establishments standing upon Crown lands no estimate of the value of the land is given. The number of such establishments was 235 in 1889, and 238 in 1890.

MANUFACTORIES, WORKS, ETC., 1881 AND 1890.

	1880-81.			1889-90.		
Description of Manufactory, Work, etc.	Number of Establish- ments.	Approximate Value of-		er of ish-	yed.	Approximate value of
		Materials used.	Articles produced.	Numb Establ ments.	Hands emplo	Plant, Lands, and Buildings.
BOOKS AND STATIONERY. Account-book manufactories, manu-	7	£ 62,386	£ 100,057	12	1,044	£ 251,105
Printing and lithographic printing establishments*	89	202,475	569,797	161	4,219	1,211,478
Photo-lithographic works	• • •	•••	••••	1	• • •	
MUSICAL INSTRUMENTS. Organ-building establishments Pianoforte manufactories	2 5	3,500 1,700	8,050 4,150	3 4	$\begin{array}{c} 37\\ 14\end{array}$	8,850 4,900
CARVING FIGURES, ETC. Wood carving and turnery works	10	4,965	10,800	19	76	20,955
DESIGNS, MEDALS, AND DIRS. Die-sinkers, engravers, medalists, trade- mark makers	6	3,350	9,200	5	66	19,300
Indiarubber stamp manufactories † Type foundry	$2 \\ 1$	350 	1,700 	•••• •••	•••	•••
PHILOSOPHICAL INSTRUMENTS, ETC. Electric-lighting apparatus manu- factory	•••	••••	•••	6	79	31,080
Philosophical instrument manufactories	1	•••		1	•••	** •
SURGICAL INSTRUMENTS. Surgical instrument, truss-manu- factories	6	2,400	5,600	5	28	11,840
ARMS, AMMUNITION, ETC. Blasting powder, dynamite, etc.— manufactories	3	9,964	16,737	6	69	31,000
Fuze manufactoryShot manufactories		•••		- 1 2	 5	 5,493
MACHINES, TOOLS, AND IMPLEMENTS. Agricultural implement manufactories Boiler and pipe-covering manufactories	54	91,659	202,535	72 1	1,006	149,367
Cutlery, tool-manufactories	3	800	2,400	10	60	30,140
Iron foundries and engineering estab- lishments §	147	329,395	723,919	185	8,329	1,606,982
Nail manufactories	•••	•••	•••	3	23	7,800

* Including paper-bag manufactories.

† Indiarubber stamps are now generally made by manufacturing stationers. See Books and Stationery above.

† Including bellows, churn, washing-machine, etc., makers.

§ Including brass-founders and pattern makers.

MANUFACTORIES, WORKS, ETC., 1881 AND 1890—continued.

•

	1880-81.			1889-90.		
Description of Manufactory, Work, etc.	Number of Establish- ments.	Approximate Value of—		er of lish-	yed.	Approximate Value of
		Materials used.	Articles produced.	Numb Establ ments	Hands emplo	Plant, Lands, and Buildings.
MACHINES, TOOLS, AND IMPLEMENTS		£	£			£
Pattern-makers Sheet-iron and tin works	 61	143,000	 247,299	5 58	23 739	6,010 214,028
CARBIAGES AND HARNESS. Carriage lamp manufactories Coach, waggon, etc.—manufactories Perambulator manufactories Saddle harness—manufactories	3 132 3 47	900 99,415 1,750 35 792	2,950 212,615 5,000 81 130	3 209 5 73	20 2,980 18 618	5,400 449,817 7,975 114 236
Saddle-tree, etc., manufactories Whip manufactories	4 3	2,400 940	6,860 2,950	4 3	$\begin{array}{c} 28\\17\end{array}$	4,350 3,890
SHIPS AND BOATS. Ship, boat—builders Ships' wheels, blocks, etc.—manufac- tories	10 3	3,570 505	14,614 1,100	8 1	40 	13,860
Floating-dockGraving-docksPatent slips	1 3 2	···· ····	···· }	8	174	423,425
HOUSES, BUILDINGS, ETC. Architectural modelling works Enamelled mantelpiece manufactories. Patent ceiling ventilator manufactories	11	3,584 250	8,900 1 600	18 4	$\begin{array}{c} 120 \\ 54 \end{array}$	$39,780 \\ 8,208$
Lime works Roof-covering composition manufac- tories	21 21 2	6,560 944	1,000 17,216 2,180	36 	358 	32,183
Venetian blind manufactories Earth-closet manufactories	12 1	5,500 	11,750 	9 3	$\begin{array}{c} 117\\ 36\end{array}$	20,900 11,340
FURNITURE. Bedding, flock, and upholstery manu- factories	15	13,350	26,880	28	331	65,214
Bedstead manufactory Cabinet works, including billiard-table makers	 63	131,000	258,188	1 83	1,672	 253,499
Iron-safe manufactories Looking-glass manufactories Picture-frame makers, etc	2 2 13	670 400 5,627	970 1,300 11,550	2 4 10	26 36 63	8,200 10,300 46,340
CHEMICALS. Chemical works Dye works Essential oil manufactories Ink, blacking, blue, washing-powder,	6 6 4 12	25,160 1,130 1,825 37,280	43,600 7,150 3,900 58,560	11 8 11 10	$ 188 \\ 66 \\ 70 \\ 227 $	90,350 18,860 11,025 52,010
Japanner Paint, varnish—manufactories	1			$\begin{vmatrix} 1\\2 \end{vmatrix}$	 10	 11,700

MANUFACTORIES, WORKS, ETC., 1881 AND 1890—continued.

	1880-81.			1889-90.		
Description of Manufactory, Work, etc.	Number of Establish- ments.	Approximate Value of—		er of lish-	s yed.	Approximate Value of Machinery.
		Materials used.	Articles produced.	Numb Establ ments	Hands emplo	Plant, Lands, and Buildings.
CHENICALS—continued.		£	£			£
Printing ink manufactories				2	20	8,000
Salt works	8	4,882	10,810	7	60	16,935
TRADICS						
Woollen mills	10	89.412	168.710	7	810	188,698
	10	00,112	100,110			
DRESS.				<u></u>	0.010	000.010
Boot manufactories	105	355,418	686,922	98	3,819	230,212
Clothing factories	63	370,181	761,401	90	5,008	419,000
Fur manufactories	3	4,300	6,900	8 10	91 499	
Hat, cap—manufactories	22	34,753	66,264	19	482	00,081
Hosiery manufactories				3	70	0,030
Oilskin, waterproof-clothing — manu-	Ð	900	5,700	Э	112	22,480
tactories		19 190	94.995	Q	- 132	18 030
Wig manufactory	9	15,100	44,04V	5	104	10,000
wig manufactory	L		• • •		***	
FIBROUS MATERIALS.						
Rope, twine, mat, bag, sack-manu-	18	66,975	102,280	12	288	101,775
factories						
Sail, tent, tarpaulin-manufactories	12	28,860	47,250	9	95	24,095
ANTMAL FOOD	-					
Butter factories				9	59	46,538
Cheese factories*	28	17,733	31,586	30	104	32,745
Fish preserving factory			01,000	1		
Meat-curing establishments	16	192.150	258.790	23	279	92,188
VEGETABLE FOOD.				_		00.000
Maizena, oatmeal, starch — manu-	5	5,620	8,000	3	149	93,200
Biscuit manufactories	12	106 110	181 840	10	671	109 775
Confectionery works	20	61 600		10	381	87,650
Flour mills	144	1 397 099	1 637 351	107	807	651.645
Jam. pickle. vinegar. sauce-manu.	25	84 430	132 170	18	406	100.935
factories		01,100	102,110	10		
Macaroni works	2	125	230	1		•••
DDINES AND STREET AND				-	Ŧ	
Aarsted waters gingerboon ligners	114	01.940	106 010	160	1 102	334 325
ate	114	31,043	190'910	TOO	601,1	007,040
Broweries	10	119 005	700 E01	70	1 959	1 308 400
Coffee chicory cocos mustard spice	19	225 255	299 700	10	197	106.910
works		200,000	044,100	14	141	TOOLO
	t	1 .	•	1	1	2

* A large quantity of cheese and butter is made on dairy farms which are not returned as factories, and therefore are not included in this table. Some of these have steam engines, and use cream separators and other machinery. It was ascertained that in 1890 as many as 14,112 hands were employed in such establishments exclusively on dairy work.

† Places where wine is made are not included. The number of wine-presses returned in 1889-90 was 545.
MANUFACTORIES, WORKS, ETC., 1881 AND 1890—continued.

		1880-81.		1889-90.			
Description of Manufactory, Work, etc.	ər of ish-	Approximat	e Value of—	er of ish-	red.	Approximate Value of	
	Numbo Establi ments.	Materials used.	Articles produced.	Numbe Establi ments.	Hands emplo	Machinery, Plant, Lands, and Buildings.	
DRINKS AND STIMULANTS*—continued.		£	£			£	
Distilleries	6	26,368	44,500	6	93	172.000	
Malthouses	14	67,635	98,000	18	123	154.190	
Sugar. treacle—refineries	1			3	$\frac{1}{260}$	125.300	
Tobacco, cigars, snuff—manufactories	16	126,450	199,320	16	840	166,500	
ANIMAL MATTERS.				, 			
Boiling-down, tallow-rendering-	15	28,303	77,000	13	71	24,971	
Bone mills and bone manure manu- factories	15	50,225	70,845	13	97	37,575	
Brush manufactories	8	15.700	27.800	11	181	24.764	
Comb manufactory) j		,		101	21,101	
Catgut manufactories	$\frac{1}{2}$	800	2.000	1	••••	•••	
Curled hair manufactories	3	1.700	2,565	4	30	9.640	
Glue. oil—manufactories	7	8.200	12.700	3	22	11.550	
Leather belting (machinery) manu- factory	·			1			
Morocco, fancy leather—manufactories	3	2,480	4.400	7	51	10.570	
Portmanteau, trunk-manufactories	7	5,680	9,520	8	37	11,215	
Soap, candle—works	38	288,340	450,924	33	399	197,710	
Tanneries, fellmongeries, and wool- washing establishments	151	1,008,531	1,406,274	137	1,576	351,438	
VEGETABLE MATTERS.							
Bark mills	8	17,000	25,650	3	18	4,100	
Basket-making works	9	1,670	4,560	12	74	16,325	
Broom manufactories +	2	6,200	13,000	2	38	8,200	
Chaff-cutting, corn-crushing-works1	165	357,232	516,623	212	940	273,563	
Cooperage works	24	17.829	35.243	30	186	37.888	
Cork manufactories	2	2,100	3,100	3	11	7,350	
Fancy-box, hat-box-manufactories	5	3.080	6.745	7	112	29,975	
Paper manufactories	3	24.300	47.370	2	201	103.928	
Sawmills, moulding, joinery, etc.— works	174	552,463	973,127	323	6,202	1,069,128	
	1	1	1	ł	1	1	

COAL AND LIGHTING. Gasworks Electric-light works Ironfounders' charcoal factory	••••	19 	97,392 	226,116 	$29 \\ 3 \\ 1$	859 23 	1,754.988 32,500
STONE, CLAY, EARTHENWARE, GLASS. Asphalt paving material works	AND	•••			1		

* Places where wine is made are not included. The number of wine presses returned in 1889-90 was 545.
† See also Brush factories under Animal Matters ante.
‡ All these establishments used machinery worked by steam, wind, or horse power. They must not be confounded with chaff-cutting and grain-crushing machines in use on farms, which numbered 19,163.

