

PART VII.—PRODUCTION.

239. The mode of disposing of Crown lands in Victoria has undergone numerous changes,* a full description of which has been given in previous issues of this work.† The present system dates from the 29th December, 1884, when the *Land Act* 1884 came into operation— which Act, with subsequent amendments, was consolidated by the *Land Act* 1890‡—which in turn was amended by the *Land Act* 1891. 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 by means of deferred payments. The Act classifies the whole of the unalienated Crown lands—exclusive of the “Mallee country,” which is dealt with separately—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 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. From 1st August, 1890, land has been authorized to be sold, leased, or licensed as regards the surface only, and to such depth below the surface as the Governor in Council may direct. Isolated blocks, not exceeding 20 acres in extent, which it is thought advisable to sell, or land required for church or charitable purposes, not exceeding 3 acres in extent, may be sold. Where the value of land is enhanced by railway or irrigation works, the price to be paid for such land may be increased by Order in Council.

Alienation
of Crown
lands.

240. Under the *Land Act* 1890, as amended by the *Land Act* 1891, the pastoral lands are leased in “pastoral allotments,” varying in size from 7,500 to 40,000 acres, for any term not exceeding 14 years from

Pastoral
occupation.

* The first twelve paragraphs in this part have been examined and verified by the Lands Department.

† See *Victorian Year-Book*, 1889-90, Vol. II., paragraphs 375 to 381.

‡ 54 Vict. No. 1,106.

§ By an Act passed on the 3rd November, 1893, power is given to sell swamp lands by auction.

the 29th December, 1884,* 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 being 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 must be offered at auction. The annual rent payable for pastoral allotments is computed according to the grazing capability of the land, at the rate of 1s. per head of sheep and 5s. per head of cattle. The principal conditions of the lease are that all “vermin” (rabbits, native dogs, 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 incoming 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 those lessees of pastoral allotments who might have under the terms of their lease the right to purchase 320 acres, under certain limitations and restrictions, as a homestead at any time during the currency of his lease.

Agricultural
and grazing
lands.

241. The agricultural and grazing lands are also leased in “grazing areas,” varying in size, but not exceeding 1,000 acres, for any term not exceeding 14 years from the 29th December, 1884,* 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 appraised by valuers, but must in no case be less than 2d. or more than 4d. per acre, any improvements that may 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.

Selection of
agricultural
allotments.

242. Persons desirous of selecting an agricultural allotment may either do so by first taking up a grazing area, and then, after the issue

* The date when the *Land Act* 1884 came into operation.

of his lease, selecting out of the area leased a block or "agricultural allotment" not exceeding 320 acres in extent, or, if the grazing area he desires is 320 acres or less, he may obtain an agricultural allotment licence direct without the previous issue of a grazing licence; 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. The selector then occupies the agricultural allotment (which is thereafter no longer considered portion of the grazing area) under licence during the first six years, within which period the licensee is obliged to reside on his selection at least five 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 is 1s. per acre per annum, which is credited to the selector as part payment of the principal, viz., 20s. per acre without interest.* At the expiration of the six years' licence, the selector, if he obtains a certificate from the Board of Land and Works that he has complied with these conditions, can either purchase his holding at once by paying up the balance of 14s. per acre, or may convert his licence into a lease extending over 14 years, at an annual rental of 2s. per acre, which is 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 becomes the freehold of the selector. 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 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 versa*.†

243. Provision is also made in this Act for grazing area lessees to take up agricultural allotments as non-residence licensees. In such cases the rent is 2s. per acre, and the total price payable for the land £2 per acre. Improvements to the value of £2 per acre, moreover, must be made during the six years licence, of which at least half

Non-residence
selections.

* See paragraph 279 *post*.

† These privileges, although not previously enacted, are also to be allowed to selectors under previous Acts.

must be made before the expiration of the third year. The area for which licences may be issued during any year for non-resident selection is limited to 50,000 acres.

Two or more selections may be made.

244. Two or more grazing areas may be taken up by one person, provided the area so taken up does not exceed 1,000 acres in extent. In like manner, if the agricultural allotment he selects from his grazing area is less than 320 acres, he may by further selection add to it or make it up to 320 acres.

Auriferous lands.

245. 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 in blocks not exceeding 1,000 acres, under licences renewable annually for a period not exceeding seven years, expiring not later than 29th December, 1898. No auriferous lands are permitted to be alienated in fee-simple except those which are found on inquiry to be "worked out," which may be licensed for a period of seven years for residence, business purposes, or cultivation, in blocks not exceeding 5 acres each. At expiration of the term, if conditions of licence have been complied with, and purchase-money to the value of the land (less the amount paid as rent) be paid, Crown grant may be issued.

Swamp lands.

246. 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.*

Sales by auction.

247. The Statute, moreover, contains 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.

Mallee pastoral leases.

248. Prior to the consolidation of the various Land Acts under the *Land Act* 1890, the occupation of the unalienated land situated in the north-western portion of the colony, comprising about one-fifth of its extent, or some $11\frac{1}{4}$ million acres (exclusive of Mildura), wholly or partially covered with the various species of stunted trees of which the "Mallee scrub" is composed, was specially provided for by the *Mallee Pastoral Leases Act* 1883, the provisions of which were repealed, and re-embodied in the Consolidated Act referred to, forming Part II. of that Act. It divides the country just described into two main divisions—the larger division containing about $7\frac{3}{4}$ million acres, being known as the "Mallee country;" and the other containing about

* See footnote (§) to paragraph 239 *ante*.

3½ million acres, situated along the southern and eastern borders of the Mallee country, being called the "Mallee border."

249. The Act directs that the "Mallee country" be divided into blocks of various sizes, each block to be subdivided into two parts. ^{Mallee blocks.} 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 portion. The principal conditions are that the lessee destroy all vermin (native dogs, rabbits, etc.) upon the whole block within the first three years, and keep the same clear of vermin during the tenure of the lease, 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 of 1883, 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 license 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 is 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 occupied 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. At the expiration of the tenure of the occupied portions the right to lease some of them till the 1st December, 1903, was offered for sale by auction at an annual rent of 4d. for each sheep and 2s. for each head of cattle during the first five years, and 6d. for each sheep and 3s. for each head of cattle during the remainder of the term, the minimum annual rent being fixed at 5s. per square mile. Others were added to the "Mallee border," subdivided, and made available as Mallee allotments. Any Mallee block may, if the Governor in Council think fit, be divided into allotments and occupied as Mallee allotments as described in the next paragraph, provided that applications have been received for all the allotments into which the block may be divided. No lessee of a Mallee block can acquire any portion thereof in fee-simple.

Mallee
allotments.

250. The "Mallee border" is subdivided into "Mallee allotments," varying in size but not in any case exceeding 20,000 acres. These are available for lease on the same terms and conditions as in the case of the leased portions of a Mallee block; but the annual rent, which ranges from 10s. to £8 per square mile, is fixed by regulations issued by the Governor in Council.

Systems of
land selec-
tions in
Austral-
asian
colonies.

251. 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 the middle of 1893, are detailed under nine heads in the following table:—

CONDITIONS OF LAND SELECTION IN AUSTRALASIAN COLONIES, 1892-3.

Conditions of Selections.	Victoria.	New South Wales.	Queensland.		South Australia.	Western Australia.	Tasmania.	New Zealand** (optional system).		
			Home- steads.	Other Selections.				Cash Lands.	Occupation Lease with Right of Purchase.	Lease in Perpetuity 999 Years.
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.	15s. || upwards	¶	10s.	£1	20s. and 5s.		
3. Time over which purchase may extend Years	20	33	5	**	¶	20	14	..	25	No right.
4. Minimum time in which fee- simple may be acquired Years	6	5	5	5	6	5	anytime	..	10	..
5. Annual payment per acre ..	1s.	1s.	6d.	**	¶	6d.	2s.	..	2s. & 6d.	1s. 7d. & 5d.
6. Value of necessary improve- ments per acre	20s.	10s.	10s.	Fencing	Fenc- ing.	10s. and Fencing	..	20s. & 10s.	23s. and 6s. 6d.	23s. & 6s. 6d.
7. Time allowed for making im- provements Years	6	5	5	5	5	20	..	7	6	6
8. Acres in every 100 to be culti- vated	10	..	..	..	..	..	..	..	..	..
9. Period of residence necessary§ Years	5	5	5	**	..	5	14	..	6 to 7	10

NOTE.—See also further information in following paragraphs.

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

† In New South Wales persons of 16 years of age may select.

‡ In Tasmania and Western Australia married women, and in New South Wales and Queensland married women judicially separated and living apart from their husbands, may select land. In Queensland married women and minors may select unconditional selections.

§ In all the colonies, as soon as the purchase-money is paid in full, the residence clause is no longer enforced; although in Tasmania £1 per acre must be spent on improvements before purchase-money in full can be paid. || But the minimum price is 5s. per acre.

¶ See account of South Australian land system, following paragraph 262 *post*.

** When two sets of figures are given in any column, they relate to first and second class land respectively.

252. In Victoria the land is taken up in the first instance in blocks not exceeding 1,000 acres, under lease, 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. See also paragraphs 242 and 243 *ante*.

Land system
of Victoria.

253. Chiefly with the view of providing an outlet for the unemployed labour of the colony, an Act* was passed on the 31st August, 1893, providing for the establishment of three descriptions of rural settlements, viz., Village Communities, Homestead Associations, and Labour Colonies. For the Village Communities, certain lands are set apart and divided into allotments of from 1 acre to 20 acres in extent, to occupy which for periods of three years permits are granted to approved applicants. During the period over which the permit extends, the occupant pays a rental of 6d. per acre per annum, and on the expiration of that period he is granted a lease for twenty years, during the currency of which he is required to pay half-yearly in advance a sum equal to a fortieth part of the price set upon the allotment, which is generally £1 per acre; he has also to repay in equal yearly instalments extending over the currency of his lease any moneys which have been advanced to him, and to pay the cost of surveying his allotment in ten half-yearly instalments extending over the first five years thereof. The lessee is bound to bring one-tenth of his land under cultivation within two years of the date of his lease, and one-fifth within four years of such date; and is, moreover, to put on the land permanent improvements to the value of £1 per acre within six years of such date. All conditions having been complied with, the lessee is entitled to receive a grant in fee of the land he had occupied.

Village
settlements

254. The Homestead Associations are combinations of not less than six persons who desire to settle near each other. For their accommodation, blocks of Crown land, each containing not more than 2,000 acres, are divided into sections not exceeding 50 acres in extent, excepting a portion, not exceeding 100 acres, which is set apart for a township, of which a division, not exceeding 40 acres, is permanently reserved for the recreation, convenience, or amusement of the members of the association. The remainder of the township portion is divided into as many allotments of one acre or less as may be necessary to provide one allotment for each occupant of a section. The conditions as to residence, cultivation, improvement, rent, and re-payment of cost

Homestead
association

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

of survey and advances, are much the same as those already described in connexion with the Village Communities. After all these have been complied with, a grant in fee of his section and township allotment is given to the occupant.

Advances
to rural
settlers.

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

Labour
colonies.

256. Labour Colonies are established for the purpose of affording assistance to persons who are absolutely without means, and are in the nature of relief works. They are placed on blocks of Crown land not exceeding 1,500 acres in extent, and are supported partly by the Government and partly by voluntary contributions, the Government granting £2 to every £1 contributed privately. To each labour colony five trustees are appointed, who manage it and dispense its funds, and the subscribers may, if they see fit, elect a committee of four persons to assist the trustees. The trustees and committee may admit any person of good character and repute into the labour colony, and may establish any trade or industry in connexion therewith. The moneys received are paid into the trust account, and may be expended in payment for work done in the erection of buildings, or in purchasing provisions, clothing, building materials, agricultural implements, tools, etc.

Leongatha
labour
colony.

257. Several Village Communities and Homestead Associations have been formed in different parts of Victoria, but the only Labour Colony in active operation is that of Leongatha, situated in the Gippsland district, about 80 miles from Melbourne. On joining this colony, each man has to work a week on probation, and then on a small wage, fixed by the manager, according to his ideas of the man's worth. After deducting the cost of food and of the clothes and other necessaries supplied him from the store, the balance of the man's wages is placed to his credit and paid him in cash when he leaves the colony, or the money is paid, as earned, to his family in town. A labour office has been established in this colony, and employers are at once supplied, without fee, with pick and shovel men, splitters, bush hands, farm labourers, ploughmen, rough carpenters, cooks, bakers, or skilled tradesmen. It must be borne in mind that the Labour Colonies are not intended to afford permanent homes to the men, but to supply their immediate wants and to fit them for a rural life. The

industries pursued at Leongatha are draining, fencing, and cultivating the land, sawing timber, and splitting posts, rails, and palings.

258. In New South Wales a territorial division of the colony is made into three zones, viz., the eastern, the central, and the western division. The maximum area allowed in the eastern division is 640, 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 appraised annual rental, with the right of conditional purchase at any time during the currency of the lease. The price per acre does not include interest, for which 4½ per cent. per annum is charged and collected out of the annual instalments paid. The first payment is 2s. per acre in advance, with an interval of 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 varying in different cases. Persons of 16 years of age, and married women judicially separated and living apart from their husbands, may select.

Land
system of
New South
Wales.

259. In June, 1893, the Parliament of New South Wales passed an Act to establish and regulate Labour Settlements on the Crown lands of that colony. Under it any Crown land not under lease may be declared to be available for the purpose of a Labour Settlement, and may be leased to a Board of Control consisting of not less than 8 or more than 16 persons, of whom not more than one-fifth may be females; such board to be a corporate body with perpetual succession and a common seal. The Board of Control may, subject to regulations, enrol such number of persons to be members of the Labour Settlement as the Minister may approve, these to be either unmarried persons of 21 years of age or over, or heads of families; and the Board may receive from the Government, in trust for the purposes of the settlement, a sum not exceeding £25 for each member who is head of a family dependent on him, £20 for each married person without family, or £15 for each unmarried person; such moneys to bear interest at the rate of 4 per cent. per annum, and, after the expiration of four years from the commencement of the lease, to be repaid to the Treasury at the rate of 8 per cent. per annum. The settlers (enrolled members) are of two kinds, viz., persons who are out of employment and without sufficient means of support, or persons who may be able

Labour set-
tlements in
New South
Wales.

and willing to provide a sum of money equal to that they obtain from the Government to be expended in connection with the settlement. It is desired that, where practicable, persons of the two classes should not be members of the same settlement. Up to August, 1893, only three labour settlements had been established.

260. In Queensland, within the limits named in the table, the 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 fifty years; the annual rental for the first ten years being not less than 3d. per acre, but for every succeeding period of five years to be fixed by the Land Board. The selector has the right to purchase at not less than 15s. 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. In Queensland, moreover, in accordance with the provisions of *The Crown Lands Act 1891* any area up to 1,280 acres may be selected by way of unconditional selection. There is no restriction as to the age of applicants, and a married woman may select. It must be specified beforehand whether the land thrown open to selection is available for conditional selection only, or for unconditional selection only, or for both kinds of selection; but in the last case the conditional selector has the priority, whilst the purchasing price to be paid by the unconditional selector must be one-third greater than what would be paid by a conditional selector. The minimum price is £1 per acre, payable in 20 annual instalments. There is no condition as to residence or improvements, and after any balance of unpaid rents has been paid up, a deed of grant is issued. For the purpose of providing funds for the payment of principal of and interest on an authorized issue of Treasury Bills, amounting to £1,420,945, an Act (*The Special Sales of Land Act 1891*) was passed, in accordance with the provisions of which "country lands," not being distant less than 20 miles from any existing or proposed railway or navigable stream, may be offered at auction, in lots not

Land
system of
Queens-
land.

Uncondi-
tional
selections.

Special sales
of country
lands at
auction.

exceeding 5,120 acres each, at a minimum price of 10s. per acre; and provision is made, if thought desirable, of allowing the purchase-money to be paid by instalments extending over periods not exceeding three years. The Act will expire immediately the bills are redeemed.

261. The formation of agricultural townships or village settlements in Queensland was first legalized in December, 1886, when it was provided that in any agricultural area in which the area of any surveyed farm does not exceed 160 acres, the Governor in Council may, by proclamation, set apart any Crown lands not exceeding two square miles as an agricultural township, which may be subdivided into portions not exceeding one acre each for purposes of residence; and in the immediate neighbourhood of such townships agricultural farms of not more than 80 acres each may be reserved for selection. Any selector of an agricultural farm is also entitled to one of the portions in the township, which is deemed a part of the farm, so that the condition of occupation may be performed by residence either upon the farm or in the township; moreover, the value of any improvements made upon the portion in the township is reckoned as part of the improvements required to be made upon the farm, but not to a greater extent than one-fifth of the whole. In an Act passed in 1889, moreover, it is provided that, in cases where it is satisfactorily proved that two or more selectors are associated together for mutual assistance, a special licence may be obtained enabling any one of the selectors to fulfil the conditions of occupation and improvement on his own and his associates' behalf; but in such cases the number of selectors in occupation at any time must not be less than one for every 160 acres of the farms so associated.

Village settlements in Queensland.

262. 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 five 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. Each Board, in fixing the purchase money and annual rental, or annual rental only (as the case may be), for any original lease of any land on which there are any improvements, shall take such improvements into account. In fixing the purchase money and the rent for a renewed lease with a right of purchase, and in re-valuations of rent under perpetual leases, the Board shall fix the rent irrespective of the value of the improvements which the lessee shall have made. The lands allotted are to be fenced within 5 years from the date of the lease. In making the allotments preference is given to applicants who will undertake to reside on the land.

Working
men's
blocks in
South
Australia.

263. Special efforts have recently been made in South Australia to extend what is known as the Working Men's Blocks System. Land has been purchased by the Government near centres of population at a cost of £10,880, and let to working men in blocks not exceeding 20 acres. Loans amounting to £5,800 (but not exceeding £50 in any one case) have been granted to the "Blockers" to assist them to build houses and out-houses, and many thousands of vines and fruit trees have been distributed gratis. Any "blocker" may have his lease endorsed "the land herein comprised is held as a homestead block," and the effect of such endorsement is that the land cannot thereafter be "seized or taken in execution for debt under process of any Court (except for the payment of rates and taxes) or vest in the trustee of his estate in case of insolvency." At the present time there are 2,682 lessees throughout the colony, holding 39,715 acres. Personal residence is necessary in all cases.

Land
system of
Western
Australia.

264. In Western Australia, the particulars given in the table 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 10s. 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 divisions selections may be made, without residence, by paying double the amount of purchase-money,

i.e., 1s. per acre per annum—the other conditions remaining the same; there is, moreover, 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 10s. per acre—the conditions being fencing within 3 years, and an expenditure of 5s. per acre on improvements within 7 years from date of survey.

265. In Tasmania, $33\frac{1}{3}$ per cent. is added to the price named in the table (£1 per acre) as interest for the period of 14 years. The purchaser is compelled to make improvements to the value of 2s. 6d. per acre per year for a term of 8 years, and the grant deed cannot issue until such improvements are made. A purchaser on credit may pay off balance at any time, provided he has made improvements to the extent of 20s. for each acre selected. In mining districts in Tasmania selection is allowed in lots ranging from 10 to 100 acres, the price being £1 per acre, with one-third in addition added for credit for a term of 14 years. Residence and improvement are compulsory, and fee-simple cannot be obtained until the expiration of 5 years. These lots are sold, reserving to the Crown the right of mining on certain conditions and payment of compensation for damage sustained after being assessed. In 1890, a Land Act was passed consolidating the twelve Acts previously in operation. There are no village settlements in Tasmania.

Land
system of
Tasmania.

266. In New Zealand the price per acre varies with the quality of the land from 5s. to about 40s. The distinguishing features of the land laws at present are, that blocks of land are declared open for selection either before or after survey on the “optional system,” which means that the selector can take up a section not exceeding 640 acres of first-class land, or 2,000 acres of second-class land, on cash payment, occupation lease with right of purchase within twenty-five years at a rent of 5 per cent., or on lease in perpetuity at a rental of 4 per cent. on the upset cash price. The freehold of lease, with right of purchase, may be obtained at any time after ten years (if not within a gold-field) so soon as the conditions of cultivation have been complied with. Nearly all Crown lands are dealt with under this system now. Residence is compulsory, except under the cash system. Pastoral runs are let by auction for periods, depending on locality, from three years to twenty-one years. Carrying capacity is usually limited to 20,000 sheep, and the rent varies from 4d. to 2s. 6d. per acre, or about 10d. per sheep per annum. Small grazing runs are open for application in areas up to 20,000 acres at about

Land
system of
New
Zealand.

2½ per cent. rent on cash prices, usually about 10s. to 20s. per acre for terms of twenty-one years, with right of renewal for other twenty-one years at valuation.

Village settlements in New Zealand.

267. Village homestead special settlements in New Zealand embrace land which may be disposed of on the "optional system," or may be sold for cash, the sizes of sections not to exceed 50 acres. Special settlements by associations of persons, not exceeding 11,000 acres in areas of 200 acres, are let on lease in perpetuity at 4 per cent. on the capital value. This system has been in operation over a period of six years; and on the 31st March, 1893, there were 85 settlements, accommodating 900 settlers with their families on 22,677 acres, and having improvements on the land valued at £61,700. If the sum lent by Government was deducted from this valuation there remains the sum of £37,074, which represents the value of improvements made by the settlers, over and above those done with the amounts advanced by the Government.

Ambiguity of the term "alienation," as applied to Crown lands.

268. In dealing with the figures relating to the alienation of the public estate, it is customary in Victoria to consider Crown lands as sold or alienated—only when the right to the title in fee-simple has been acquired. Consequently a large proportion of the land set 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 present 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 connection with land which is only conditionally purchased, but, when this occurs, such explanation will be given as will prevent a mistake.

Crown lands alienated, 1892.

269. The land finally alienated from the Crown in fee-simple during 1892 amounted to 245,230 acres, of which 245,101 acres were sold, and 129 acres were granted without purchase. The total extent

was larger by 10,628 acres than in 1891, but less by 4,338 acres than in 1890, and also much less than in any of the ten years ended with 1889, during which period the extent alienated annually usually exceeded 400,000 acres, and only once did it fall below 300,000 acres.

270. Of the area sold, 10,620 acres, or 4 per cent., were disposed of by auction, and 1,368 acres under pre-emptive rights, private 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 1892 was 3,266 acres more than in 1891, about 1,600 and 3,000 acres respectively less than in 1890 and 1889; whilst it was only about half the area in 1888, 1887, or 1886, also considerably 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 rather over 150,000 acres, Crown lands sold by auction.

271. The total extent of Crown lands sold and finally parted with in Victoria up to the end of 1892 was 16,556,085 acres, and the extent granted without purchase was 15,627 acres. The whole area alienated in fee-simple was thus 16,571,712 acres, of which 6,646,133 acres, or 40 per cent., were sold by auction, and nearly the whole of the remainder was originally acquired by selection under the system of deferred payments. Crown lands alienated to end of 1892.

272. The total area selected in the colony up to the end of the year, exclusive of the extent which had been forfeited or abandoned, and had reverted to the Crown, amounted to 15,888,445 acres. For 9,894,953 acres of this area the purchase has been completed, whilst the remainder, amounting to 5,993,492 acres,* represents the whole area still in process of alienation under the deferred payment system at the end of 1892. Crown lands selected.

273. The total area of the colony is 56,245,760 acres; and if from this be deducted the sum of the land granted, sold, and selected, amounting—less the extent forfeited—to 22,565,204 acres, it will follow that the residue, representing the Crown lands neither alienated nor in process of alienation, amounted at the end of 1892 to 33,680,556 acres. Crown lands unalienated.

274. The whole of this residue, however, is not available for settlement, for it embraces lands occupied by roads, the unsold portions of the sites of towns, and beds of rivers and lakes; the State forests; water, timber, education, and other reserves. Deducting these lands—amounting in the aggregate to 8,468,578 acres, also that portion of the colony known as the Mallee country, containing Public estate, 1892.

* The balance still remaining unpaid on this area amounts to £2,133,925, of which, however, only £652,045 was in arrear.

11,572,000 acres, leased for pastoral purposes under special provisions of the Act, and 6,150,227 acres occupied under lease or licence for various terms of years—from the extent unalienated and unselected, already stated to have been 33,680,556 acres, it will be found that the available area is narrowed to 7,489,751 acres. This will be at once seen by the following table, which shows the position of the public estate at the end of 1892:—

PUBLIC ESTATE OF VICTORIA ON 31ST DECEMBER, 1892.

Condition of Land.	Approximate Number of Acres.
Land alienated in fee-simple	16,571,712
Land in process of alienation under deferred payments ..	5,993,492
Roads in connexion with the above	1,337,000
Water reserves*	289,331
Reserves for agricultural colleges and experimental farms ...	151,146†
Timber reserves and State forests*	2,108,795
State education endowment reserves*	1,907,400
Other reserves*	218,369
Unsold land in towns, beds of rivers, etc., etc.	2,456,537
Mallee country	11,572,000‡
Land in occupation under—	
Pastoral leases	1,409,785
Grazing area leases	4,221,013
Grazing licences for auriferous lands	516,537
Swamp leases	2,892
Available for occupation at end of 1892	7,489,751§
Total area of Victoria	56,245,760

Crown lands available for settlement.