MANUFACTORIES, WORKS, ETC., 1881 AND 1890-continued.

		1880-81.		1889-90.		
Description of Manufactory, Work, etc.	er of ish-	Approximat	e Value of—	er of ish-	s yed.	Approximate Value of Machinery.
	Numb Establ ments	Materials used.	Articles produced.	Numb Establ ments	Hands emplo	Plant, Lands, and Buildings.
STONE, CLAY, EARTHENWARE, AND						0
GLASS—continued.		£	£	-		£
Asbestos works				1		000 000
Brickyards and potteries	165		137,834	233	3,243	922,228
Cement tile works	•••					1.650
Filter manufactories						1,000
Glass manufactories, works	9	12,705	41,150	9	256	31,200
Stone-breaking, asphalt, tar-pavement works*	9	10,640	27,783			
Stone and marble sawing, polishing- works	43	50,583	104,614	53	676	104,050
WATER. ⁺						
Ice manufactories	2	2,000	7,000	5	25	50,818
GOLD, SILVER, AND PRECIOUS STONES. Goldsmiths, jewellers, and electro- platers (manufacturing)	28	62,020	109,650	29	416	141,870
Royal mint	1			1	51	68,000
Metals other than Gold and Silver.					-	
Bell foundry	1			•••		
Brass and copper works-gasalier manu- factories				30	400	.110,040
Lead, pewter, and zinc—works	5	17,850	23,800	4	28	38,600
Pyrites works	1			1		•••
Smelting works	7	32,396	48,610	4	65	30,890
Wire-working establishments	10	3,650	9,800	13	128	30,550
Total where only one return was received [‡]		257,910	400,080	•••	132	39,305
Total	2,468	7,997,745	13,370,836	3,137	57,432	15,612,064

Value of materials

589. The difference between the value of materials used and

used and produced. articles produced in 1880-81, as shown by the table, indicates an increase in the value of the former by the process of manufacture of over $5\frac{1}{3}$ millions sterling, or 67 per cent. The following are the exact figures :—

* Now included under the head of Stone Quarries-post.

† Works for the storage and supply of water are not included in the manufacturing tables. For information relating to these, see paragraph 505 et seq.

t The particulars of these have been combined in accordance with a promise made that the contents of individual schedules would not be published.

Value of materials operated upon ,, articles produced	•••	£ 7,997,745 13,370,836
Increased value	••••	5,373,091, or 67 per cent

590. By comparing the particulars respecting these manufactories, summary of as returned in 1890 and in the first year of each of the two previous quinquennia, considerable increases at each successive period will be found in all the columns. The number of establishments increased by 27 per cent. between 1880 and 1885, and by 10 per cent. between 1885 and 1890; the hands employed increased by 48 per cent. and 17 per cent. in those intervals respectively; and the value of machinery, plant, lands, and buildings, increased by 51 per cent. in the first, and by 54 per cent. in the second, interval. The following is the comparison referred to :—

Year ended March.	Total Number of Establish- ments.	Number of Establishments using Steam or Gas Engines.	Horse-power of Engines.	Number of Hands employed.	Approximate Value of Lands, Buildings Machinery, and Plan
· .					£
1880	2,239	877	12,677	33,247	6,711,745
1885	2,841	1,340	18,949	49,066	10,166,463
1890	3,137	1,717	27,683	57,432	15,612,064

SUMMARY OF MANUFACTORIES, WORKS, ETC., 1880, 1885, AND 1890.

591. The stone quarries, stone-crushing, and tar-pavement works stone returned in 1890 were fewer by 8 than in 1889, and the hands employed were fewer by 34; but the output of stone increased by 29,454 cubic yards, and a substantial increase also appears in the power of steam engines, and in the value of plant, lands, and buildings. The following are the figures for the two years :---

STONE QUARBIES,* ETC., 1889 AND 1890.

0

¥7	Number		Cubic Yar	Steam Engines in use.				
ended of March. etc. Bluestone		Slate and Flagging.	Sandstone and Freestone.	Granite.	Other.	Number.	Horse- power.	
18 89 1890	179 171	726,174 749,656	2,060 3,476	17,900 29,556	1 ,7 00 600	6,000 	27 26	548 864
Increase Decrease	 8	23,482	1,416 	11,656	 1,100	 6,000	 1	316

* Including stone-crushing and tar-pavement works.

Voor	Number of	Approximate Total Value of-							
ended March.	Hands employed.	Stone raised.	Machinery and Plant.	Lands.†	Buildings.				
1889 1890	1,783 1,749	£ 196,020 208,410	£ 70,693 78,118	£ 74,835 88,785	£ 8,310 14,843				
Increase Decrease	$\frac{\dots}{34}$	12 ,3 90	7,425	13,950	6,533				

STONE QUARRIES,* ETC., 1889 AND 1890—continued.

Manufactories,Works, toria and New South Wales.

592. According to the official returns, the manufactories and works etc., in Vic- (including stone quarries) in Victoria exceeded those in New South Wales by 309, and the hands employed were also more numerous by 13,275. The number of works and hands employed therein in the two colonies are placed side by side in the following table:---

> MANUFACTORIES, WORKS, ETC., IN VICTORIA AND NEW SOUTH WALES, 1890.

	Num Establis	ber of shments.	Hands Employed.	
Description of Manufactory, Work, etc.	Victoria.	New South Wales.	Victoria.	New South Wales.
BOOKS AND STATIONERY. Manufacturing stationers, including rubber- stamp makers	12	26	1,044	65 8
Printing and lithographic printing establish-	161	180	4,219	3,784
Photo-lithographic works	1	2	19	29
MUSICAL INSTRUMENTS, ETC. Organ builders Pianoforte makers	3 4	••••	$\begin{array}{c} 37\\ 14\end{array}$	
CARVING, ENGRAVING, ETC. Wood-carving, turnery works Die-sinkers, engravers	19 5 -	7	76 66	
PHILOSOPHICAL INSTRUMENTS, ETC. Philosophical and surgical instrument makers	12	10	111	. 61
ARMS, AMMUNITION, ETC. Blasting-powder, dynamite, and fuze makers Shot manufacturers	7 2		87 5	

* Including stone-crushing and tar pavement works. † The figures in this column apply to purchased land only. Thirty-nine of the stone quarries in 1890, and fifty-three in 1889, were on Crown lands, and in these cases no valuation of the land has been given.

•

MANUFACTORIES,	WORKS.	ETC.,	IN	VICTORIA	AND	New	South
	WALES	, 1890)—a	continued.			

Description of Many	Num Establis	ber of hments.	Hands employed.				
Description of Man		Victoria.	New South Wales.	Victoria.	New South Wales.		
MACHINES, TOOLS,	AND IM	PLEMENT	S.		-		
Agricultural implement	t makers			72	22	1 006	187
Domestic implement m	annfacto	ries	••••	6		1,000 22	
Frairs and machine n	nabare ii	on and	hrass	216	166	00 8 799	5 765
formdone	14ACIS, 11	on and	DIASS	210	. 100	0,134	0,700
10unuers	tin load			69	00	FOH	000
Sneet, galvanized fron,	, un, leau	, znic, pe	wter,	02	98	767	899
type works				0		20	
Nail manufacturers	* * *			3		23	••••
Cutlery, tool makers	• • •	•••		10	•••	60	•••
Pattern makers	•••	• • •		5		23	
CARRIAGES	AND HAR	NESS					
Carriage lamp, etc., m	anufacto	ries		3		20	
Coach waggon neram	hulator h	nilders	•••	214	218	2 998	1 948
Saddle saddle-tree wh	in make	rs	•••	80	1 10 67	663	527
Survice, survice of co, mi	inp mano.	10	•••		0.		021
SHIPS AN		1					
Ship host builders bl	nolz malze	7 • 3 1 9 ©		Q	25	41	714
Graving doals not ont	aline of	0 0 0	•••	9 8	10	174	112
uraving uocks, patent	sups, en	•	•••	0	. 10	1/4	, HIO
HOUSES AND) BUILDI	NGS.					
Architectural modelle	rs. etc.			18	8	120	44
Lime and cement work	79	•••	•••	36	18	358	177
Venetian blind makers	1	* * *		g	8	117	64
Enamelled mantalniage	a makare	* * *	•••	и 4.		54	
maniened manuerpree	5 maxers	• • •	•••	£		0 F	
FURN	ITURE.			· · ·			
Bedding manufacturer	'S			28	15	331	191
Furniture, cabinet wor	rks			84	87	1,676	1,103
Picture frame makers				10	9	63	38
Earth-closet makers				3		36	
Iron safe makers				2		26	
Looking glass makers			•••	4		36	
Zooxing Stars march	* * *	***	•••	-			
Chem	ICALS.						
Chemical works	• • •	. 	• • •	11	7*	188	96
Dye works		•••		8	7	66	41
Ink, printing ink, bl	acking.	blue. wa	shing	12	8	247	64
powder, baking now	der man	ufactories	5	-			
Essential oil factories				11		70	
Paint varnish japann	ing work	····	•••	3	2	16	12
Salt works	mg work		* * 4	7	-	60	
Dalt WOIKS	•••	* * \$	• • •		•••	00	
TEXTILE FAB	RICS AND	DRESS.		- -	-		
Woollen mills			•••	7	5	810	
Boot factories	•••	• • •	•••	98	59	3,819	2,420
Clothing factories		•••	•••	90	30	5,068	2,745
Fur manufactories			•••	8	2	57	12
Hat, cap factories			• • •	19	14	482	106
				Į			

* Including 2 poudrette and ammonia factories.

MANUFACTORIES, WORKS, ETC., IN VICTORIA AND NEW SOUTH WALES, 1890—continued.