275. The area of the colony, exclusive of the Mallee country, is 44,673,760 acres, of which, at the end of 1892, 22,565,204 acres, or 50 per cent., were already alienated or in process of alienation; 8,468,578 acres, or 19 per cent., were occupied by reserves, etc.; 6,150,227 acres, or 14 per cent., were occupied under lease|| for pastoral purposes; and 7,489,751 acres, or 17 per cent., were available for immediate occupation.

Classification of available land.

276. Following the classification provided for under the existing *Land Act*, the estimated available area of Crown lands, exclusive of the Mallee country, at the end of 1892, may be divided as follows:—

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

† 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, 132,640 acres were leased for agricultural and grazing purposes, and return an annual revenue of £6,388.

‡ Occupied for pastoral purposes, under Part II. of the *Land Act* 1890, for terms not exceeding 20 years. See paragraphs 248 *ante* and 291 *post*. It has recently been thrown open to selection.

§ Of this area 5,068,371 acres are temporarily held under grazing licences, renewable annually; only 64,098 acres of it may be sold by auction.

|| Including a small proportion under license for periods of five years.

CLASSIFICATION OF LAND AVAILABLE FOR SETTLEMENT AT
END OF 1892.

	Acres.
Pastoral lands	1,931,102
Agricultural and grazing lands	4,363,312
Auriferous lands	1,046,489
Swamp lands	84,750
May be sold by auction	64,098
Total	7,489,751

277. The amount realized for Crown lands finally alienated in 1892 was £303,077, or at the rate of £1 4s. 8d.* per acre. Of this sum, only part was received during the year, nearly all the remainder having been paid in former years as rents and licence fees. The proportion sold by auction realized £59,341, or an average of £5 11s. 9d. per acre; and the proportion sold otherwise than at auction realized £243,736, or an average of £1 0s. 10d. per acre.

Amount realized on Crown land alienated in 1892.

278. The principle of deferred payments in connexion with sales of Crown lands by auction was introduced for the first time in the *Land Act* 1884,† it being necessary to pay one-fourth of the price bid at the time of sale, the remaining three-fourths being, 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. At the end of 1892 the balance outstanding was £106,205, out of a total of £821,589 purchase-money during the last eight years; the principal received being £715,384, as well as £29,328 for interest.

Deferred payments on land sold by auction.

279. From the period of the first settlement of the colony to the end of 1892, the amount realized by the sale of Crown lands was £25,254,201, or at the rate of £1 10s. 6d. 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.

Amount realized, 1836 to 1892.

280. During the year 1892, 568 applications were granted for the selection, for agricultural purposes, of 88,723 acres under the deferred

Selection of public lands, 1892.

* 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 279 *post*.

† 48 Vict. No. 812, Section 71.

payment system.* The whole of this area was selected from grazing areas in allotments limited to 320 acres. The purchase-money for these selections, payable by instalments extending over a period of 20 years, amounts to £92,522. The following is a summary of the selectors, the number of acres selected, and the amount of purchase-money payable under each authority:—

SELECTORS AND AREA SELECTED, 1892.

Selections of Crown Lands for purpose of—	Legalization— <i>Land Act 1890.</i>	Number of Selectors.	Area Selected.	Purchase money payable. (Nominal.)
			Acres.	£
Agriculture, with residence	Sec. 42	538	84,924	84,924
” without residence } dence	Sec. 49	30	3,799	7,598
Total ... ..	...	568	88,723	92,522

Number of selectors, 1870 to 1892.

281. The number of selectors approximates closely to the number of approved applications. The following are the numbers in each of the ten years ended with 1892, and in the whole period from 1870 to 1892, those applying according to the different purposes allowed by the Land Act in force at the time of application being distinguished:—

APPROVED APPLICATIONS (SELECTORS), 1870 TO 1892.

Period.	Number of Selectors of Land.				Total.
	For Purposes of Cultivation.		For Residence and Cultivation near Goldfields.	For Residence.	
	With Residence.	Without Residence.			
1870 to 1882† ...	74,754	235	12,868	209	88,066
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
1890	518	33	...	...	551
1891	539	37	...	...	576
1892	538	30	...	...	568
Total	90,475	598	15,866	401	107,340

* See paragraphs 243 and 244 *ante*.

† For particulars respecting each year, see *Victorian Year-Book*, 1892, Vol. II., paragraph 417.

‡ The great majority of the applications approved in the years 1885 and 1886 were lodged in 1884, under the provisions of the *Land Act 1869*.

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

Progress of settlement on public lands, 1870 to 1892.

CROWN LANDS ABSOLUTELY AND CONDITIONALLY ALIENATED, 1870 TO 1892.

Period.	Area Granted, Sold, and Selected.			Total.
	Granted without Purchase.	Sold by Auction.*	Conditionally Alienated.† (Selected.)	
	Acres.	Acres.	Acres.	Acres.
1870 to 1882‡	7,808	980,566	12,492,648	13,481,022
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	22,413	53,738	76,673
1889	531	15,639	71,251	87,421
1890	195	12,883	99,307	112,385
1891	338	8,665	99,231	108,234
1892	129	11,988	88,723	100,840
Total	14,462	1,173,431	15,417,772	16,605,665

283. 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-three years the average number of acres taken up by each selector has been 144.

Average size of selections.

284. Of the land which has been selected in former years, 33,479 acres during 1892, held under 205 licences or leases, were abandoned or forfeited to the Crown in consequence of non-fulfilment of conditions. In 105 cases the licences or leases were declared expired, in 25 cases at the holders' request, in 37 for non-payment of rent, in 26 cases through the land having been sold, and in 12 for non-compliance with conditions, etc. The Treasury profited by such revocations and forfeitures to the extent of £5,640.

Selected land forfeited, 1892.

* Including 2,389 acres in 1888, 1,959 acres in 1889, 682 acres in 1890, 1,311 acres in 1891, and 1,368 acres in 1892, 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 274 ante.

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

Licence
liens.

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

LICENCE LIENS, 1886 TO 1892.

Year.	Liens Registered.		
	Number.	Area on which Liens were Granted.	Amount Secured.
		Acres.	£
1886	326	79,099	38,924
1887	305	68,968	34,634
1888	405	95,294	48,098
1889	267	58,705	30,039
1890	216	46,467	25,244
1891	118	23,513	13,836
1892	75	12,998	8,548

Lease of
grazing
areas, 1892.

286. Until agricultural lands are selected they are leased as grazing areas, out of which the lessee has the right to make a selection.* The number of applications for leases of such areas in 1892 was 1,912; but the number approved during that year was only 949, the extent for which approval was granted being 347,201 acres, at an annual rental of £2,893. The applications approved were fewer by about 300, and the area granted was less by about 132,000 acres than in the preceding year.

Pastoral
occupation,
1892.

287. Under the present land system, it is intended that the purely pastoral lands of the colony, the whole of which are marked off as "pastoral allotments," should be occupied under lease for periods not exceeding fourteen years from the 29th December, 1884. But it has been 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 Acts 1884 and 1890. Moreover, agricultural lands, which are not occupied for agricultural purposes, are leased in grazing areas as already stated; auriferous lands, in blocks not exceeding 1,000 acres, may be licensed for grazing purposes for periods not exceeding seven years, and special provision is made for the occupation of the Mallee country. The following table shows

* See paragraphs 241 and 242 ante.

the area of the Crown lands under the *Land Act 1890* held under lease or licence for pastoral or grazing purposes, including Mallee pastoral leases, at the end of 1892, also the number of leases and licences, and the annual rental payable. The rental shows an increase of about £7,600 as compared with the previous year:—

PASTORAL OCCUPATION, 1892.*
(Under *Land Act 1890.*)

Description of Tenure.	Number of Licences or Leases.	Extent of Crown Lands.	Annual Rental.
		Acres.	£
Pastoral leases (sec. 21) ...	88	1,409,785	5,278
Grazing area leases (sec. 32) ...	9,196	4,221,013	35,175
Grazing licences (secs. 3 and 123)...	3,270	5,068,371	20,784
" " (auriferous lands, secs. 65 and 67)†	4,400	516,537	9,000
Mallee pastoral leases (Part II.) ...	2,442	9,310,791	12,666
Total ...	19,396	20,526,497	82,903

288. By these figures it may be ascertained that the average extent of land embraced in a pastoral lease was 16,020 acres, in a grazing area lease 459 acres, in a grazing licence (secs. 3 and 123) 1,550 acres, and in a Mallee pastoral lease 3,813 acres. The areas are exclusive of any purchased land attached thereto.

Average area of runs and grazing lands.

289. According to the table, the average rent per acre of land held under pastoral leases was about $3\frac{1}{2}$ farthings (.899d.); of land held under grazing area lease 2 pence (2.00d.); of land held under grazing licence over a penny farthing (1.28d.); and of Mallee pastoral lands under a third of a penny (.32d.). The rental of pastoral and grazing lands as a whole showed a net decrease as compared with the previous year of about £3,600, the rental from grazing area leases alone having fallen off by about £5,800, but as against this there were increases under all the other heads.

Rent of runs and grazing lands.

290. 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 £24,717 per annum. Since 1885, however, the area has been considerably reduced, which must naturally reduce the assessment referred to.

Assessment of pastoral lands.

* Including Mallee pastoral leases, which are not now dealt with under a separate Act.

† Including licences for residences or cultivation limited to 20 acres each. At the end of 1892 the number of these was 3,162, but the area was only 58,255 acres.

Mallee
pastoral
leases.

291. The Mallee country is divided into blocks and allotments.* The number of lessees and leases of these, the approximate area held under the latter, and the annual rental payable therefor, are shown in the following table:—

MALLEE PASTORAL LEASES ON 31ST DECEMBER, 1892.

Description of Leaseholds.	Number of Lessees.	Number of Leases.	Area.	Annual Rental.†
			Acres.	£
Mallee blocks	25	76	6,233,866	4,553
„ allotments	2,300	2,366	3,076,925	8,113
Total	2,325	2,442	9,310,791	12,666

Surrender
and re-
leasing of
Mallee
blocks.

292. On the 1st January, 1889, the occupied portions of most of the Mallee blocks were surrendered to the Crown.‡ The greater number of these were re-leased for the remainder of the term allowed under the Act, which expires on the 1st December, 1903, but some were subdivided into allotments and made available for selection with others which were subsequently surrendered. In all 17 blocks have thus been subdivided into 770 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.

Mallee areas
still unoc-
cupied,
1892.

293. At the end of 1892 the following areas were still available for occupation in the Mallee country:—Mallee blocks, 1,196,800 acres; Mallee allotments, 268,856 acres. Two blocks, containing 233,866 acres, also, are reserved for public purposes.

Past and
present
occupation
of Mallee
country.

294. In 1883, prior to the passing of the *Mallee Pastoral Leases Act*, the Mallee country was held under pastoral licences or grazing rights. The number of such licences or 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 £8,076. From a comparison of these figures with those in the above table, it appears that since 1883 the occupiers of the Mallee country have increased thirty-seven times, the extent occupied by nearly one-third, and the annual rental by over one-half. It should, moreover, be pointed out that the present lessees have to comply with certain

* See paragraphs 248 to 250 *ante*.

† Approximate only.

‡ See paragraph 249 *ante*.

conditions* to which the licensees under the former Act were not subject.†

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

Average rental of Mallee country.

296. The revenue from the sale and occupation of Crown lands may be divided into—(1) receipts from the alienation of lands in fee-simple, including the price realized from land sales and from rents which count towards the purchase-money; (2) receipts on account of temporary occupation, which include payment 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 decrease of about £83,000 as compared with those in the previous year, chiefly under the head of alienation. The receipts for temporary occupation fell off by nearly £9,000, but this item is largely affected by arrears, and, as a matter of fact, there was a decrease in the pastoral rents etc. receivable of only £3,600. The following are the actual receipts for the two years:—

Land revenue.

LAND REVENUE, 1891 AND 1892.

Heads of Land Revenue.	Amounts Received.		Decrease.
	1891.	1892.	
	£	£	£
Alienation in fee-simple and progressive ...	444,076	373,903	70,173
Temporary occupation ...	101,765	93,021	8,744
Penalties, fees, etc. ...	32,331	27,827	4,504
Total ...	578,172	494,751	83,421

297. The agricultural statistics of Victoria are collected by the municipal bodies, which, under the *Local Government Act* 1890 (54 Vict. No. 1,112), 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

Agricultural statistics.