Description of Manufactory, Works, etc.Victoria.New South Wales.DRESS—continued. Oil-skin, waterproof clothing makers53112SOILESS—continued. Oil-skin, waterproof clothing makers5311325OILESS—continued.SOILESS—continued.SNew South Wales.OILESS—continued.OILESS—continued.Mosiery manufacturers127288IISANTMAL FOOD.Meat, fish, curing, preserving works2413295ASTMAL FOOD.Maizena, oatmeal, starch, macaroni makers, rice dressers, etc.1606671375Dater and factures100666VEGETABLE FOOD.Maizena, oatmeal, starch, macaroni makers, rice dressers, etc.1521381Bisenit manufactories100662Data Matthe Astrophysica1604414Jase Matthe Matthe Sand16160 </th <th></th> <th>Num Establis</th> <th>ber of shments.</th> <th colspan="3">Hands employed.</th>		Num Establis	ber of shments.	Hands employ e d.		
DBESS—continued. 112 58 Oil-skin, waterproof clothing makers 9 1 132 5 Hosiery manufacturers 3 78 FIDENOUS MATERIALS. 3 78 Sail, tent, tarpaulin makers 9 16 95 98 ANIMAL FOOD. 9 160 * 836 Meat, fish, curing, preserving works 24 13 295 355 Butter and cheese factories (steam) 39 74 163 503 ",",",", (hand or other power) * 160 * 836 VEGETABLE FOOD. * * 347 163 503 Price dressers, etc. 107 80 807 583 Fruit preserving, jam, pickle, sauce, condinins 15 21 341 497 Flour mills 70 674 1,252 520 Distillerics 70 674 1,25	Description of Manufactory, Works, etc.	Victoria.	New South Wales.	Victoria.	New South Wales.	
Oil-skin, waterproof clothing makers 5 3 1132 55 Hosiery manufacturers 9 1 132 5 Hosiery manufacturers 3 78 Rope, twine, mat, bag, sack makers 12 7 288 118 Sail, tent, tarpaulin makers 9 16 95 98 ANIMAL FOOD. 9 160 * 836 Meat, fish, curing, preserving works 24 13 295 355 Butter and cheese factories (steam) 39 74 163 503 ,, , , , (hand or other power) * 160 * 836 VEGETABLE FOOD. 15 21 381 497 Confectionery works 15 21 381 497 Four mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiiner, winegar works 12 6 127 154 Sugar (raw) works 40 2198 Coffee, chocolate, mustard, spice works 12	DRESS—continued.	-	0	OLL	70	
Unbreila, parisoi makers 9 1 122 9 Hosiery manufacturers 3 78 FIDEOUS MATERIALS. 12 7 288 118. Sail, tent, tarpaulin makers 9 16 95 98 ANTMAL FOOD. 9 16 95 98 Meat, fish, curing, preserving works 24 13 295 355 Ruter and cheese factories (steam) 39 74 163 503 , , , (hand or other power) * 160 * 836 VEGETABLE FOOD. 10 6 671 375 Confectionery works 15 21 381 497 Four mills 107 80 807 583 Freit preserving, jam, pickle, sauce, condi- 18 9 406 347 ment, vinegar works 12 6 127 154 Sugar (raw) works 31 260 230 Sugar (raw) works 40 217 154 <	Oil-skin, waterproof clothing makers	b	5 1	114	56	
Hossery manufacturers	Umbrella, parasol makers	9	1	154	G (
FIBEOUS MATERIALS. 12 7 283 118 Sail, tent, tarpaulin makers 9 16 95 98 ANIMAL FOOD. 24 13 295 355 Butter and cheese factories (steam) 39 74 163 503 ",",",", (hand or other power) * 160 * 836 VEGETABLE FOOD. 39 74 163 503 Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. 10 6 671 375 Sonfectionery works 10 6 671 375 583 Fruit preserving, jam, pickle, sauce, condi- 18 9 406 347 ment, vinegar works 107 80 807 583 DRINKS AND STIMULANTS. 160 1444 1,153 1,099 Breweries	Hosiery manufacturers	ð	•••	10	•••	
Rope, twine, mat, bag, sack makers 12 7 288 118- Sail, tent, tarpaulin makers 9 16 95 98 ANIMAL FOOD. 39 74 163 503 Butter and cheese factories (steam) 39 74 163 503 ",",",",",",", (hand or other power) * 160 * 836 VEGETABLE FOOD. 4 2 152 24 Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. 10 6 671 375 Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Freit preserving, jam, pickle, sauce, condi- 18 9 406 347 DEINKS AND STIMULANTS. 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 3 1 260 230 Sugar (raw) works <td< td=""><td>FIBROUS MATERIALS.</td><td></td><td></td><td></td><td></td></td<>	FIBROUS MATERIALS.					
Sail, tent, tarpanlin makers 9 16 95 98 ANTMAL FOOD.	Rope, twine, mat, bag, sack makers	12	7	288	118	
ANIMAL FOOD. 24 13 295 355 Butter and cheese factories (steam) 39 74 163 503 ",",", (hand or other power) * 160 * 836 VEGETABLE FOOD. * 160 * 836 Note an unfactories 10 6 671 375 Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 Breweries 70 674 1,252 820 Distilleries 70 674 1,252 820 Distilleries 31 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, stuff manufacturers 16 10 840 621 Malthouses 13 6	Sail, tent, tarpaulin makers	9	16	95	98	
Meat, fish, curing, preserving works 24 13 295 355 Butter and cheese factories (steam) 39 74 163 503 ",",", (hand or other power) * 160 * 836 ",",", (hand or other power) * 160 * 836 ",",", (hand or other power) * 160 * 836 ",",", (hand or other power) * 160 * 836 ",",", (hand or other power) * 160 * 836 "Lie dressers, etc. 10 6 671 375 Confectionery works 11 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 107 80 807 583 Breweries 70 677 1,252 820 Distilleries 3 1 260 230 Sugar (raw) works 3 1 260 230 Sugar (raw) works 18 123	ANTMAL FOOD:					
Butter and cheese factories (steam) 39 74 163 503 ",",", (hand or other power) * 160 * 836 Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. 160 * 836 Biscuit manufactories 10 6 671 375 Confectionery works 10 6 671 375 Confectionery works 10 6 671 375 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 107 80 807 583 Fruit preserving, iqueur, cordial works 160 144 1,183 1,099 Breweries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 13 6 97 36 Brush, boom factories 13 <t< td=""><td>Meat, fish, curing, preserving works</td><td>24</td><td>13</td><td>295</td><td>355</td></t<>	Meat, fish, curing, preserving works	24	13	295	355	
"""", """, (hand or other power) * 160 * 836 WEGETABLE FOOD. """ """ """ """ """ """ 836 Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. """" """ """ <th< td=""><td>Butter and cheese factories (steam)</td><td>39</td><td>74</td><td>163</td><td>503</td></th<>	Butter and cheese factories (steam)	39	74	163	503	
VEGETABLE FOOD. 4 2 152 24 Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. 10 6 671 375 Biscuit manufactories 10 6 671 375 Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 DEINES AND STIMULANTS. Aërated waters, liqueur, cordial works 160 144 1,183 1,099 Breweries 70 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 123 Malthouses 13 6 97 36 Sugar (raw) works	"""" (hand or other power)	*	160	*	836	
Maizena, oatmeal, starch, macaroni makers, rice dressers, etc. 4 2 152 24 rice dressers, etc. Biscuit manufactories 10 6 671 375 Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condi- ment, vinegar works 18 9 406 347 Breweries 70 677 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar (raw) works 40 2,194 Tobacco, cjegars, snuff manufacturers 18 123 Malthouses 13 6 97 36 Bone mills, bone manure works 13 6 97 36 Malthouses .13 6 97 36 Brush, broom factories 14 181 <td>VEGETABLE FOOD</td> <td></td> <td></td> <td></td> <td></td>	VEGETABLE FOOD					
Biscuit manufactories 10 6 671 375 Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 ment, vinegar works 160 144 1,183 1,099 Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar (raw) works 400 2,194 Malthouses 16 10 840 621 Malthouses 13 6 97 36 Brush, broom factories 11 4 181 32 Curled hair, flock manufactories 13 6 97 36 Brush, broom	Maizena, oatmeal, starch, macaroni makers, rice dressers, etc.	4	2	152	24	
Confectionery works 15 21 381 497 Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 DEINKS AND STIMULANTS. 70 677 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 400 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 18 123 Malthouses 18 123 Malthouses 13 6 97 36 Brush, broom factories	Biscuit manufactories	10	6	671	375	
Flour mills 107 80 807 583 Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 DRINKS AND STIMULANTS. 18 9 406 347 Aërated waters, liqueur, cordial works 160 144 1,183 1,099 Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 13 6 97 36 Brush, broom factories 11 4 181 32 Curled hair, flock manufactories 8 2 37	Confectionery works	15	21	381	497	
Fruit preserving, jam, pickle, sauce, condiment, vinegar works 18 9 406 347 DERINKS AND STIMULANTS. Aërated waters, liqueur, cordial works 160 144 1,183 1,099 Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works .12 6 127 154 Sugar refineries 400 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses Boiling down, tallow melting, glue making works 17 17 105 144 Bone mills, bone manure works 13 6 97 36 Brush, broom factories 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 Leather belting, morocco, fancy leather, catgut f	Flour mills	107	80	807	583	
DRINKS AND STIMULANTS. 160 144 1,183 1,099 Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 13 6 97 36 Bone mills, bone manure works 11 4 181 32 Curled hair, flock manufactories 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 Leather belting, morocco, fancy leather, at 2 36 8 2 37 12 Leather belting, morocco, fancy leather, catgut factories 33	Fruit preserving, jam, pickle, sauce, condi- ment, vinegar works	18	9	406	347	
Aërated waters, liqueur, cordial works 160 144 1,183 1,099 Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 3 1 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 18 123 Malthouses 18 6 97 36 Brush, broom factories 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 Leather belting, morocco, fancy leather, catgut factories 33 30 <td>DRINKS AND STIMULANTS.</td> <td></td> <td></td> <td></td> <td></td>	DRINKS AND STIMULANTS.					
Breweries 70 67† 1,252 820 Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 3 1 260 230 Sugar (raw) works 3 1 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 18 123 Malthouses 18 144 Morks Bone mills, bone manure works 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 Leather belting, morocco, fancy leather, catgut factories	Aërated waters, liqueur, cordial works	160	144	1,183	1,099	
Distilleries 6 2 93 13 Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 3 1 260 230 Sugar (raw) works 3 1 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 18 123 Malthouses 18 123 Malthouses 18 123 Boiling down, tallow melting, glue making works 17 17 105 144 Bone mills, bone manure works 11 4 181 32 Curled hair, flock manufactories 8	Breweries	70	67†	1,252	820	
Coffee, chocolate, mustard, spice works 12 6 127 154 Sugar refineries 3 1 260 230 Sugar (raw) works 3 1 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Boiling down, tallow melting, glue making works 17 17 105 144 Bone mills, bone manure works 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 <	Distilleries	6	2	93	13	
Sugar refineries 3 1 260 230 Sugar (raw) works 40 2,194 Tobacco, cigars, snuff manufacturers 16 10 840 621 Malthouses 18 123 Malthouses 18 6 97 36 Boue mills, bone manure works 11 4 181 32 Curled hair, flock manufactories 8 2 37 12 Leather belting, morocco, fancy leather, catgut factories <td< td=""><td>Coffee, chocolate, mustard, spice works</td><td>12</td><td>6</td><td>127</td><td>154</td></td<>	Coffee, chocolate, mustard, spice works	12	6	127	154	
Sugar (raw) works402,194Tobacco, cigars, snuff manufacturers1610840621Malthouses18123Malthouses18123Malthouses18123Malthouses18123Malthouses1369736Boiling down, tallow melting, glue making works1717105144Bone mills, bone manure works1369736Brush, broom factories11418132Curled hair, flock manufactories401616Portmanteau, trunk makers823712Leatherbelting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Sugar refineries	3	1	260	230	
Tobacco, cigars, snuff manufacturers1610840621Malthouses18123Malthouses18123Malthouses18123Malthouses18123Malthouses1717105144Malthouses1369736Boiling down, tallow melting, glue making works1369736Boue mills, bone manure works11418132Curled hair, flock manufactories11418132Curled hair, flock manufactories823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Sugar (raw) works		40	• • •	2,194	
Malthouses18123ANIMAL MATTERS.Boiling down, tallow melting, glue making works1717105144Bone mills, bone manure works1369736Brush, broom factories11418132Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Tobacco, cigars, snuff manufacturers	16	10	840	621	
ANIMAL MATTERS.Boiling down, tallow melting, glue making works1717105144Bone mills, bone manure works1369736Brush, broom factories11418132Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Malthouses	18	•••	123		
Boiling down, tallow melting, glue making works1717105144Bone mills, bone manure works1369736Brush, broom factories11418132Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	ANIMAL MATTERS.					
Bone mills, bone manure works1369736Brush, broom factories11418132Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Boiling down, tallow melting, glue making works	17	17	105	144	
Brush, broom factories11418132Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Bone mills, bone manure works	13	6	97	36	
Curled hair, flock manufactories443016Portmanteau, trunk makers823712Leather belting, morocco, fancy leather,82568catgut factories3330399250Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Brush, broom factories	11	4	- 181	32	
Portmanteau, trunk makers823712Leather belting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Curled hair, flock manufactories	4	4	30	16	
Leatherbelting, morocco, fancy leather, catgut factories82568Soap, candle works3330399250Tanneries, fellmongeries, woolwashing works1371521,5762,242	Portmanteau, trunk makers	8	2^{\cdot}	37	12	
Soap, candle works 33 30 399 250 Tanneries, fellmongeries, woolwashing works 137 152 1,576 2,242	Leather belting, morocco, fancy leather, catgut factories	8	2	56	8	
Tanneries, fellmongeries, woolwashing works 137 152 1,576 2,242	Soap, candle works	33	30	399	250	
	Tanneries, fellmongeries, woolwashing works	137	152	1,576	2,242	