* See paragraph 249 *ante*.

† Mallee lands, which have proved to be excellent for wheat growing, may now be selected. See paragraph 250 *ante*. An interesting account of the position and prospects of irrigation and water supply in the Mallee country was given in an Appendix to the last issue of this work.

penalty not exceeding £10. Collectors divulging or making extracts from the information they receive, except under the special direction or authority of the Government Statist, also render themselves liable to a penalty of £10.

Agricultural
statistics,
1892-3.

298. The agricultural statistics to which reference will now be made are those for the year ended 1st March, 1893.* Tables embodying the final results of these statistics will be found in the *Government Gazette* of the 7th August last,† and these, with additional tables, form portion of the *Statistical Register of Victoria*.

Increase of
cultivation
in 21
counties in
20 years.

299. In the 20 years ended with 1892-3 the land under cultivation in Victoria increased by about two million acres, but the increase was confined to 21 counties situated for the most part in the northern or north-western parts of the colony, a decrease having taken place in 15 of the southern counties, embracing generally the oldest and longest settled agricultural districts. The following are the counties in which cultivation increased, arranged in order according to the increase shown in each:—

INCREASE OF CULTIVATION IN 21 COUNTIES, 1873-4 TO 1892-3.

Counties.	Number of Acres in Cultivation.		
	1873-4.	1892-3.	Increase in 20 Years.
Borong	21,084	576,863	555,779
Moira	28,097	380,590	352,493
Lowan	4,338	335,485	331,147
Kara Kara	20,215	194,957	174,742
Buln Buln	7,828	135,335	127,507
Gladstone	25,562	137,870	112,308
Rodney	42,577	151,184	108,607
Karkaroc ... ..	...	88,254	88,254
Bendigo	66,299	152,026	85,727
Gunbower	2,240	87,016	84,776
Tatchera	140	67,591	67,451
Bogong	40,347	66,426	26,079
Evelyn	6,432	19,084	12,652
Benambra	2,457	7,733	5,276
Heytesbury	6,835	10,498	3,663
Tambo	73	3,272	3,199
Mornington	20,446	23,290	2,844
Croajingolong ... ..	...	2,545	2,545
Wonnangatta	2,530	4,826	2,296
Dargo	995	2,890	1,895
Weeah ... ..	...	30	30
Total	298,495	2,447,765	2,149,270

* 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 30th March.

300. The following are the counties in which cultivation decreased in the last 20 years. These are arranged according to the extent of decrease which took place in each county :—

Decrease of cultivation in 15 counties in 20 years.

DECREASE OF CULTIVATION IN 15 COUNTIES, 1873-4 TO 1892-3.

Counties.	Number of Acres in Cultivation.		
	1873-4.	1892-3.	Decrease in 20 Years.
Talbot	144,832	116,022	28,810
Bourke	92,533	72,216	20,317
Dalhousie	60,855	43,061	17,794
Ripon	61,332	47,134	14,198
Villiers	48,971	37,266	11,705
Grant	73,758	64,369	9,389
Normanby	20,285	11,347	8,938
Polwarth	21,033	14,350	6,683
Grenville	40,773	34,838	5,935
Delatite	34,076	28,415	5,661
Hampden	13,641	9,255	4,386
Anglesey	10,747	7,146	3,601
Tanjil	22,751	19,994	2,757
Dundas	15,171	12,869	2,302
Follett	5,743	4,068	1,675
Total	666,501	522,350	144,151

301. The total number of farm holdings visited in the year under notice was 35,223, of which 34,233 were in shires, and 990 in cities, towns, or boroughs. In the previous year the number of farms visited was 35,945, there being thus a decrease of 722; whilst, as compared with 1890-91, there was a decrease of 790.

Number of cultivators.

302. The extent of land returned as under cultivation amounted to 2,970,115 acres, as against 2,687,575 acres in 1891-2. The increase shown by the figures was, therefore, 282,540 acres.

Land under tillage.

303. The average area returned as in cultivation to each person in the colony was rather over 2½ acres in the year under review, as against a shade under 2½ acres five years previously, and 2¼ acres ten years previously. The exact proportions at the three periods were as follow :—

Area cultivated per head of population.

AVERAGE AREA CULTIVATED TO EACH PERSON IN THE COLONY.

	Acres.
1882-3	2.25
1887-8	2.49
1892-3	2.54

Area cultivated per head in Australasian colonies.

304. The following table shows the area per head cultivated in each Australasian colony during the nine seasons ended with that of 1891-2, the colonies being placed in order according to the average extent per head that each colony cultivates :—

CULTIVATION PER HEAD IN AUSTRALASIAN COLONIES,
1884 TO 1892.*

Colony.	Acres under Tillage per Head of Population.									
	1883-4.	1884-5.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.	1890-91.	1891-2.	Mean.
1. S. Australia† ...	9·05	8·91	...	...	...	...	9·07	8·30	7·90	8·55
2. Tasmania ...	3·19	3·35	3·23	3·39	3·36	3·48	3·43	3·56	3·39	3·35
3. New Zealand...	2·61	2·42	2·20	2·33	2·39	2·41	2·53	2·62	2·47	2·46
4. Victoria ...	2·41	2·46	2·48	2·42	2·49	2·38	2·38	2·34	2·32	2·39
5. W. Australia...	1·94	2·42	2·19	2·18	2·49	2·51	2·70	2·48	2·48	2·32
6. N. S. Wales ...	·92	·94	·91	·99	1·03	·95	1·08	1·34	1·01	1·01
7. Queensland ...	·58	·64	·66	·66	·58	·58	·65	·61	·63	·62

Results in different colonies compared.

305. It will be observed that South Australia cultivates much more, and Queensland and New South Wales 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, Victoria, in proportion to population, had more land in cultivation than New Zealand.

Land under principal crops.

306. The principal crops grown in Victoria are wheat, oats, barley, potatoes, hay, and green forage. In 1892-3 the area under wheat was larger by 9,821 acres than in 1891-2, and nearly 110,000 acres larger than in 1887-8, when the extent of wheat under cultivation was the largest previously recorded. A large decrease as compared with the previous year, however, is noticeable under oats, barley, and potatoes, the falling-off being probably in consequence of the low prices realized for the produce of such crops. The area under oats in 1892-3

* For the population and number of acres under tillage in each Australasian colony during the nineteen years ended with 1892-3, see Summary of Australasian Statistics (third folding sheet) *ante*.

† The colony of South Australia did not collect agricultural statistics in the four years ended with 1888-9; the mean is, therefore, for five years.

was considerably smaller than in any of the nine preceding years, although it was larger than in any other previous years; that under barley was less than that in the thirteen preceding years, although larger than in any other years; that under hay was considerably larger than in any of the preceding years; that under green forage was larger than in any year since 1886, but was considerably less than in many other previous years. The apparent falling-off in the last-named item is, however, doubtless mainly accounted for by the fact that in the last six 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:—

LAND UNDER PRINCIPAL CROPS, 1892 AND 1893.

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Green Forage.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1892 ...	1,132,683	190,157	45,021	57,334	369,498	184,184
1893 ...	1,342,504	177,645	37,533	40,594	512,648	249,719
Increase ...	9,821	...	...	...	143,150	65,535
Decrease ...	...	12,512	7,488	16,740	...	...

307. The wheat crop in 1892-3 showed an increase of 1,135,000 bushels as compared with the previous year, and there was also a large increase in the oats and hay crops notwithstanding the smaller area placed under the former; the potato and barley crops, however, fell off considerably. The wheat crop in 1892-3—14,814,645 bushels—was the second largest ever raised in the colony; the largest being in 1883-4, when 15,570,245 bushels were raised, or 755,600 bushels more than in the season under notice. The gross yield of oats, although larger than that in 1891-2, was exceeded in four previous years; the gross yield of barley was exceeded in every year since 1878-9 except 1882-3; the gross yield of potatoes was exceeded in nine previous years, but the gross yield of hay was much the largest ever known in Victoria. The following is a statement of the gross produce of each of the principal crops in 1891-2 and 1892-3:—

Produce of
principal
crops.

GROSS PRODUCE OF PRINCIPAL CROPS, 1892 AND 1893.

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1892 ...	13,679,268	4,455,551	844,198	200,523	514,406
1893 ...	14,814,645	4,574,816	774,207	142,623	740,049
Increase ...	1,135,377	119,265	...	...	225,643
Decrease ...	...	...	69,991	57,900	...

308. The following table shows the area under, and gross produce of, wheat in each county during the year ended 1st March, 1893, also the average produce of wheat per acre in each county during that and the preceding year:—

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

Counties.	Year 1892-3.		Average Produce per Acre.	
	Area under Wheat.	Gross Produce.	1892-3.	1891-2.
	Acres.	Bushels.	Bushels.	Bushels.
Anglesey ...	737	11,832	16·05	12·76
Benambra ...	1,512	36,611	24·22	16·68
Bendigo ...	53,327	724,783	13·59	13·08
Bogong ...	28,935	379,997	13·13	9·21
Borong ...	363,400	3,913,489	10·77	10·07
Bourke ...	1,104	27,279	24·71	22·67
Buln Buln ...	262	5,188	19·80	19·84
Croajingolong ...	48	666	13·88	16·90
Dalhousie ...	3,115	65,593	21·06	17·00
Dargo ...	100	3,325	33·25	25·52
Delatite ...	8,565	134,262	15·68	10·94
Dundas ...	3,155	46,915	14·87	15·59
Evelyn ...	21	485	23·10	19·09
Follett ...	1,768	24,771	14·01	14·31
Gladstone ...	63,973	706,917	11·05	10·96
Grant ...	1,640	33,464	20·40	20·62
Grenville ...	560	10,650	19·02	15·36
Gunbower ...	38,929	457,784	11·76	10·55
Hampden ...	358	7,018	19·60	21·99
Heytesbury ...	121	2,932	24·23	22·79
Kara Kara ...	102,681	1,080,848	10·53	10·43
Karkaroc ...	71,985	813,351	11·30	8·07
Lowan ...	257,685	2,211,477	8·58	8·21
Moirra ...	210,817	2,532,453	12·01	10·73
Mornington ...	45	828	18·40	17·07
Normanby ...	1,464	19,224	13·13	14·00
Polwarth ...	647	12,915	19·96	25·00
Ripon ...	4,728	70,915	15·00	13·95

Area under
and pro-
duce of,
wheat.

WHEAT IN EACH COUNTY.—AREA UNDER CROP, AND GROSS AND AVERAGE PRODUCE—*continued.*

Counties.	Year 1892-3.		Average Produce per Acre.	
	Area under Wheat.	Gross Produce.	1892-3.	1891-2.
	Acres.	Bushels.	Bushels.	Bushels.
Rodney	63,880	855,567	13·39	12·25
Talbot	6,002	99,747	16·62	15·84
Tambo	50	805	16·10	18·20
Tanjil	2,065	49,948	24·19	17·51
Tatchera	47,115	432,226	9·17	9·38
Villiers	1,637	39,020	23·84	22·00
Wonnangatta	73	1,360	18·63	12·00
Total	1,342,504	14,814,645	11·04	10·26

309. As regards the acreable yield of wheat, it will be noticed that in 1892-3, taking the colony as a whole, it was over three-fourths of a bushel higher than in 1891-2. In only 9 of the 36 counties was the yield per acre lower in 1892-3 than in the previous year, viz. :—Buln Buln, Croajingolong, and Tambo, in Gippsland, and Dundas, Follett, Grant, Hampden, Normanby, and Polwarth, all old agricultural districts situated in the western part of the colony. In Weeah, one of the Mallee counties, 40 acres were placed under wheat in 1891-2, from which 840 bushels were reaped, but, although the average was a good one, the experiment was not repeated in 1892-3, and therefore Weeah does not appear as a wheat producing county.

Acreable yield of wheat.

310. It will be observed that in several of the counties in which the average yield of wheat is high, a very small quantity is grown, 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 1892-3 only 21 acres were placed under wheat in Evelyn, 45 in Mornington, 48 in Croajingolong, 50 in Tambo, and 73 in Wonnangatta; in all these counties the yield per acre was much above the average of the colony.

Small gross yield of wheat in some counties.

311. Most oats in 1892-3 were cultivated in the counties of Kara Kara, Talbot, and Dalhousie; most barley in Moira; most potatoes in Villiers, Grant, and Talbot; and most hay in Borung, Talbot, and Moira. The following table gives a statement of the number of acres under these crops in each county :—

Area under other principal crops in each county.