* In Victoria a large quantity of cheese and butter is made on dairy farms, which are not returned as factories. Some of these have steam-engines, and use cream-separators and other machinery. It was ascertained that in 1890 as many as 14,112 hands were employed in such establishments exclusively on dairy work. See also paragraph 538 ante.

+ Including bottling works.

Decomination of Manufactory Work ato	Num Establi	nber of shments.	Hands employed.		
Description of Manufactory, work, etc.	Victoria.	New South Wales.	Victoria.	New South Wales.	
VEGETABLE MATTERS.					
Bark mills	3	2	- 18	9	
Basket makers	12	10	74	72	
Broom (millet) factories	2	2	38	26	
Chaff cutting, corn crushing works	212	· 100	940	446	
Cooperage works	30	10	186	150	
Fancy box, hat box manufactories	7	7	112	86	
Paper manufactories	2	1	201	66	
Saw mills, moulding, joinery, packing case, cork cutting works	326	392	6,213	4,372	
COAL AND LIGHTING.					
Electric light works	3	7	23	32	
Gas, coke works	30	36	867	1,131	
Kerosene, oil works		2	•••	251	
STONE, CLAY, AND GLASS.					
Stone quarries,* stone crushing, dressing works, asphalt, pavement works	172	82	1,766	993	
Brickyards, potteries	233	228	3,243	2,134	
Glass works	9	7	256	108	
Stone, marble—sawing, polishing, monu- mental works	53	37	676	259	
Artificial stone, asbestos, cement tile, filter	4		22	••••	
WATER.					
Ice manufactories, refrigerating works	5	8	25	157	
GOLD, SILVER, AND PRECIOUS STONES.					
Goldsmiths, jewellers, gold beaters, electro- platers, mother-of-pearl workers	29	35	416		
Mint	1	1	51	28	
METALS OTHER THAN GOLD AND SILVER					
Smelting, pyrites works	5	21	69	1,276	
Wire working establishments		8	128	106	
Other works		4		28	

MANUFACTORIES, WORKS, ETC., IN VICTORIA AND NEW SOUTH WALES, 1890—continued.

					- <u></u> ,	
Total	 •••	•••	3,308	2,999	59,181	45,906

593. Gold was first discovered in Australia by the Rev. W. B. Discovery of Clarke, of Sydney, who, in 1841, found the precious metal in the mountainous regions to the west of the vale of Clwyd, in New South Wales, and in 1844 exhibited a specimen of gold in quartz to the

* In making comparisons it has been found impossible to separate stone quarries from the other works carried on in connexion therewith. They are, therefore, necessarily included in this table.

then Governor, Sir George Gipps, and others. But the subject was not followed up, "as much from considerations of the penal character of the colony as from general ignorance of the value of such an indication." In 1850, however, Mr. E. H. Hargreaves returned to Sydney from California for the express purpose, as he states, of searching for gold; and on the 12th February, 1851, he succeeded in finding gold at Summer Hill Creek, in New South Wales. This discovery afterwards led to gold being found at other places in that colony, and to the discovery of the gold-fields of Victoria. The following is a short statement of the order in which a Select Committee, appointed in 1853* by the Legislative Council to consider claims for rewards for gold discoveries in Victoria, placed the various claimants :-- The Hon. W. Campbell discovered gold in March, 1850, at Clunes; concealed the fact at the time from the apprehension that its announcement might prove injurious to the squatter on whose run the discovery was made, but mentioned it in a letter to a friend on the 10th June, and afterwards on the 5th July, 1851, which friend, at Mr. Campbell's request, reported the matter to the gold-discovery committee on the 8th July. Mr. L. J. Michel and six others discovered gold in the Yarra Ranges, at Anderson's Creek, which they communicated to the gold-discovery committee on the 5th July. Mr. James Esmond, a Californian digger, and three others, obtained gold in the quartz rocks of the Pyrenees, and made the discovery public on the 5th July. Dr. George Bruhn, a German physician, found indications of gold in quartz "two miles from Parker's station" in April, 1851, and forwarded specimens to the gold committee on the 30th June. Mr. Thomas Hiscock found gold at Buninyong on the 8th August, and communicated the fact to the editor of the Geelong Advertiser on the 10th of the same month. This discovery led to that of the Ballarat gold-fields. Mr. C. T. Peters, a hutkeeper at Barker's Creek, and three others, found gold at Specimen Gully on the 20th July, worked secretly to the 1st September, then published the account. This led to the discovery of the numerous gold-fields

about Mount Alexander.

Gold raised, 1888 and 1889.

594. According to the estimate of the Mining Department, the gold raised in Victoria in 1889 was 614,839 oz., which is less than the quantity obtained in 1888 by 10,187 oz., representing, at £4 per oz., a decreased value of £40,700. The following are the figures for the two years :--

* The report of this Committee was dated 10th March, 1854.

Year.			Gold raised in Victoria.			
			Estimated Quantity.	Value, at £4 per oz.		
			0Z.	£		
1888	• • •	•••	625,026	2,500,104		
1889	• • •	• - •	614,839	2,459.356		
Decrea	ase		10,187	40,748		

QUANTITY AND VALUE OF GOLD RAISED IN 1888 AND 1889.

595. From 1871 to 1879 the quantity of gold raised from year to Gold raised, year had been steadily diminishing, but in the next three years an ^{1871 to} improvement took place, which, however, has not since been sustained, the yield having again gradually fallen off since 1882, and being less in the last three years than it had been previously since 1851. 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 1889.

			OZ.			OZ.
1871		• •••	1,355,477	1881	• • •	 858,850
1872	• • •	• • •	1,282,521	1882		 898,536
1873	•••		1,241,205	1883	•••	 810,047
1874	•••	• • •	1,155,972	1884		 778,618
1875			1,095,787	1885	• • •	 735,218
187 6	• • •	•••	963,760	1886		 665, 196
1877		•••	809,653	1887		 617,751
1878	• • •	• • •	$775,\!272$	1888	· · · ·	 $625,\!026$
1879	• • •	• • •	758,947	1889	• • •	 614,839
1880	•••	•••	829,121			

596. Carrying on to the end of 1889 the calculations given in Gold raised previous years, the following may be estimated as the total quantity 1851 to 1889. and value of the gold raised in Victoria from the period of its first discovery about the middle of 1851. The figures give an average per annum during the whole period of about 1,442,000 oz., which is about two and a third times the quantity raised in 1889 :—

ESTIMATED TOTAL QUANTITY AND VALUE OF GOLD RAISED IN

VICTORIA, 1851 TO 1889.