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

Counties.	Area under Crop, 1892-3.			
	Oats.	Barley.	Potatoes.	Hay.
	Acres.	Acres.	Acres.	Acres.
Anglesey	1,078	75	284	2,346
Benambra	2,274	32	191	2,114
Bendigo	12,696	687	3	37,996
Bogong	5,120	131	414	11,221
Borong	6,729	674	19	59,469
Bourke	6,335	1,617	4,414	30,904
Buln Buln	2,907	72	3,049	6,819
Croajingolong	235	8	66	259
Dalhousie	15,251	362	3,366	12,506
Dargo	97	7	198	784
Delatite	7,370	56	686	7,053
Dundas	2,750	175	91	4,240
Evelyn	283	1	633	4,725
Follett	1,159	45	76	967
Gladstone	12,778	264	6	24,411
Grant	6,417	1,318	5,976	35,463
Grenville	3,650	1,206	1,013	12,048
Gunbower	5,159	588	5	17,666
Hampden	795	490	910	2,595
Heytesbury	990	176	927	1,873
Kara Kara	16,349	189	93	27,970
Karkaroc	578	40	16	6,743
Lowan	6,964	206	11	34,867
Moira	13,492	19,267	26	42,351
Mornington	415	30	999	6,127
Normanby	2,275	142	550	4,670
Polwarth	1,076	1,047	3,001	3,335
Ripon	5,886	81	730	15,867
Rodney	11,650	3,546	...	24,538
Talbot	15,851	266	5,471	50,114
Tambo	51	3	161	623
Tanjil	3,019	995	992	4,893
Tatchera	2,095	284	9	9,190
Villiers	3,449	3,451	6,055	5,244
Weeah ... ..	...	...	...	30
Wonnangatta	422	2	153	627
Total	177,645	37,533	40,594	512,648

Gross produce of other principal crops in each county.

312. By the next table, which shows the gross produce of oats, barley, potatoes, and hay in each county, it will be seen that in 1892-3 most oats were grown in Talbot, Dalhousie, Moira, Bendigo, Gladstone, and Kara Kara, in the order named; 38 per cent. of the barley in Moira; most potatoes in Villiers, Polwarth, Grant, Talbot, and

Bourke; and most hay in Talbot, Grant, Borung, Bourke, Bendigo, and Lowan:—

GROSS PRODUCE OF OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY, 1892-3.

Counties.	Gross Produce, 1892-3.			
	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Tons.	Tons.
Anglesey ...	35,856	2,044	854	4,464
Benambra ...	83,416	1,207	763	4,036
Bendigo ...	327,746	14,518	6	49,896
Bogong ...	133,659	2,303	1,236	15,688
Borong ...	145,809	9,622	43	64,933
Bourke ...	205,751	54,472	12,914	59,615
Buln Buln ...	95,491	1,790	13,559	13,220
Croajingolong ...	5,245	140	414	513
Dalhousie ...	445,809	11,718	7,935	24,254
Dargo ...	3,685	183	1,246	1,835
Delatite ...	213,847	1,208	1,773	11,226
Dundas ...	67,873	4,504	237	6,025
Evelyn ...	6,069	15	2,162	8,124
Follett ...	28,805	1,184	210	1,364
Gladstone ...	305,512	4,491	12	29,222
Grant ...	195,816	38,001	17,270	73,311
Grenville ...	103,235	35,787	2,917	18,555
Gunbower ...	120,754	11,026	20	16,327
Hampden ...	23,544	14,207	3,699	4,719
Heytesbury ...	27,519	5,509	2,880	3,031
Kara Kara ...	301,887	3,450	197	32,386
Karkaroc ...	6,056	448	44	7,448
Lowan ...	128,916	2,422	33	33,978
Moira ...	339,651	295,385	89	45,872
Mornington ...	11,864	434	5,009	9,555
Normanby ...	52,438	2,980	1,764	6,388
Polwarth ...	25,792	29,012	17,298	7,060
Ripon ...	140,478	1,867	1,947	27,494
Rodney ...	285,774	65,824	...	29,483
Talbot ...	475,876	7,698	13,957	99,172
Tambo ...	1,695	86	998	1,291
Tanjil ...	87,118	29,962	4,591	9,444
Tatchera ...	45,137	4,853	5	9,357
Villiers ...	86,148	115,839	26,004	9,407
Weeah ...	...	...	...	30
Wonnangatta ...	10,545	18	537	1,326
Total ...	4,574,816	774,207	142,623	740,049

313. The average produce per acre of oats, barley, potatoes, and hay in each county during the last two seasons is given in the following table:—

Average yield of other principal crops in each county.

AVERAGE PRODUCE OF OATS, BARLEY, POTATOES, AND HAY IN
EACH COUNTY, 1891-2 AND 1892-3.

Counties.	Average Produce per Acre of—							
	Oats. (Bushels.)		Barley. (Bushels.)		Potatoes. (Tons.)		Hay. (Tons.)	
	1891-2.	1892-3.	1891-2.	1892-3.	1891-2.	1892-3.	1891-2.	1892-3.
Anglesey ...	25·86	33·26	23·00	27·25	3·20	3·01	1·56	1·90
Benambra ...	26·05	36·68	27·95	37·72	3·68	3·99	1·38	1·91
Bendigo ...	23·04	25·81	18·11	21·12	2·69	2·00	1·10	1·31
Bogong ...	21·75	26·11	17·95	17·58	2·77	2·99	1·10	1·40
Borong ...	17·59	21·67	13·18	14·27	1·78	2·26	1·01	1·09
Bourke ...	25·51	32·48	24·63	33·68	3·03	2·93	1·63	1·93
Buln Buln ...	26·70	32·85	18·03	24·86	4·47	4·45	1·96	1·94
Croajingolong	28·92	22·32	28·33	17·50	4·59	6·27	1·52	1·98
Dalhousie ...	25·74	29·23	27·16	32·37	2·12	2·36	1·78	1·94
Dargo ...	46·22	37·99	37·50	26·14	5·51	6·29	1·91	2·34
Delatite ...	18·04	29·02	23·39	21·57	2·45	2·58	1·16	1·59
Dundas ...	26·22	24·68	23·74	25·74	2·86	2·60	1·54	1·42
Evelyn ...	22·89	21·45	25·00	15·00	3·78	3·42	1·61	1·72
Follett ...	22·02	24·85	22·33	26·31	2·65	2·76	1·47	1·41
Gladstone ...	21·86	23·91	12·24	17·01	1·22	2·00	1·01	1·20
Grant ...	29·06	30·52	31·48	28·83	2·73	2·89	1·93	2·07
Grenville ...	28·54	28·28	36·21	29·67	2·80	2·88	1·63	1·54
Gunbower ...	17·54	23·41	14·61	18·75	1·00	4·00	·96	·92
Hampden ...	31·08	29·62	28·44	28·99	5·28	4·06	2·08	1·82
Heytesbury...	25·49	27·80	32·45	31·30	3·81	3·11	1·87	1·62
Kara Kara ...	20·88	18·47	15·77	18·25	1·70	2·12	1·01	1·16
Karkaroc ...	9·41	10·48	6·74	11·20	2·13	2·75	1·07	1·10
Lowan ...	15·29	18·51	11·51	11·76	2·52	3·00	·85	·97
Moir ...	21·01	25·17	15·11	15·33	1·93	3·42	·98	1·08
Mornington	26·85	28·59	18·08	14·46	5·28	5·01	1·60	1·56
Normanby ...	22·84	23·05	21·49	20·99	3·10	3·21	1·51	1·37
Polwarth ...	27·57	23·97	33·85	27·70	5·49	5·76	2·15	2·12
Ripon ...	24·05	23·87	24·93	23·05	2·19	2·67	1·94	1·73
Rodney ...	20·81	24·53	16·25	18·56	1·00	...	·96	1·20
Talbot ...	28·40	30·02	18·91	28·94	2·14	2·55	1·91	1·98
Tambo ...	21·19	33·24	25·00	28·66	5·54	6·20	1·88	2·07
Tanjil ...	27·80	28·86	29·82	30·11	4·50	4·63	1·80	1·93
Tatchera ...	22·22	21·55	12·60	17·09	·80	·56	1·04	1·02
Villiers ...	28·24	24·98	35·49	33·56	4·99	4·29	2·16	1·79
Weeah ...	...	...	...	...	...	...	1·50	1·00
Wonnangatta	19·01	24·99	...	9·00	3·16	3·51	1·62	2·11
Total ...	23·43	25·75	18·75	20·63	3·50	3·51	1·39	1·44

Yield of oats,
barley,
potatoes,
and hay,
1892-3.

314. It will be noticed that in the year ended 1st March, 1893, the highest acreable yield of oats was in Dargo, Benambra, Anglesey, Tambo, Buln Buln, Bourke, Grant, and Talbot, in the order named; that the average yield of barley was highest in Benambra, Bourke, Villiers, Dalhousie, Heytesbury, and Tanjil; that potatoes yielded the largest crop per acre in Dargo, Croajingolong, Tambo, Mornington, and Polwarth, where the average was 6 tons; that the highest yields

of hay were in Dargo, Polwarth, Wonnangatta, Grant, and Tambo, in which this crop averaged over 2 tons to the acre; and in Croajingolong, Talbot, Buln Buln, Dalhousie, and Bourke, in which it averaged slightly under 2 tons to the acre.

315. Comparing the averages of 1892-3 with those of the previous season, an increase is observed in the acreable yield of oats in all but 10 counties, the principal increases being in Tambo, Delatite, Benambra, Bourke, and Anglesey; of barley in all but 12 counties, the principal being Benambra, Talbot, and Bourke; of potatoes in all but 9 counties; and of hay in all but 14 counties.

Yield of other principal crops in past two seasons.

316. In the past season, over the colony as a whole, the acreable yield was above the average for all the principal crops except potatoes, the yield of which was slightly under it; the yield per acre of wheat exceeded that in six of the nine years immediately preceding; whilst the yield of oats was higher than in any of those years, that of barley than in six, that of potatoes than in four, and that of hay than in eight of those years. The following are the averages for the last ten years:—

Yield of principal crops, 1884 to 1893.

AVERAGE PRODUCE OF PRINCIPAL CROPS, 1884 TO 1893.

Year ended March.	Average Produce per Acre of—				
	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1884	14.10	25.07	22.84	4.01	1.43
1885	9.52	23.40	17.38	4.16	1.09
1886	8.99	21.72	17.58	3.83	1.05
1887	11.49	22.91	22.36	3.41	1.09
1888	10.81	22.92	23.34	4.11	1.41
1889	7.10	14.20	13.55	3.04	.75
1890	9.75	23.87	20.18	3.33	1.48
1891	11.13	22.25	17.91	3.79	1.37
1892	10.26	23.43	18.75	3.50	1.39
1893	11.04	25.75	20.63	3.51	1.44
Mean	10.42	22.55	19.45	3.67	1.25

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

317. In the last eight years the statistics of malting barley have been distinguished from those of other descriptions of the same cereal. The following is the result of this division for the year under review:—

Malting and other barley.

MALTING AND OTHER BARLEY, 1892-3.

Description of Barley.		Area under Crop.	Gross Produce.	Average per Acre.
		Acres.	Bushels.	Bushels.
Malting	... ..	26,195	475,454	18·15
Other	... ..	11,338	298,753	26·35
Total		37,533	774,207	20·63

Yield of malting smaller than of other barley.

318. Of the total area under barley, 70 per cent. was under malting barley; and of the produce, 61 per cent. was of malting barley. In the previous year these proportions were respectively 76 per cent. and 66 per cent. It will be noticed that this description of barley is by far the less prolific of the two kinds, the average in 1892-3 being only a little over 18 bushels to the acre, as against $26\frac{1}{3}$ bushels of the other barley.

Average produce in Australasian colonies.

319. 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 five years ended with 1892:—

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN AUSTRALASIAN COLONIES, 1888 TO 1892.

Year ended March.	Victoria.	New South Wales.	Queensland.	South Australia.*	Western Australia.	Tasmania.	New Zealand.
WHEAT.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1888 ...	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
1890 ...	9·75	15·65	15·88	7·91	14·00	15·42	25·15
1891 ...	11·13	10·95	20·02	5·62	13·75	16·30	18·99
1892 ...	10·26	11·11	20·32	4·15	11·00	19·71	25·50
Mean ...	9·81	10·91	15·84	5·38	11·68	17·65	24·05
OATS.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1888 ...	22·92	20·35	24·26	...	15·05	18·20	31·24
1889 ...	14·20	13·77	5·65	...	23·42	27·97	29·89
1890 ...	23·87	24·30	19·41	12·77	20·00	28·60	32·09
1891 ...	22·25	18·20	21·82	9·32	19·49	25·04	28·73
1892 ...	23·43	21·32	23·31	6·40	14·00	30·91	34·03
Mean ...	21·33	19·59	18·89	9·50	18·39	26·14	31·20

* No agricultural statistics were collected in South Australia in 1888 or 1889; an estimate of the produce of wheat, however, was made for the latter year.