Gold raised in Victoria.	Estimated Quantity.	Value, at £4 per oz.
Prior to 1889 During 1889	oz. 55,635,959 614,839	£ 222,543,836 2,459,356
Total	56,250,798	225,003,192

597. Since the first discovery, in 1851, of gold in Australasia, 86 Gold raised in Australmillion ounces have been raised in the various colonies, two-thirds of asian colonies.

which was got in Victoria. The following is a statement of the quantity recorded as having been raised in the respective colonies during each year. No column is assigned to Western Australia, as, although during the last three or four years gold has been raised in that colony, chiefly in the Kimberley district, no reliable information as to the quantity has ever been obtained :---

Year.	Victoria.	New South Wales.	Queensland.	South Australia.	Tasmania.	New Zealand
	CZ.	OZ.	OZ.	oz.	OZ.	OZ.
1851	145,137	144,121				•••
1852	2,738,484	818,752				
1853	3,150,021	548,053				
1854	2,392,065	237,911		• • •	• • • •	
1855	2,793,065	170,146				• • •
1856	2,985,735	183,946				••••
1857	2,761,567	161,043			•••	10,437
1858	2,528,227	280,558			••••	13,534
1859	2,280,717	323,984	•••			7,336
1860	2,156,700	381,614	4,127		••••	4,538
1861	1,967,453	459,879	1,077		••••	194,031
1862	1,658,281	616,910	190		• • •	410,862
1863	1,627,105	467,399	3,937	•••	• • • •	628,450
1864	1,545,437	341,954	22,037		•••	480,171
1865	1,543,188	364,541	25,339			574,574
1866	1,478,280	287,534	22,916	•••	348	735,376
1867	1,433,246	269,407	49,092	• • •	1,363	686,905
1868	1,634,200	258,774	165,801		692	637,474
1869	1,337,296	252,130	138,221	•••	137	614,281
187 0	1,222,798	240,402	136,773		964	544,880
1871	1,355,477	321,469	171,937		6,005	730,029
1872	1,282,521	$424\ 100$	186,019	2,494	6,969	445,370
1873	1,241,205	360,850	194,895	98	4,661	505,337
1874	$1,\!155,\!972$	270,710	375,586	8,351	4,651	376,388
1875	1,095,787	229,386	391,515	13,742	3,010	355,322
1876	943,760	155,166	374,776	9,857	11,107	322,016
1877	809,653	$122,\!629$	428,104	11,811	5,777	371,685
1878	775,272	117,978	310,247	10,746	25,249	310,486
1879	758,947	107,640	288,556	14,250	60,155	287,464
1880	829,121	116,751	267,136	13,246	52,595	305,248
1881	858,850	145,532	270,945	16,976	56,693	270,561
1882	898,536	129,233	224,893	15,669	49,122	251,204
1883	810,047	122,257	212,783	15,939	46,577	248.374
1884	778,618	105,933	307,804	21,455	42,340	229,946
1885	735,218	100,667	310,941	18.327	41,241	237.371
1886	665,196	98,446	340,998	26.315	31,014	227.079
1887	617,751	108,101	425,923	36.569	42,609	203.869
1888	625,026	85,295	481.643	16.763	39.610	201.219
1889	614,839	119,759	739,103	20,833	32,333	203.211
Total	56,250,798	10,050,960*	6,873,314*	273,441	565,222	11,625,028

GOLD PRODUCE IN AUSTRALASIAN COLONIES, 1851 TO 1889.

* The estimate for New South Wales, which has been derived from official documents, is lower by 41,396 ounces than that furnished by the Government Statistician of that colony, but that for Queensland is higher by 45,426 ounces than that furnished by the Registrar-General of Queensland and published in the "Australasian Statistics, 1889," for which see Table XIX. in Appendix A., at end of this volume.

598. According to the above figures the total quantity of gold Gold produce of raised in each colony from 1851 to 1889 has been as follows :---Australasia, 1851 to 1889. SUMMARY OF GOLD PRODUCE OF AUSTRALASIA, 1851 TO 1889. Oz. Oz. 56,250,798 South Australia Victoria 273,441. New Zealand... 11,625,028 Western Australia . . . 135,492*. . . New South Wales 10,050,960 . . . Queensland 6,873,314 Total ... 85,774,255 ... Tasmania 565,222

599. The average value of the gold raised varies in the different value of If it be estimated at £4 per ounce, the total value would be colonies. £343,097,020, or if at £3 15s. per ounce it would be £321,653,456.†

600. By the following table, which, with the exception of the Gold produce of the figures for Australasia, has been taken from the report for 1889 world, 1885 to 1888. of Mr. Edward O. Leech, director of the United States Mint, it appears that during the four years ended with 1888 the world's annual production of gold has averaged rather more than 5 million ounces, the largest quantity being produced in the United States, the next largest in Australasia, and the next in Russia :---

GOLD PRODUCE OF EACH COUNTRY, 1885 TO 1888.[‡]

Countries.	1885.	1886.	1887.	1888.
	OZ.	OZ.	OZ.	OZ.
Australasia	 $1,\!442,\!437$	1,389,048	1,434,822	1,499,556
Europe—				
Great Britain	 • • •		• • •	7,071
Russia	 1,225,414	992,288	971,717	1,030,215
Sweden	 1,511	2,154	2,154	2,443
Germany	 44,292	34,231	72,352	58,177
Austria-Hungary	 53,484	53,484	60;331	60,331
Turkey	 321	321	321	321
Italy	 4,564	6,268	6,268	5,143

gold raised in Australasia.

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Asia						
British I	ndia		6,525	20,378	15,460	32,399
China	•••		224,898	176,524	162,896	435,267
Japan	•••		8,518	10,703	18,128	$18,\!128$
Africa			66,952	69,523	92,826	217,633
		1	· •			

* For Western Australia, the yield prior to 1889 has been set down roughly at 100,000 oz., and to this has been added the quantity which appeared in the export returns for 1889. This, however, is admittedly considerably below the actual production. See last edition of this work, Vol. II., footnote to paragraph 582.

† Pure gold is worth £4 4s. $11\frac{1}{2}$ d., and standard gold (22 carats fine) £3 17s. $10\frac{1}{2}$ d.

1 See U.S. Mint Report, 1889, pages 166 and 167, where the quantities are given in kilogrammes, which have been converted into ounces on the assumption that a kilogramme is equal to 32.142 oz. troy. When the figures for any year were not given by Mr. Leech, those for a previous year have been inserted.

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Countries.		1885.	1886.	1887.	1888.
		02.	0Z.	OZ.	. OZ.
America—					
Canada		34,713	64,895	66,245	66,245
United States		1,537,930	1,692,694	1,595,979	1,604,432
Mexico		41,913	29,699	39,856	47,088
Salvador				3,214	7 7964
Costa Rica		289	4,211	4,211	7,404
Colombia		120.918	120,918	120,918	72,544
Venezuela		226.055	161,353	161,353	45,770
Brazil		38.699	48.277	48,277	10,639
Peru		7.264	5.464	5,464	5,078
Bolivia		3.504	3.504	3.504	3,504
Chile		16.071	16.071	16.071	76.980
Argentine Republic		3,793	964	1,446	1,511
The World	••••	5,110,065	4,902,972	4,903,813	5,307,739

GOLD PRODUCE OF EACH COUNTRY, 1885 TO 1888*-continued.

Value of the world's gold produce, 1885-1888.

 $^{-1}$ 601. According to the figures, the gold raised in the world during 1888, if valued at £4 per ounce, would be £21,230,956; or if at £3 15s. per ounce, it would be £19,904,020. During the four years the value of the whole quantity raised (20,224,589 oz.) would be £80,898,356 at the former, or £75,842,208 at the latter valuation.

Silver raised in Australasian colonies.

602. Some years since 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 found economical to send the ore in a concentrated form to Europe for smelting. For Queensland and South Australia⁺ no definite returns are available;

and but little silver has been raised in Western Australia and Tasmania. The following, so far as is known, are the quantities

* See U.S. Mint Report, 1889, pages 166 and 167, where the quantities are given in kilogrammes, which have been converted into ounces on the assumption that a kilogramme is equal to 32 142 oz. troy. When the figures for any year were not given by Mr. Leech, those for a previous year have been inserted.

† It is known that in Queensland 1,014 tons of silver-lead ore, valued at £61,500, were raised in 1889; 1,190 tons, valued at £44,015 in 1888; 2,183 tons, valued at £80,092, in 1887; 1,631 tons, valued at £52,797, in 1886; 2,377 tons, valued at £49,922, in 1885; and 15,519 tons, valued at £224,669, in the previous six years; also that in South Australia 1,620 tons of silver-lead ore, valued at £23,349, were raised in the ten years ended with 1884.

raised in Victoria, New South Wales, and New Zealand during each of the twenty-seven years ended with 1889 :---

SILVER	PRODUCE	IN	AUSTRALASIAN	COLONIES.	1863	ŤΟ	1889
--------	---------	----	--------------	-----------	------	----	------

	Year.		Victoria.*	New South Wales.	New Zealand.*	
			OZ.	OZ.	02.	
1863	***	•••	1,098	•••	* 8 3	
1864	•••	•••	5,688	···]		
1865	• • -	•••	3,379		• • •	
1866	- e e	••••	2,348		• • •	
1867	•••	•••	78		• • •	
18 68			5,7 61			
1869	• • •	•••	•••	753	11,063	
1870	• • •	•••		13,868	37,123	
1871	- • •		•••	71,311	80,272	
1872		• • •	8,011	4 9,544	37,064	
1873	• • •	•••	14,347	66,997	36,187	
1874			11,906	78,027	40,566	
1875			21,842	52,553	29,085	
1876	• • •		26,355	69,179	12,683	
1877	• • •		19,717	31,409	33,893	
1878	***		22,995	60,563	23,018	
1879	• ∎ ♥		23,728	83,164	$20,\!645$	
1880			23,247	91,419	20,005	
1881			20,957	57,254	18,885	
1882	•		20.343	38.618	5,694	
1883			22.121	77.065	16.826	
1884			27.070	93,660	24,914	
1885	* • •	•••	28.951	794.174	16.624	
1886			26.422	1.015.433	12,108	
1887			26,321	3,137,800†	20,809	
1888	•••		28,971	6,427,000+	403	
1889	•••		28,630	9,067,500+	24,105	
Tot	al		420,286	21,377,291	521,972	

603. The total quantity of silver raised in the three colonies, value of according to the table, was 22,319,549 oz., which would represent a raised in value at 4s. per ounce of $\pounds4,463,910$; or, at 3s. 6d. per ounce, of $\pounds3,905,921$.

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604. The bulk of the silver raised in Australasia is from the Broken Hill Broken Hill mines, situated in New South Wales, at or near the mines. 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 £320,000 in 160,000 shares of £2 each, fully

* In Victoria and New Zealand, nearly all the silver produced has been extracted from crude gold

t' No official statement having been published in New South Wales of the quantity of silver raised in that colony in the last three years, these quantities have been estimated in the office of the Government Statist, Melbourne, from information supplied by the manager of the Broken Hill Proprietary mine, and that obtained from other sources.

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paid up.* From the time of the formation of this company on 13th August, 1885, to the 31st May, 1890, the ore treated (gross) amounted to 412,316 tons, the total yield of which was 16,897,076 ounces of silver, and 68,475 tons of lead, of which 7,140,199 ounces of silver and 29,059 tons of lead were produced in the year 1889-90. 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 to a total value of £3,960,000. For the six months ended with May, 1890, the mine has paid dividends to the amount of £464,000. The manager of the mine reported that there was in May, 1889, more than 700,000 tons of ore in sight, averaging 31 ounces of silver to the ton, and there was every hope that the present dividends might be increased. The number of men permanently employed at and in connexion with the mine at the present time is 2,309.

Silver produce of each country 605. The next table, with the exception of the figures for Australasia, has also been taken from Mr. Leech's Mint report for 1889, and shows that the world's production of silver during the four years ended with 1888 was 404,671,757 oz., the largest quantity being raised in the United States, the next largest in Mexico, and the next in Bolivia:—

Cou	intries.		1885.	1886.	1887.	1888.
			OZ.	OZ.	OZ.	0Z.
Australasia		•••	839,749	1,053,963	3,184,930	6,456,374
Europe—						
Russia	•	•••	499,808	408,428	434,624	466,798
\mathbf{Sweden}	• • •	• • •	74,762	99,030	99,030	149,396
Norway			231.422	231,422	231,422	231,422

SILVER PRODUCE⁺ OF EACH COUNTRY, 1885 TO 1888.

Germany ⁺	•••	789,633	856,584	769,126	752,509
Austria-Hungary		1,617,064	1,617,064	1,716,094	1,716,094
Turkey	•••	42,524	42,524	42,524	42,524
-	5		Ĩ	· · ·	-

* On the 12th February, 1890, the shares were sub-divided into 800,000 shares of 8s. each, and a further issue was allowed to the shareholders of 160,000 shares, at 8s. each, to be registered in London.

† See U.S. Mint Report, 1889, pages 166 and 167, where the quantities are given in kilogrammes, which have been converted into ounces on the assumption that a kilogramme is equal to 32.142 oz. troy. According to the New York *Financial and Commercial Chronicle*, of 2nd August, 1890, the world's production of silver in 1889 was 125,988,671 oz.

t The figures for Germany differ from those published in the last issue of this work, which included large quantities of silver derived from ore sent from other countries to be smelted. The present figures denote the silver actually raised from German mines.

SILVER PRODUCE* OF EACH COUNTRY, 1885 TO 1888—continued.

Countries.		1885.	1886.	1887.	1888.
Europe—continued.		OZ.	 OZ.		07
Italy		940,443	940,443	1.087.653	1.101.828
France		1,639,242	1,639,242	1,503,892	1.745.761
Spain		1,746,436	1,746,436	1.746.436	1.655.377
Great Britain		244,504	325,406	320.263	216.091
Asia—		-	7 ,		
Japan		741,998	798,889	1.030.633	1.030.633
Africa		40,949	101,729	13.885	13.885
America—					- ,
Canada	- · · •	161,674	161,674	349.223	349.223
United States		39,906,800	39,442,766	41.265.667	45,780,686
Mexico		24,835,159	25,521,809	29.056.368	31,997,361
Salvador				185.588	
Honduras		•••		57,823	$\{$ 270,700
Colombia		309,367	309,367	309.367	928,068
Brazil		84,855	4,532	4,532	4,532
Peru		1,537,673	3,093,539	1,599,064	2,419,103
Bolivia	- • -	12,374,188	12,374,188	7.733.879	8,507,280
Chile		5,796,553	6,749,820	6,749,820	6,602,674
Argentine Republic	•••	369,633	46,413	23,207	328,684
The World†	•••	94,824,436	97,565,268	99,515,050	112,767,003

606. At 4s. per ounce the quantity of silver raised in the world Value of during 1888, would be worth £22,553,401; or, at 3s. 6d. per ounce, it would be worth £19,734,225. The quantity raised in the four years ^{1885-1888.} ended with 1888 would be worth £80,934,351 at the former, or £70,817,558 at the latter valuation.[‡]

607. The relative values of silver and gold have always been vari-Relative able. Until comparatively recent years, however, the fluctuations have gold and silver. been but slight. In the 102 years, 1687 to 1789, the ratio of the former to 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 depreciation of silver and consequent difference in

* See U.S. Mint Report, 1889, pages 166 and 167, where the quantities are given in kilogrammes, which have been converted into ounces on the assumption that a kilogramme is equal to 32.142 oz. troy. According to the New York *Financial and Commercial Chronicle*, of 2nd August, 1890, the world's production of silver in 1889 was 125,988,671 oz.

† British India, which, according to another authority, produced silver to the value of £914,367 in 1883, does not appear to be included.

: In 1889, according to the 20th Annual Report of the Deputy-Master of the Royal Mint, London, page 14, the average price per ounce paid for silver bullion for coinage (standard silver) was rather more than 3s. $6\frac{3}{4}$ d., or $\frac{1}{5}$ d. lower than the average price for 1888. The silver in the table, taken as a whole, was probably considerably below the standard. value between the two metals has been greater from year to year, and in 1889 it took 21.8 parts of silver to be equivalent to 1 part of gold. This is the greatest difference yet reached. The following figures show the relative values of the two metals in each of the 19 years, 1871 to 1889:---

RELATIVE VALUES OF GOLD AND SILVER, 1871 TO 1889.*

In	1871	1	part of gold	was worth	15.57	parts of	silver.
"	1872		,,	"	15.63	- ,,	
,,	1873		32	"	15.92	,,	
"	1874		93	"	16.17	9 7	
,,	1875		37	"	16 59	, ,	
""	1876		>>	"	17.88	,,	
"	1877		>>	,,,	17.22	"	
>>	1878		33	33	17.94	> 7	
"	1879		5 5	» "	18.40	37	
"	1880		>>	"	18.05	33	
""	1881		• • •	"	18.10	ÿ	
"	1002		32	> >	10.19	**	
"	1003		,,	• •	10.57	ゥ	
"	1985		**	;;	10.11	>>	
"	1886		>>	"	13 41	"	
32	1887		• • • • •	> 3	2070	5 1	
"	1888		"	"	21.76	53	
"	1889		••	"	21.82	"	
"	1000		>>	73		"	

Gold derived from alluvial and quartz workings.

608. Of the gold which was raised during 1889 in Victoria, 384,984 oz. was obtained from quartz reefs, and 229,855 oz. from alluvial deposits. These figures, as compared with those of the previous year, show a decrease of 1,408 oz. in the yield of quartz reefs, and one of 8,779 oz. in that of alluvial workings. The respective proportions of quartz and alluvial gold raised were 62 and 38 per cent. in 1888, and 63 and 37 per cent. in 1889.

Value of gold per mine**r**. 609. 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 1885, when it was £108 15s. 9d. per head. In 1889, it was £101 2s. 3d., or £3 13s. 8d. higher than in 1888, and also higher than in any years since 1870, except 1875, 1884, 1885, and 1886. The following figures, which have been derived from returns supplied by the Secretary for Mines, express this proportion for the last nineteen years :--

* For years previous to 1888, see U. S. Mint Report, 1888, page 209. † For the number of gold miners at work in 1889, see paragraph 165, Volume I.

			\pounds s. d.				£s.	d.
1871			93 6 $1\frac{1}{2}$	1881	• • •		95 11	91
1872	•••	• • •	93 17 $1\frac{1}{2}$	1882		• • •	95 19	$7\frac{3}{4}$
1873	•••	• • •	93 16 $2\frac{1}{2}$	1883	•••		95 6	31
1874	• • •	•••	99 8 3	1884	• • •		106 14	$6\frac{1}{4}$
1875	• • •		104 4 4	1885			$108 \ 15$	91
1876	• • •	• • •	$89 \ 19 \ 6\frac{3}{4}$	1886			104 18	4
1877	• • •	• • •	82 6 $1\frac{3}{4}$	1887	• • •		96 17	$\overline{2}$
1878	• • •	•••	82 12 11 $\frac{1}{2}$	1888			97 8	7
1879	* * •		76 1 $2\frac{1}{4}$	1889			101 2	3
1880	• • •	• • •	81 18 11 $\frac{3}{4}$					-

VALUE OF GOLD PER MINER,* 1871 TO 1889.

610. In proportion to the number of miners engaged in alluvial Value of and quartz mining, the yield of gold from the latter has frequently alluvial been more than twice as large as that from the former. The following miner. are the figures for the last twelve years :---

VALUE OF GOLD PER	ALLUVIAL	AND G	UARTZ]	Miner,	1878 то	1889.
-------------------	----------	-------	---------	--------	---------	-------

	Year.			Alluvial Miners.	Quartz Miners.
				£ s. d.	£ s. d.
1878				$47 \ 3 \ 6\frac{3}{4}$	138 7 $7\frac{1}{4}$
1879				$48\ 10\ 1\frac{1}{3}$	118 8 7
1880		• • •		49 14 2	129 11 $7\frac{3}{4}$
1881				62 0 $9\frac{3}{4}$	$141 \ 19 \ 2\frac{1}{3}$
1882		• • •		$68 14 1\frac{1}{3}$	$131 \ 19 \ 5\frac{1}{2}$
1883				66 4 4	132 13 2
1884				76 4 2	144 9 10
1885]	75 17 2	$148 \ 19 \ 11$
1886				72 11 $2\frac{1}{5}$	$144 \ 13 \ 11\frac{1}{2}$
1887		• • •		68 5 4	$125 \hspace{.1in} 12 \hspace{.1in} 0^{\H}$
1888	• • •			76 17 7	$121 \ 8 \ 11$
1889				78 13 11	124 11 7

611. The estimated yield of gold in the first half of 1890 was Estimated 286,492 oz. as against 293,750 oz. in the first half of 1889.⁺ Twice ^{gold yield}, the first quoted amount would give 572,984 oz. as the estimate for the whole of 1890, or 41,855 oz. less than the quantity actually raised in 1889, and 52,042 oz. less than the quantity raised in 1888.

612. Exclusive of dividends paid by a few private companies, Dividends of respecting which the Mining Department was unable to obtain companies. information, the following are the amounts of dividends paid by gold mining companies in Victoria, in the last two quarters of 1889 and the first two quarters of 1890:---

* 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.

† See Mining Registrars' Reports for first two quarters of 1889 and 1890.

DIVIDENDS	OF GOLD	MINING	COMPANIE	es, 1	889-90.
Quarter ended	September, 18		• • •	•••	£132,520
•	December, 188	39		• • •	158,076
••	March, 1890		•••	• • •	114,304
>)	June, 1890		• • •	•••	124,223
	Total in 1	2 months		••••	£529,123

Steam engines used in mining.

613. Of the steam engines employed in connexion with gold mining, about a fifth are used on alluvial and four-fifths on quartz workings. The following is the number of engines in use and their horse-power in each of the last sixteen years :---

STEAM ENGINES USED IN GOLD MINING, 1874 TO 1889.