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN
AUSTRALASIAN COLONIES, 1888 TO 1892—*continued.*

Year ended March.	Victoria.	New South Wales.	Queens- land.	South Australia.*	Western Australia.	Tasmania.	New Zealand.
BARLEY.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
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
1890 ...	20·18	20·79	21·24	12·54	17·00	23·75	31·67
1891 ...	17·91	16·48	21·70	12·13	16·50	22·82	23·18
1892 ...	18·75	20·96	28·83	9·35	13·00	27·05	28·38
Mean ...	18·75	17·70	24·35	11·34	14·59	22·21	28·33
POTATOES.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
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
1890 ...	3·33	2·85	3·60	3·74	3·00	4·25	5·22
1891 ...	3·79	2·72	3·20	3·62	3·25	3·63	5·45
1892 ...	3·50	2·72	2·73	4·04	3·00	3·84	5·94
Mean ...	3·55	2·72	3·18	3·80	3·15	3·84	5·43
HAY.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1888 ...	1·41	1·35	2·02	...	·94	1·14	1·49
1889 ...	·75	·64	1·54	...	1·00	1·11	1·41
1890 ...	1·48	1·73	1·93	1·20	1·00	1·45	1·43
1891 ...	1·37	1·22	1·61	·90	1·14	1·15	1·43
1892 ...	1·39	1·28	1·92	·64	1·00	1·48	1·44
Mean ...	1·28	1·24	1·80	·91	1·02	1·27	1·44

NOTE.—All the calculations in this table were made in the office of the Government Statist, Melbourne. For average yields for each year from 1873, see last issue of this work, Vol. II., page 268, *et seq.* For the land under, and total produce of, each crop in the respective colonies during the nineteen years ended with 1892-3, see summary of Australasian Statistics (third folding sheet), *ante*; and for average yields per acre in 1892-3, see Table XVI. of Appendix C., *post.*

320. It will be observed that, according to the mean of the five Colonies with highest and lowest average yields. years ended with 1892, 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; whilst the yield of potatoes is lowest in New South Wales. Victoria stands third in regard to the average per acre of oats and hay, fourth in regard to barley and potatoes, and sixth in regard to wheat.

* No agricultural statistics were collected in South Australia in the four years ended with 1888-9.

Average
produce
1891-2 and
previous
years
compared.

321. It will further be noticed that in 1891-2—with the exception of barley and potatoes in Victoria, potatoes in New South Wales, Queensland, and Tasmania, hay in New Zealand, all the crops except potatoes in South Australia, and all the crops in Western Australia—the average produce of each of the crops named was above the mean of same crop during the five years to which reference is made.

Land under
crop in
British and
Foreign
countries.

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

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

Country.	Year.	Number of Acres under—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom ...	1892	2,299,	4,238,	2,220,	61,	1,277,
Australasia ...	1891-2	3,738,	570,	92,	...	140,
Canada—						
Ontario ...	1891	1,361,	1,841,	553,	...	160,
Quebec, Nova Scotia, and New Brunswick	1881	305,	...	...	...	235,
Manitoba ...	1891	917,	306,	90,	...	13,
Prince Edward Island, British Columbia, and the Territories	1885	67,	35,	12,	...	4,
Cape of Good Hope ...	1875	188,	115,	29,	...	9,
Austria ...	1891	2,747,	4,677,	2,815,	4,802,*	2,686,
Belgium ...	1883	811,	616,	99,	686,	492,
Denmark ...	1888	120,	1,050,	735,	693,	129,
France ...	1891	14,214,*	10,479,	3,021,	3,701,	3,687,
Germany ...	„	4,657,	10,262,	4,463,	13,535,	7,219,
Holland ...	1889	211,	284,	110,	501,	366,
Hungary ...	1891	7,440,	2,487,	2,577,	2,554,	1,066,
Italy ...	1890-91	11,120,	1,119,	820,	350,	430,
Norway ...	1890	10,	235,	122,	33,	89,
Russia in Europe ...	1887	28,882,	34,887,	12,443,	64,612,	3,713,
Sweden ...	1890	174,	1,978,	546,	964,	385,
United States ...	1891	39,917,	25,582,	...	...	...

Gross yield
of crops in
British and
Foreign
countries.

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

* Including spelt (*Triticum spelta*).

GROSS PRODUCE OF CERTAIN CROPS IN SOME BRITISH AND FOREIGN COUNTRIES (000's OMITTED).

Country.	Year.	Number of Bushels* of—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom	1892	61,176,	170,381,	77,928,	...	243,600,
Australasia ...	1891-2	35,963,	16,733,	1,875,	...	21,653,
Canada—						
Ontario ...	1891	32,584,	75,010,	16,142,	...	24,056,
Quebec, Nova Scotia, and New Brunswick	1881	3,070,	25,161,	2,064,	...	29,213,
Manitoba ...	1891	23,192,	14,763,	3,198,	...	2,292,
Prince Edward Island, British Columbia, and the Territories	1881	840,	3,852,	247,	...	6,605,
Cape of Good Hope ...	1890-91	2,727,	1,810,	923,	527	760,
Austria ...	1891	39,804,	106,066,	53,563,	67,858,†	248,306,
Belgium ...	„	15,935,	28,816,	3,370,	15,270,	93,369,
Denmark ...	„	4,492,	32,800,	22,395,	18,532,	13,804,
France ...	„	213,558,†	291,899,	69,906,	59,370,	439,511,
Germany ...	„	85,727,	290,892,	110,966,	210,826,	730,405,
Holland ...	1889	6,274,	12,964,	4,698,	10,972,	63,452,
Hungary ...	1891	134,983,	62,903,	53,085,	36,205,	84,760,
Italy ...	„	137,093,	16,756,	9,061,	4,439,	29,569,
Norway ...	1890	278,	10,322,	4,576,	959,	25,831,
Russia in Europe ...	1891	163,475,	415,477,	135,984,	483,238,	279,551,
Sweden ...	„	4,411,	57,313,	13,451,	22,035,	51,170,
United States ...	„	592,692,	715,356,	...	...	...

324. The following is an official statement of the average produce of wheat in the United Kingdom during each of the nine years ended with 1892:—

Average yield of wheat in United Kingdom.

AVERAGE PRODUCE PER ACRE OF WHEAT IN THE UNITED KINGDOM, 1884 TO 1892.‡

	Bushels per Acre.		Bushels per Acre.
1884	30	1889	30
1885	31	1890	31
1886	27	1891	31·3
1887	32	1892	26·6
1888	28		

325. The average produce in the nine years was about 29·7 bushels per acre, which is much above the yield in any of the Australasian colonies, except in New Zealand. The yield in 1892 (26·6 bushels to the acre) was, it will be observed, the lowest in the nine years.

Wheat yield in United Kingdom and colonies.

* The produce was originally given in Imperial bushels, except in the case of Germany, where it was stated in cwts., and the United States in Winchester bushels. Moreover, the potato crop of Austria, Belgium, France, and Italy was stated 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 about ·9688 of an Imperial bushel.

† Including also spelt (*Triticum spelta*).

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

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

AVERAGE PRODUCE PER ACRE OF SOME BRITISH AND FOREIGN COUNTRIES.

Country.	Bushels* per Acre of—				
	Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom ...	26·6	40·2	35·1	...	190·8
Australasia ...	9·6	29·4	20·3	...	154·7
Canada—					
Ontario ...	23·9	40·7	29·2	...	150·4
Quebec, Nova Scotia, and New Brunswick	9·9	...	...	...	124·3
Manitoba ...	25·3	48·2	35·5	...	176·3
Prince Edward Island, British Columbia, and the Territories	9·9	...	...	...	124·3
Cape of Good Hope ...	14·5	15·7	31·8	...	84·4
Austria ...	14·5	22·7	19·0	14·1	92·4
Belgium ...	19·6	46·8	34·0	22·3	181·0
Denmark ...	37·4	31·2	30·5	26·7	107·0
France ...	15·0	27·9	23·1	16·0	119·2
Germany ...	18·4	28·3	24·9	15·6	101·2
Holland ...	29·7	45·6	42·7	21·9	173·4
Hungary ...	18·1	25·3	20·6	14·2	79·5
Italy ...	12·3	15·0	11·1	12·7	68·8
Norway ...	27·8	43·9	37·5	29·1	290·2
Russia in Europe ...	5·7	11·9	10·9	7·5	75·3
Sweden ...	25·4	29·0	24·6	22·9	132·9
United States ...	14·8	28·0	...	...	...

327. It will be observed that in all the other countries named, except Russia, the acreable yield of wheat is higher than in Australasia, also that the yield per acre of oats is higher in Australasia than in the Cape of Good Hope, Austria, Hungary, France, Germany, Italy, European Russia, or the United States, about the same as in Sweden, but lower than in any other of the countries named. The yield of potatoes in Australasia is above that of the other countries named except the United Kingdom, Manitoba, Belgium, Holland, and Norway.

328. The following table contains a statement of the area under, and produce of, wheat in various countries in 1890-91, together with the deficiency or surplus of wheat in each country as indicated by the net quantity it imported or exported in that year; also the average annual produce of wheat in each country during the decade 1881-1890. The European countries are placed separately from the others, and

* See footnote (*) to table following paragraph 325 *ante*.

Average yield of crops in British and Foreign countries.

Yield of crops in Foreign countries and Australasia.

Wheat crop of the world.

the countries are arranged according to their importance as wheat importing, or inversely as wheat exporting, countries:—

WHEAT PRODUCTION OF THE WORLD (000'S OMITTED).

Countries.	Wheat, 1890-91.			Average Annual produce of Wheat, 1881-90.
	Area under Crop.	Produce.	Deficiency imported (-). Surplus exported (+).	
EUROPEAN COUNTRIES.	Acres.	Bushels.	Bushels.	Bushels.
United Kingdom ...	2,388,	77,016,	-163,200,	77,677,
France ...	17,450,	331,749,	-39,886,	309,433,
Belgium ...	682,	19,410,	-24,809,	17,930,
Italy ...	11,125,	141,455,	-23,684,	122,283,
Germany ...	4,844,	104,021,	-19,717,	92,862,
Switzerland ...	110,	2,622,	-12,887,	2,041,
Holland ...	211,	6,890,	-11,365,	5,748,
Greece ...	...	6,969,	-9,000,	6,969,
Spain ...	7,059,	73,245,	-5,598,	91,557,
Sweden and Norway ...	177,	4,029,	-4,722,	3,695,
Portugal ...	642,	8,512,	-3,543,	7,778,
Cyprus ...	170,	800,	-132,	1,240,
Malta ...	6,	166,	...	162,
Turkey ...	3,890,	38,107,	...	40,915,
Denmark ...	120,	4,978,	+332,	4,838,
Servia ...	380,	8,065,	+2,216,	6,033,
Bulgaria ...	4,450,	40,022,	+9,957,	40,022,
Austria-Hungary ...	10,195,	192,078,	+15,232,	160,529,
Roumania ...	3,812,	45,672,	+34,272,	49,640,
Russia and Poland ...	28,879,	225,662,	+101,581,	242,266,
Total, Europe ...	96,590,*	1,331,468,	-154,953,*	1,283,618,
EXTRA-EUROPEAN COUNTRIES				
Natal ...	1,	12,	-678,	10,
Japan ...	1,122,	12,568,	-95,	13,858,
Cape Colony ...	...	3,865,	...	3,865,
Tunis ...	...	4,256,	...	4,256,
Syria ...	...	12,969,	...	12,969,
Algeria ...	...	21,584,	...	21,584,
Persia ...	...	22,131,	...	22,131,
Asia Minor ...	...	37,339,	...	37,339,
Caucasus ...	...	74,269,	...	74,269,
Chile ...	...	15,175,	+1,964,	15,175,
Canada ...	1,361,	33,611,	+3,107,	39,899,
Egypt ...	1,200,	10,381,	+3,128,	10,381,
Australasia ...	3,738,	35,963,	+12,149,	35,120,
Argentine Republic ...	...	28,708,	+12,588,	28,708,
India ...	26,424,	255,435,	+26,606,	254,927,
United States ...	39,917,	611,780,	+103,960,	439,767,
Total out of Europe ...	...	1,180,046,	+162,729,	1,014,258,
Grand Total ...	...	2,511,514,	+7,776,†	2,297,876,

NOTE.—The figures, except those for Australasia, have been mainly derived from a work entitled *Production and Distribution of the principal Agricultural Products of the World*, by the Statistician to the Department of Agriculture, U.S.A.