Year.	Number.	Horse-Power.	_	Number.	Horse-Power.
$1874 \\1875 \\1876 \\1877 \\1878 \\1879 \\1880 \\1881$	$1,141 \\ 1,101 \\ 1,081 \\ 1,067 \\ 1,036 \\ 1,024 \\ 1,030 \\ 1,034$	$\begin{array}{r} 24,866\\ 24,224\\ 23,947\\ 23,416\\ 22,711\\ 22,509\\ 22,499\\ 23,379\\ \end{array}$	$ 1882 \\ 1883 \\ 1884 \\ 1885 \\ 1885 \\ 1886 \\ 1887 \\ 1888 \\ 1888 \\ 1889 \\ $	$1,074 \\ 1,087 \\ 1,104 \\ 1,085 \\ 1,072 \\ 1,080 \\ 1,119 \\ 1,123$	$\begin{array}{r} 24,692\\ 25,933\\ 26,228\\ 26,627\\ 26,920\\ 27,218\\ 27,472\\ 26,680\\ \end{array}$

Mining

614. The value of gold mining machines of all descriptions, as machinery. estimated by the Department of Mines, increased from £1,838,123 in 1888 to £1,845,862 in 1889. In the latter year, the value of those used in quartz mining was £1,584,300, whilst that of those used in alluvial mining was only £261,562.

Auriferous reefs.

615. The number of quartz reefs proved to be auriferous, as returned by the mining surveyors and registrars, was 3,718 in 1888, and 3,848 in 1889. It has been pointed out, however, that these cannot in every case be distinct reefs, as parts of the same reef in different localities are held to be independent veins, and named accordingly; and, moreover, as the lines of reef are further explored, it is found that what were supposed to be separate reefs are in reality not distinct.

616. The approximate area of auriferous ground worked upon Extent of auriferous during the last quarter of 1889 was stated to be about 327 square ground. The figures are derived from estimates, not from actual miles. surveys, and they vary from year to year. As the different goldworkings are abandoned by the miners, they are excluded from the returns, which only take into account the ground on which gold mining operations are actually being carried on.

617. It is impossible to obtain an exact statement of the yield of Average auriferous quartz in any year, owing to the fact that many of the quartz. 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 734,313 tons in 1888, and 732,461 tons in 1889. The average yield per ton of these crushings was 9 dwt. 17.96 gr. in the former, and 9 dwt. 19.19 gr. in the latter year. From similar estimates, extending over a long series of years, and embodying information respecting the crushing of nearly 24,854,000 tons of quartz, an average is obtained of 10 dwt. 10.12 gr. of gold to the ton of quartz crushed.

618. The following is the estimate of the Mining Department* of Gold from the gross and average yield of over 43 millions of tons of the various matrices. minerals and drifts from which gold is obtained in Victoria. The quantity of gold included in the estimate is about a fourth of the total yield of the Victorian gold-fields from the period of the first gold discoveries to the end of 1889:—

		Yield	of Gold.
Matrix.	Quantity treated.	Total.	Average per ton.
From Quartz Reefs.	tons.	oz.	oz. dwt. gr.
Quartz	24,853,711	12,950,885	0 10 10.12
Tailings and mullock	2,275,942	349,496	0 3 1.70
Pyrites	129,525	280,303	$2 \ 3 \ 6.76$
From Alluvial Workings.			
Washdirt	15,389,599	1,159,648	0 1 12.17
Cement	413,254	96,465	0 4 16 04
Total	43,062,031	14,836,797	0 6 21.38

GOLD FROM VARIOUS MATRICES.

619. The ten deepest shafts in the colony are those of Lansell's _{Deep shafts}. 180 mine, 2,640 feet; Moonlight Company, 2,409 feet; Victoria Reef Quartz Company, 2,302 feet; Victory and Pandora Company, 2,300 feet; New Chum and Victoria Company, 2,228 feet; North Old Chum Company, 2,210 feet; Old Chum Company, 2,128 feet; Lansell's 222 claim, 2,091 feet; Ironbark Company, 2,073 feet; Watson's Central and Kentish mine, 2,061 feet. It thus appears

^{*} Mineral Statistics 1889, Statement No. 6.

that the greatest depth to which the earth's crust has been pierced in this colony by a shaft is a little over 2,600 feet.* The second mine mentioned is at Stawell, all the others are at Sandhurst.

620. Since the first issue of gold-mining leases, the total number Gold-mining leases. granted has been 16,703, giving the right to mine over an area amounting in the aggregate to 321,167 acres. Of these leases, 461, for 10,768 acres, were granted in 1889, and 1,561; for 34,693 acres, were in force at the end of that year.

Minerals other than ing in Victoria.

621. Silver, tint, copper, antimony, lead, iron, and coal have been gold exist- mined for at different times in Victoria, but with the exception of brown coal, little, if any, of these minerals were raised in 1889. The silver obtained in that year was, as has already been stated, extracted at the Mint during the process of refining the gold. The following metals also exist in Victoria, but up to this date have not been discovered in paying quantities :- Bismuth, cobalt, cadmium, manganese, molybdenite, osmiridum, and zinc-blende. Various limestones and marbles, as well as kaolin and other clays, also exist, and have been worked to a certain extent.

Coal.

622. Many attempts have been made to mine for coal, but the seams hitherto worked have been too thin to yield a profit; the reported discovery of thicker seams, however, and of large deposits of brown coal, chiefly in South Gippsland, led to the appointment, in July, 1889, of a Royal Commission, which was instructed "to inquire into and report as to the best means of developing the coal mining industry of Victoria." This commission has brought up a progress report,§ in which several seams of true coal situated in different localities are referred to, varying in thickness from 2 feet to 4 feet 6 inches, the latter being the "Jumbunna East" seam, which is thus reported upon by Mr. R. A. F. Murray, the Geological Surveyor attached to the Mining Department :---

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"The thickness of the seam varies at different parts of the cutting from 4 feet 6 inches to 5 feet, but it may be safely stated that the seam contains 4 feet 6 inches of good solid coal, without break, parting, or impurity so far as exposed. In a steep bank immediately over the creek, and on the same side as the large seam, is an exposure of coal about 18 inches thick, which may possibly be an attenuated portion

* See Report of Mining Registrars for the quarter ended 30th June, 1890, page 5.

† In the latter part of 1890 the discovery was reported of extensive deposits of tin in the Omeo districts.

t So far as is known, only 43,361 tons of coal have been raised, chiefly from Crown lands, in Victoria up to the present time. Of this, 19,729 tons were obtained during the last five years by the Moe Coal Mining Company on private lands.

§ Parliamentary Paper, No. 168, Session 1890.

of the main seam; but this is uncertain until more has been done to trace out the extension of the seam. The quality of the coal appears very good. It is clean, hard, and bright, contains very little pyrites and carbonate of lime, and burns well and freely, though it does not appear to be a coking coal. Taking into consideration thickness, quality, freedom from impurity, and accessibility, I consider this seam to be the best, so far as exposed, yet found in Victoria, and careful exploration should be made to trace its continuation round the side of and under the range, and its extension in dip towards the creek and under the opposite range, all of which could be done easily and cheaply by means of open cuttings in the first place and boring subsequently. Should a mine be established, access to the Great Southern line or Anderson's Inlet could be easily obtained. There have been other seams of coal discovered in the neighbourhood."

623. The Commissioners, in their report, mentioned the existence Brown coal. of extensive seams of brown coal or lignite, and visited one mine the thickness of the deposits in which ranged from 60 to 200 feet. They say that "the brown coal differs materially from the black both in appearance and character. It belongs to the tertiary formation, and represents only a partial degree of mineralization. It is comparatively light, burns freely when dry, gives off a strong heat without smoke, and leaves a very small percentage of ash. Its principal drawback arises from the quantity of moisture it contains, and the fact that the gas extracted from it is of low luminosity." Some experiments respecting the value of this material as a fuel have been made under the direction of Messrs. R. A. F. Murray and Cosmo Newbery, who found that the proportion of brown coal equivalent to the best Newcastle coal for similar work was nearly in the ratio of 3 to 2 by weight. Further trials of brown coal in furnaces of different kinds, and with bars specially adapted to its use, are in progress.

624. The Coal Commission wound up their progress report with Recommenda the following recommendations :--

Recommendations by Coal Commission.

1. That the geological survey of the carboniferous areas of the colony be at once undertaken and conducted with vigour and continuity.

2. That the most important and accessible coal deposits should be connected by railway with the existing lines where sufficient assurance is given that such deposits will be worked.

3. That there shall be no State expenditure incurred in establishing railway communication with any coal deposits until they shall have been sufficiently opened up to demonstrate that they are of a payable character.

4. That in cases where coal deposits are developed close to a railway line we recommend the construction of sidings under the above conditions.

5. That the sum of £10,000 be added to the amount already upon the Estimates for prospecting for coal, to be devoted to prospecting other than by means of the diamond drill, upon the basis of £1 for £1 contributed and expended exclusively on labour.

6. That boring with diamond drills be continued both in Gippsland and in the Western District upon a preconcerted plan, and under the best scientific advice obtainable; the number of drills to be increased if necessary.

Coal raised in various countries.

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625. At the present time, the coal-producing colonies of Australasia are, practically, New South Wales, Queensland, and New Zealand, whilst small quantities have been found in Victoria and Tasmania. In these over $4\frac{1}{2}$ million tons of coal were raised in 1889, but four-fifths of this quantity came from New South Wales. The following are the quantities returned as brought to the surface in each of those colonies during a series of years :---

COAL RAISED IN AUSTRALASIAN COLONIES, 1876 TO 1889.

			Tons	of Coal raised	in—	
Y	ear.	New South Wales.	Queensland.	Tasmania.	New Zealand.	Victoria.
1 876		 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

Coal raised in Australasian colonies.

626. The following is a statement of the quantity of coal raised in various countries during one year, the returns being generally those for 1884, 1885, or 1886 :---

ANNUAL PRODUCTION OF COAL IN VARIOUS COUNTIES.*

Tons.

United Kingdom

Canada

Tons. 9 001 076

$\mathbf{U}_{\mathbf{M}} = \mathbf{U}_{\mathbf{M}} = $	010
United States (1887) 124,015,255 Spain 1,000,	000
Germany 58,020,612 Japan 900,	000
France 20,014,597 Sweden 250,	600
Belgium 17,253,144 Italy 220,	000
Austria-Hungary 17,191,500 Chile 50,	000
Australasia (1889) 4,562,480 Other Countries (estimated) 8,000,	000
Russia 4,500,000	
British-India 4,000,000 Total 423,588,	646
China 4,000,000	

* The figures in this table, except those for Australasia and Canada, have been derived from the American Almanac and Treasury of Facts, 1888, p. 40, by Ainsworth R. Spofford, Librarian of Congress.

627. During 1889, 70 leases—of which 49 were for tin mining— Leases for other of Crown lands were issued, conferring the privilege of working ^{minerals.} for minerals and metals other than gold; whilst at the end of the year the number and area of leases in force in Victoria were as follows:—

LEASES FOR MINERALS AND METALS OTHER THAN GOLD, 1889.

	Leases in	n force at en	d of	1889.		
Metals and Minerals.	Number.	Area.				
Antimony and the Ores of Anti-	monv		3	a. 281	r.	р. 1
Bismuth	j	•••	2	<u>201</u> 98	3	4
Calcite and Silicate of Alumina			$\frac{1}{1}$	13	3	39
Coal			19	9.188	3	19
Copper and the Ores of Copper		÷	6	450	1	$\overline{20}$
Infusorial Earth and Kaolin			1	22	2	28
Iron, Silver, and Lead	• • •	••••	1	459	1	0
Iron and the Ores of Iron			1	319	3	0
Lead, Copper, and Coal	•••		1	232	2	5
Lead and the Ores of Lead	•••		3	449	0	9
Lead and Silver	• • •		2	481	2	27
Lignite, or Brown Coal	• • •	•••	1	414	2	,10
Porphyry	•••	••••	2	104	2	37
Sapphires	• • •	•••	1	30	2	22
Silver and the Ores of Silver	•••	• • •	10	492	0	18
Silver, Lead, and Copper	• • •	•••	1	38	0	37
Slate and Slate Flagging	• • •	••••	10	546	1	20
Tin and the Ores of Tin			70	5,236	0	15
Turquoise	•••		4	130	2	30
Total			139	18,991	1	21

628. The leases in force at the end of 1889, as shown in the table Leases for were greater by 48, and the area comprised therein was greater by ^{minerals, 1888 and} 3,871 acres, than at the end of 1888. The leases for tin mining ^{1839.} increased from 25 to 70, and those for coal mining from 17 to 19, while those for silver and lead mining fell from 16 to 11. It should also be mentioned that besides leases there were several licences issued during the year to search for metals and minerals other than gold.

629. According to the estimate of the Mining Department, the Minerals other than following are the values of metals and minerals other than gold gold raised raised in Victoria from 1851 to the end of 1889:—

	27			Estimated Value.				
	Name.			1851 to 1888.	Year 1889.	Total.		
				£	£	£		
Silver*				78,003	5,726	83,729		
Tin				669,071	1,112	670,183		
Copper and cop	oper ore			190,932	175	191,107		
Antimony				169,295	157	169,452		
Lead	• • •			5,340	20	5,360		
Iron		•		$12,\!535$	5	12,540		
Coal†	- 	• • •	}	28,765	10,991	39,756		
Lignite		· · · •		2,193	140	2,333		
Kaolin	• • •			7,444	• • •	7,444		
Flagging			• • •	71,505	723	72,228		
Slates	· · ·			8,646	283	8,929		
Gypsum	• • •			7	· · ·	7		
Magnesite	• • •	• • •		12	• • •	12		
Ores, mineral	earthy c	lays, etc.		10,901		10,901		
Diamonds	• • •			108	• • •	108		
Sapphires, etc.	•••		•	630		630		
Total				1,255,387	19,332	1,274,719		

VALUE OF MINERALS AND METALS OTHER THAN GOLD, 1851 то 1889.

Miners for minerals gold.

630. The following, according to the estimate of the Mining other than Department, is the number of men engaged in mining for various kinds of minerals or metals other than gold[‡] at the end of 1889. The figures show an increase of 200 in the coal miners, but a falling-off under most of the other heads, the net increase being 143, as compared with 1888:-

	N	umber of liners.		Nu M	mber of iners.
Antimony	 • • •	12	Lignite	 	3
Coal	 •••	254	Silver and lead	 	36
Freestone	 •••	6	Slate and flag	 	74
Granite	 •••	13	Tin	 	81
Infusorial earth	 	4			
Kaolin		5			A.Q.A

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MINERS FOR MINERALS OTHER THAN GOLD, 1889.

Revenue from goldfields.

Turquoise

631. The revenue derived from the gold-fields amounted to £17,268 in 1887-8, and £18,408 in 1888-9. The amount in the latter year was made up of the following items :---

6

* Of late years the silver produced has been extracted from gold in the process of refinement at the Melbourne branch of the Royal Mint.

† The quantity of coal raised was 43,361 tons, inclusive of 19,729 tons raised by the Moe Coal Mining Company on private lands in 1885, 1887, 1888, and 1889.
‡ For number of gold miners, see paragraph 165, Volume I.

Miners' rights	•••	• • •	•••	•••	£ 5,896
Business licences		• • •	•••	• • •	264
Rents for leases of aur	iferous and	mineral	l lands	•••	9,317
,, mining on p	rivate prop	erty	• • •	•••	1,759
Water-right and searc	hing licence	es	•••	• • •	1,172
\mathbf{Tot}	al	•••		,	£18,408

REVENUE FROM GOLD-FIELDS, 1888-9.

632. The State aid to the mining industry during the year 1888-9, State aid to was £119,139, as compared with £117,837 in 1887-8.* The former sum is made up of £24,452, cost of the Mining Department and Mining Boards; £81,072 to assist miners in prospecting operations, and to defray the cost and working expenses of diamond drills; £2,909 for prospecting and boring for coal; and £10,706 for geological and underground surveys, cutting tracks in unexplored regions, etc. Under the second of these items, usually known as the "Prospecting Vote," the expenditure was only £20,000 a few years since; but it has latterly amounted to about £80,000.

633. During the period from 1875-6 to 1879-80, the sum of Loans to £21,050 was lent to mining companies, but only £1,237 has since companies. been repaid. Of the balance (£19,813), as much as £15,813 has been written off as non-recoverable.

634. In 1889, exclusive of the expenditure incurred in consequence Diamond drills. of the wear and tear of diamonds, £15,704 was spent on the working of diamond drills, of which £9,494 was expended in gold prospecting, and £6,210 in coal prospecting. The average cost of boring was 10s. $4\frac{1}{2}$ d. per foot.

635. Of the fifteen diamond drills belonging to the Mining Operations Department, nine were engaged in alluvial prospecting, five in coal drills. prospecting, and one in boring for water, at the end of June, 1890. The number of bores made in 1889 was 188, viz., 176 in search of gold, and 12 in search of coal; the aggregate depth bored was

18,454 feet for gold, and 11,840 for coal.

636. An Act to legalise mining for gold and silver on private Mining on property, † and to compensate the owner and occupier thereof for the property. damage sustained by reason of the land being taken, or of their being deprived of possession of the surface thereof, in consequence of mining operations, came into force on the 24th November, 1884. Between that date and the 31st December, 1888, 698 leases were issued under

^{*} See page 159 of the first volume of this work. † The Mining on Private Property Act 1884 (48 Vic. No. 796).

it, covering an area of 131,267 acres; and during the year 1889, 73 leases were issued covering an area of 14,804 acres.

Value of 637. The estimated value of the produce raised from Victorian mining produce. mines and quarries in 1889 is summarized as follows:—

V ALCE V					£
Gold					2,459,356
Other metals and min	nerals	•			19,332
Stone from quarries					208,410
•	-				
	Total		• • •	•••	2,087,098

VALUE O	F MINING	PRODUCE,	1889.
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Agricultural, pastoral, and mining produce.

638. The estimated value of the agricultural, pastoral, and mining produce raised in Victoria, during each of the last sixteen 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.* In several of the years the value of the pastoral produce was greater than that of the other two industries combined :---

VALUE OF AGRICULTURAL, PASTORAL, AND MINING PRODUCE, 1874 TO 1889.

Year.]			
		Agricultural Produce.	Pastoral Produce.†	Mining Produce.ț	Total.
		£	£	£	£
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
	AND A				1

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* For prices of agricultural produce in different years, see table following paragraph 523 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.

639. The census taken on the 3rd April, 1881, enabled an approxi-Agriculmate return to be made of the value of articles manufactured in the pastoral, twelve months prior to that date, and the net result has already been and manustated to be £5,373,091.* On the assumption that the value of produce. manufacturing produce has increased since the census in the same proportion as the number of hands employed, or by 51 per cent., the value in 1889 would be £8,110,000, 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 agricultural, pastoral, mining, and manufacturing produce will be obtained for that year, amounting in the aggregate to £27,707,000.

640. The patents for inventions applied for in 1889 numbered Patents. 951, or 68 more than in 1888, and a larger number than in any Since 1854 the total number of patents applied for previous year. has been 7,399.

641. The Victorian Copyright Act (33 Vict. No. 350) came into Copyrights. force in December, 1869. Copyrights—especially those for literary productions-have been increasingly numerous during the last six or seven years, during which period they averaged about 573 per annum; whereas prior to 1883 the largest number registered was 347. The following copyrights have been registered since the passing of the Act :---

	-	Сор	yrights Registe	red.
Subject of Copyright.		Prior to 1889.	During 1889.	Total.
DESIGNS. Articles of manufacture, chiefly of- Metals		310	13	323

Соругіднтя, 1870 то 1889.

mining, facturing

Wood	, stone, ce	ment, or	plaster		63	8	71
Glass	• • •	• • •	•••		9	5	14
Earth	enware	• • •			10	1	11
Ivory,	, bone, pap	oier-mâc	hé, etc.		55	10	65
Wove	n fabrics				18		18
Misce	llaneous	•••	• • •		18	1	19
	TERARY	PRODUC	TIONS.				
Literary w	0143				3,589	$\boldsymbol{432}$	4,021
Dramatic	33	• • •			115	11	126
Musical	>>	• • •	•••	•••	104	6	110
				I.			1



* See paragraph 589 ante.

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			_		Copyrights Registered.			
	Subject o	f Copyr	ight.	Prior to 1889.	During 1889.	Total.		
	WORKS	OF A	 RT.					
Paintings	•••				6	2	8	
Drawings	• • •	· • •			30	2	32	
Engravings					1,241	61	1,302	
Photographs	• • •	•••			1,057	75	1,132	
Sculpture		••			5	• • •	5	
	Total				6,630	627	7,257	

COPYRIGHTS, 1870 TO 1889—continued.

Trademarks. 642. Provision for the registration of trade-marks was established under the *Trade-marks Registration Act* 1876 (40 Vict. No. 539), which came into operation on the 22nd September of that year. The registration of a person as the proprietor of a trade-mark is *primá 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 1889, 2,310 trade-marks were submitted for registration, and 1,554 were registered. During the year 1889, the number submitted was 297—or 47 less than in 1888, and the numbers registered 204—or 35 more than in 1888.