* Information incomplete.

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

Value of
world's
wheat crop.

329. Supposing these figures to be correct, and the wheat to be worth three shillings per bushel, the total value of the world's annual wheat crop in 1890-91 would be nearly three hundred and seventy-six and three-quarter millions sterling (£376,727,100).

Principal
wheat
exporting
and
importing
countries.

330. By the third figure column of the table, it will be observed that almost the only countries which grow an insufficiency of wheat for their own consumption are those of Western and Southern Europe; the principal of which are the United Kingdom, with an importation in 1890-91 of 163 million bushels, or more than that of all the others together, France with one of 40 millions, Belgium and Italy with from 23 to 25 millions, Germany with 20 millions, followed by others of less importance. The total importation by Western and Southern Europe amounted to $318\frac{1}{2}$ million bushels, of which $163\frac{1}{2}$ million bushels were supplied by Eastern Europe—chiefly Russia, Roumania, Austria-Hungary and Bulgaria; and the balance (155 million bushels) by countries out of Europe, 104 millions, or about two-thirds, having been contributed by the United States, $26\frac{1}{2}$ millions or one-sixth by India, and from 12 to $12\frac{1}{2}$ millions each—or about half the Indian supply—by the Argentine Republic and Australasia. The following is an approximate summary of the demand for and supply of this article:—

Wheat Requirements of—		Millions of Bushels.
The United Kingdom	...	$163\frac{1}{4}$
Countries on the Continent of Europe	...	$155\frac{1}{4}$
		—
		$318\frac{1}{2}$
		—
Wheat Supplied by—		
Eastern Europe	...	$163\frac{1}{2}$
Extra-European Countries	...	155
		—
Total	...	$318\frac{1}{2}$
		—

Experimen-
tal farm,
Dookie.

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

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

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 1892 were £1,788 and the expenditure £2,246. Of the amount expended £687 was paid for live stock, £503 for labour, and £185 for salary. So far as possible, the provisions necessary for the students at the Agricultural College, and the staff thereof, were obtained from the farm.

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

During the year the rain-fall recorded was 24.29 inches, distributed over 89 days.

40 acres of Lucerne are doing well.

50	„	Ensilage	... ..	yielded 350 tons.
45	„	Hay	... ..	70 tons.
50	„	Steinwedel wheat	... ..	15 bus. per acre.
40	„	W. Essex	„ ..	14 „ „
90	„	Purple straw	„ ..	15 „ „

Numerous experiments were conducted with varieties of wheat, barley, and oats, peas, grasses, clovers, maize, sorghums, etc.

Various methods of putting a crop of wheat in by drilling and broadcasting, and the effects of harrowing them during growth, were tested.

There are 25 acres under vines, and the vintage of this year gave 176 gallons wine per acre. 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.

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

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

A seven-acre arboretum is being established that will represent 300 of the principal commercial timber trees of the world.

There is a five-acre plantation of fifteen-year-old olives of six varieties, from which 200 gallons oil have been made during 1892-3.

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

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

There are 40 students, to whom the charge per head per annum is £25 for maintenance and £1 5s. for medical attendance and medicines, or £26 5s. in all. No charge is made for instruction.

332. An Act for the establishment of Agricultural Colleges was passed towards the close of 1884. Particulars respecting this Act and its operations were given in the *Victorian Year-Book*, 1890-91.* Since then Mr. Martin has reported that of the land intended as endowment, 137,842 acres have been reserved and vested in the trustees, and 132,640 acres of the land so vested have been leased for agricultural and grazing purposes. The total of the annual rents payable amount to £6,388. The areas reserved under section 4 of

Agricultural colleges.

* Vol. II., paragraph 467.

Act No. 825, as sites for Colleges and Experimental Farms, amount to 13,393 acres. At the Dookie Agricultural College the course of instruction has been supplemented with lectures on agriculture, arboriculture and viticulture, and practical dairy, blacksmith's, and carpenter's work. At the Longerenong College the buildings have been completed, and now accommodate 40 students; 350 acres are under cultivation, of which 30 are devoted to carrying out various experiments, including those with 200 varieties of wheat. The area under vines, fruit trees, etc., has been increased to 35 acres; and a third tank has been excavated. The rainfall at Longerenong was 16.13 inches in 1892, as compared with 14.13 inches in 1891, and 18.85 inches in 1890, which, however, was an exceptionally wet season, the average being about 16 inches.

333. The following table shows, for 1881 and each subsequent year, the mean population of Victoria, quantity of wheat grown, and the quantity of wheat, flour, and biscuit exported after deducting imports; also the residue of breadstuffs left for consumption during each of those years:—

POPULATION AND BREADSTUFFS, 1881 TO 1892.

Year.	Mean Population.	Wheat grown in Victoria.	Wheat, Flour, and Biscuit.*	
			Exported after deducting Imports.	Available for Consumption.
		Bushels.	Bushels.	Bushels.
1881	868,942	9,727,369	3,892,974	5,834,395
1882	889,720	8,714,377	3,321,532	5,392,845
1883	910,130	8,751,454	2,376,530	6,374,924
1884	932,630	15,570,245	8,232,605	7,337,640
1885	956,880	10,433,146	3,745,985	6,687,161
1886	984,860	9,170,538	2,226,907	6,943,631
1887	1,016,750	12,100,036	3,897,987	8,202,049
1888	1,054,980	13,328,765	4,373,959	8,954,806
1889	1,090,350	8,647,709	1,357,334	7,290,375
1890	1,118,500	11,495,720	2,185,644	9,310,076
1891	1,146,930	12,751,295	6,526,727	6,224,568
1892	1,162,710	14,814,645	5,651,358	9,163,287

NOTE.—See also table following paragraph 328 *ante*. For particulars relating to previous years, commencing with 1840, see *Victorian Year-Book*, 1892, Vol. II., tables following paragraphs 470 and 471.

334. For the last sixteen years the colony has raised more than enough breadstuffs for the consumption of its own inhabitants. In each of those years there was a surplus of Victorian-grown wheat remaining for export, which in 1892 was larger than in any previous year except 1884, when the maximum was recorded. The

* 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 bread-
stuffs.

Breadstuffs
available
for con-
sumption.

following table shows, for each of the last twelve years, 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:—

BREADSTUFFS AVAILABLE FOR CONSUMPTION, 1881 TO 1892.

Year.	Wheat, Flour, and Biscuit.*			
	Quantity Available for Consumption.	Probable Manner of Consumption.		
		For Seed, etc.	For Food.†	
			Total.	Per Head.
	Bushels.	Bushels.	Bushels.	Bushels.
1881	5,834,395	1,853,458	3,980,937	4·58
1882	5,392,845	1,938,724	3,454,121	3·88
1883	6,374,924	2,208,784	4,166,140	4·58
1884	7,337,640	2,192,708	5,144,932	5·52
1885	6,687,161	2,040,164	4,646,997	4·86
1886	6,943,631	2,105,370	4,838,261	4·91
1887	8,202,049	2,465,886	5,736,163	5·64
1888	8,954,806	2,434,382	6,520,424	6·18
1889	7,290,375	2,357,470	4,932,905	4·52
1890	9,310,076	2,290,326	7,019,750	6·28
1891	6,224,568	2,665,366	3,559,202	3·10
1892	9,163,287	2,685,008	6,478,279	5·57

NOTE.—See note to last Table.

335. The estimated average quantity of breadstuffs available for food to each individual of the population is shown in the last column of the table. This will be found to have varied in the last ten years from $6\frac{1}{4}$ bushels in 1890 to as low as 3 bushels in 1891. In 1892 the proportion was nearly $5\frac{3}{5}$ bushels per head, which was lower than in 1887, 1888, and 1890, but higher than in any of the other years named.

Consumption of breadstuffs per head.

336. The quantity of breadstuffs available for annual food-consumption per head has averaged $5\frac{2}{5}$ bushels during the last eleven years, and about $5\frac{1}{8}$ bushels during the last five years. In the present state of the Victorian population, it may be fair to assume that about $5\frac{1}{4}$ bushels per head, irrespective of the quantity required for seed, is amply sufficient to supply the wants of any given year.

Average consumption of breadstuffs.

337. According to the Government Statistician of New South Wales,‡ the consumption of wheat per head is considerably larger in

Consumption of wheat in New South Wales.

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

† Including stocks in store or retained by the farmers.

‡ See *Statistical Register of New South Wales* for 1892, Part V. Agriculture, Settlement, and Mineral Production: Potter, Sydney, 1893.

that colony than in Victoria, the quantity consumed per head being in 1888 as much as 7·6 bushels; in 1889, only 5·5; in 1890, 7·2; in 1891, 5·5; and in 1892, 5·5 bushels; the average quantity in the five years ended with 1892 being 6·3 bushels. According to the same authority, New South Wales has never grown nearly enough wheat for her own consumption, the quantity imported in 1892, after deducting the exports, being about 3,203,704 bushels, whilst 3,963,668 bushels were grown in the colony. The latter quantity was lower than usual; in the previous five years the average quantity grown was nearly $4\frac{1}{2}$ million bushels.

Consumption of wheat in various countries.

338. In Australasia, in 1891, the estimated consumption of wheat was nearly $4\frac{1}{4}$ bushels per head, which was a little less than the average in the United States, viz., $4\frac{2}{3}$ bushels, and considerably less than in France, where it was as high as $8\frac{1}{2}$ bushels, or in Canada, or the United Kingdom, where it averaged $7\frac{1}{4}$ and 6 bushels respectively. In Denmark, the rate of consumption was only one-half, and in Russia only one-fourth, of that in Australasia; but in Russia, barley, potatoes, and especially rye, to a large extent take the place of wheat. The following are the proportions for each of the countries named, the production, net imports or exports, and seed requirements being also shown:—

WHEAT CONSUMPTION IN VARIOUS COUNTRIES,* 1881 to 1890.
(000's OMITTED.)

Countries.	Production.	Wheat and Flour.		Seed Requirements.	Available for Consumption.	
		Net Import.	Net Export.		Total.	Per Head of Population.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
France ...	309,433,	38,500,	...	25,828,	322,105,	8·5
Canada ...	39,899,	...	2,774,	3,600,	33,525,	7·3
United Kingdom†	77,677,	143,434,	...	3,796,	217,315,	6·0
United States ...	439,767,	...	126,165,	53,912,	259,690,	4·6
Australasia‡	35,963,	...	12,149,	7,476,	16,338,	4·2
Denmark ...	4,838,	...	274,	194,	4,370,	2·1
Russia ...	229,916,	...	79,754,	51,850,	98,312,	1·1

Imports and exports of breadstuffs, 1837 to 1892.

339. The quantity and declared value of the Victorian imports and exports of breadstuffs during the fifty-six years, 1837 to 1892, are set down in the following table:—

* The figures in this table, except those for Australasia, have been taken from a report issued by the U.S. Department of Agriculture. The quantities are given in Winchester bushels, which are strictly less than Imperial bushels by one thirty-second part.

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

‡ The figures for Australasia are for 1891 only.

IMPORTS AND EXPORTS OF BREADSTUFFS,* 1837 TO 1892.

Wheat, Flour, and Biscuit.	Quantity.	Value.
	Bushels.	£
Imported, 1837 to 1892	34,498,595	14,216,199
Exported, ,, ,,	61,676,258	14,547,771
Exports in excess of imports ...	27,177,663	331,572

340. It will be observed that the quantity of breadstuffs exported from the colony from the period of its first settlement to the end of 1892 exceeded that imported during the same period by over 27 million bushels; but, in consequence of the prices of wheat and flour during the earlier years, in which the imports invariably exceeded the exports, being much higher than in the later years, in which the exports exceeded the imports, the declared value of the breadstuffs sent away has only slightly exceeded that of those received.

Excess of quantity and value exported.

341. The net exports of breadstuffs from the Australasian Colonies, in 1892, amounted to only 6½ million bushels as compared with 12 million bushels in 1891, and over 13¾ million bushels in 1890, the principal wheat exporting colonies in 1892 being Victoria, South Australia, and New Zealand, in the order named. The following were the imports and exports of breadstuffs by each colony during the year:—

Breadstuffs imported into and exported from Australasian colonies, 1892.

BREADSTUFFS IMPORTED AND EXPORTED IN AUSTRALASIAN COLONIES, 1892.

Colony.	Wheat, Flour, and Biscuit.†		Excess of—	
	Imported.	Exported.	Imports over Exports.	Exports over Imports.
	Bushels.	Bushels.	Bushels.	Bushels.
Victoria	266,176	5,917,534	...	5,651,358
New South Wales	3,103,004	159,068	2,943,936	...
Queensland	1,851,372	7,718	1,843,654	...
South Australia	658,387	4,196,178	...	3,537,791
Western Australia	310,370	...	310,370	...
Total	6,189,309	10,280,498	...	4,091,189‡
Tasmania	175,931	41	175,890	...
New Zealand	915	2,670,072	...	2,669,157
Grand Total	6,366,155	12,950,611	...	6,584,456‡

* 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.

† The quantities have been reduced in all cases to their equivalent in bushels of wheat.

‡ Net figures.

342. In 1891 the net exports of breadstuffs from South Australia exceeded those from Victoria by 2,429,000 bushels, but in 1892 those from Victoria exceeded those from South Australia by 2,114,000 bushels. In both colonies the net exports of the articles named were less in the year under review than in the previous year, but the falling-off was only about 13 per cent. in the case of Victoria, whereas it was 60 per cent. in that of South Australia.

343. The following are the values of the net imports—*i.e.*, the values of imports after the values of the exports have been deducted—of certain vegetable productions during each of the six years ended with 1892. All the articles named are capable of being produced, and all, or nearly all, are to a certain extent now produced, in the colony:—

NET IMPORTS* OF CERTAIN ARTICLES OF AGRICULTURAL PRODUCE, 1887 TO 1892.

Articles.	Balance of Imports over Exports in—					
	1887.	1888.	1889.	1890.	1891.	1892.
	£	£	£	£	£	£
Oats	126,990	147,989	296,207	54,862	21,948	1,694
Barley and pearl barley	44,564	29,148	95,357	...	...	...
Malt	2,056	7,565	...	1,927	...	...
Maize	1,500	10,118	38,961	815	1,050	...
Maizena and corn flour	7,498	8,801	7,908	22,260	3,789	12,945
Beans, peas, and split peas	1,843	415	2,987	...	...	...
Arrowroot	1,105	1,872	1,455	1,587	1,414	1,444
Macaroni and vermicelli	686	2,271	2,295	1,428	1,518	1,170
Starch	3,569	6,070	9,372	1,439	5,586	3,003
Fruit—fresh, bottled, dried, currants, and raisins	226,888	212,868	234,800	295,750	262,623	310,423
Jams, jellies, and preserves	3,068	...	3,964	3,912	2,777	2,017
Nuts, almonds, walnuts	6,076	8,973	10,071	4,381	7,997	8,147
Peanuts	2,129	1,615	1,439	1,816	2,074	2,119
Ginger	2,286	3,064	1,552	1,009	852	1,642
Opium	29,955	33,493	38,886	33,998	30,871	15,293
Hops	28,579	18,557	38,856	14	496	4,316
Chicory ... ..	...	...	...	186	432	...
Pickles	7,620	7,005	7,853	10,285	2,149	3,380
Mustard	13,872	16,160	19,261	14,539	11,590	16,047
Oil, olive and salad ...	8,953	18,642	13,557	12,074	14,456	8,119
„ linseed	31,144	38,040	47,581	23,825	39,897	28,507
„ castor... ..	34,485	24,445	35,766	46,178	51,297	23,038
Linseed meal	459	602	...	...	1,848	2,342

* The total imports and total exports of these articles during 1892 will be found in the table following paragraph 6, *ante*, under Orders 14, 22, 23, 25, and 26.

Large falling-off in exports of breadstuffs in South Australia.

Net imports of agricultural products.

NET IMPORTS* OF CERTAIN ARTICLES OF AGRICULTURAL
PRODUCE, 1887 TO 1892—*continued*.

Articles.	Balance of Imports over Exports in—					
	1887.	1888.	1889.	1890.	1891.	1892.
	£	£	£	£	£	£
Tobacco, cigars, and snuff	128,618	233,221	258,191	227,451	200,715	190,068
Flax (Phormium) ...	3,595	8,752	7,314	11,233	8,495	6,129
Hemp ...	33,098	43,636	49,793	53,198	44,635	29,477
Jute ...	...	2,636	1,165	1,640	1,008	42
Broom corn and millet	4,632	4,932	7,469	4,376	7,333	4,330
Bark ...	2,955	...	...	...	...	...
Cork ...	1,403	935	758	884	593	323
Vegetables (preserved)	...	1,063	269	1,609	1,330	1,905
Canary seed ...	1,571	2,181	1,817	1,924	1,384	2,030
Grass and clover seed	13,390	10,901	16,538	16,993	12,952	11,835
Seeds, undescribed ...	15,402	8,831	10,928	6,010	9,876	9,491
Tares ...	81	267	185	372	5	77
Total ...	790,070	915,068	1,262,555	857,975	752,990	701,353

344. It will be observed that chicory and maize are absent from the list for the last year, that malt is absent from the list for the last two years, also that barley and beans and peas are absent from the list in the last three years, and bark in the last five years. Moreover, the import of fruit in 1892 was much larger than in any previous year shown, the annual importation having increased by nearly 50 per cent. since 1888. Decreased imports of agricultural products.

345. In addition to the articles named in the above table, eggs, of which it might reasonably be supposed that Victoria would produce sufficient for her own consumption, were imported in 1892 to the number of 1,191,600, and to the value of £4,047; and exported to the number of only 135,972, and the value of only £502, the difference in favour of the former being 1,055,628 in number, and £3,545 in value. The value of the imports of eggs in 1891 exceeded that of the exports by £22,302, in 1890 by £34,168, in 1889 by £39,907, in 1888 by £34,745, and in 1887 by £30,498. Net import of eggs.

346. Of every thousand acres cultivated during the past season, 452 acres were placed under wheat, 60 under oats, 13 under barley, 14 under potatoes, 172 under hay, and 289 (including 166 in fallow) under other tillage. The following table shows the proportion that the land under different crops has borne to the total area under Proportion of land under each crop.

* See footnote on previous page.

tillage in each of the last three years and for the first year of each of the two preceding quinquennia:—

PROPORTION OF LAND UNDER EACH CROP TO TOTAL UNDER CULTIVATION, 1881 TO 1893.

Year ended March.	Proportion to the Total Land under Tillage of that under—					
	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Other Tillage.*
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
1881	48·97	6·72	3·43	2·25	12·51	26·12
1886	42·41	8·98	3·08	1·77	17·51	26·25
1891	43·17	8·33	3·31	2·03	15·57	27·59
1892	49·59	7·08	1·67	2·13	13·75	25·78
1893	45·20	5·98	1·26	1·37	17·26	28·93

Minor crops.

347. In addition to the principal crops of which mention has been made, various descriptions of minor crops are also raised. It is not, however, presumed that the whole of such crops, or the full measure to which they are grown, is recorded by the collectors. It is certain that they are often raised in gardens, in which case the different kinds would not be distinguished in the returns. It is also probable that they may be sometimes grown upon allotments of one acre in extent, or even less, which are not taken account of. The following list must, therefore, be looked upon as indicating 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,† 1888 TO 1893.

Nature of Crop.	1887-8.	1888-9.	1889-90.	1890-91.	1891-2.	1892-3.
Amber cane ...	{ acres ...	12	34	3	2	...
	{ cane, tons ...	90	104	...	...	...
	{ seed, lbs. ...	280	120	750	300	...
Artichokes ...	{ acres ...	3	...	...	3	5
	{ tons ...	55	...	...	5	35
Beet, carrots, parsnips ...	{ acres ...	485	269	396	315	328
	{ tons ...	4,672	2,250	4,111	4,057	3,370
Beans (broad)...	{ acres ...	...	...	...	...	2
	{ tons ...	...	...	...	...	4
,, (French)	{ acres ...	2	2	7	...	...
	{ tons ...	3	4	4	...	...
,, (haricot)	{ acres ...	...	...	...	...	2
	{ tons ...	...	...	...	...	1
Broom-millet ...	{ acres ...	5	12	7	3	301
	{ fibre, cwt. ...	72	72	41	100	177
	{ seed, bush....	28	384	64	...	860

* Including land in fallow, the proportion in 1893 being 16·62.

† Exclusive of those grown in gardens.

MINOR CROPS,* 1888 TO 1893—continued.

Nature of Crop.		1887-8.	1888-9.	1889-90.	1890-91.	1891-2.	1892-3.
Buckwheat	{ acres	...	...	2	3	14	9
	{ bushels	...	...	40	75	490	263
Canary seed	{ acres	...	...	...	3	...	...
	{ bushels	...	...	...	60	...	...
Cauliflowers and cabbages	{ acres	164	133	27	25	69	57
	{ dozens	68,345	62,830	11,800	14,928	32,712	33,270
Chicory	{ acres	249	148	229	258	215	43
	{ tons	1,375	811	1,376	1,859	1,509	223
Drake	{ acres	...	...	...	...	...	30
	{ bushels	...	...	...	...	...	144
Durra	acres	...	...	...	...	...	3
Flax	{ acres	1	3	138	63	13	13
	{ fibre, cwt.	5	...	3,550	307	15	40
	{ linseed, bush.	7	5	507	640	267	148
Garden seeds	{ acres	83	46	...	...	...	...
	{ cwt.	196	66	...	...	...	...
Grass and clover seeds	{ acres	4,638	1,541	3,390	2,587	2,861	2,264
	{ bushels	61,177	17,444	54,547	36,415	43,985	30,430
Green peas	{ acres	152	85	11	150	183	217
	{ tons	234	117	7	167	197	289
Hops	{ acres	685	761	829	789	771	806
	{ lbs.	605,360	618,128	639,632	888,272	729,456	848,176
Kail (thousand headed)	{ acres	...	...	9	6	...	...
	{ tons	...	...	225	210	...	...
Maize	{ acres	6,031	5,789	8,447	10,357	8,230	6,667
	{ bushels	318,551	267,155	357,047	574,083	461,957	373,183
Mangel-wurzel	{ acres	1,191	897	984	892	922	1,138
	{ tons	20,590	13,974	15,604	14,676	16,160	18,727
Medicinal herbs	acres	...	...	3	5	...	...
Mulberry trees	{ acres	1	1	1	1	1	...
	{ number	1,000	1,000	1,000	1,000	1,000	...
Mustard	{ acres	16	34	28	8	2	5
	{ cwt.	80	112	105	7	12	20
Olives	cwt.	...	...	...	10	...	67
Onions	{ acres	2,437	1,768	1,957	2,238	2,661	1,973
	{ tons	11,774	4,430	10,815	13,961	14,682	11,793
Opium poppies	{ acres	11	8	10	14	26	50
	{ lbs. of opium	178	86	169	242	314	762
Osiers	{ acres	...	6	5	3	7	8
	{ tons	...	11	13	8	20	15
Peanuts	acre	...	...	...	...	...	1
Peas and beans	{ acres	26,692	31,222	22,784	25,992	31,053	32,488
	{ bushels	732,060	361,724	528,074	739,310	769,196	981,411
Pumpkins†	{ acres	107	158	252	196	257	131
	{ tons	850	959	1,251	1,273	1,621	1,234
Pyrethrum cineraria folium	{ acres	...	...	6	6	...	...
	{ cwt.	...	...	12	12	...	...
Rape for seed	{ acres	70	42	1	...	2	1
	{ bushels	940	597	14	...	8	10
Rumax	acres	...	...	8	3	...	...

* 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,* 1888 TO 1893—continued.

Nature of Crop.			1887-8.	1888-9.	1889-90.	1890-91.	1891-2.	1892-3.
Rye	...	{ acres ...	1,069	1,109	1,089	948	561	483
		{ bushels ...	14,900	10,744	16,707	17,583	7,495	8,092
Seeds (agricultural & garden)	...	{ acres ...	...	...	71	82	68	47
		{ cwt. ...	...	...	252	548	260	133
Sunflowers for seed	...	{ acres ...	8	...	...	6	6	1
		{ bushels ...	128	...	...	105	45	30
Tobacco	...	{ acres ...	1,966	1,685	955	618	545	477
		{ cwt. ...	11,853	13,355	4,123	326	2,579	658
Turnips	...	{ acres ...	303	379	424	393	403	312
		{ tons ...	4,102	4,560	4,984	4,499	5,300	3,819
Vetches and tares for seed	...	{ acres ...	1	3	11	3	3	23
		{ bushels ...	20	45	116	60	50	400
Vines	...	{ acres ...	11,195	12,886	15,662	20,686	25,295	28,052
		{ wine, galls.	1,167,874	1,209,442	1,578,590	2,008,493	1,554,130	1,694,745
Walnuts	...	{ acres ...	4	2	7	8	10	...

Increase or decrease of minor crops.

348. In 1892-3, as compared with the previous year, an increase will be observed in the area under crop, and in the produce, of beet, carrots and parsnips, hops, vines, peas and beans, and mangel-wurzel, but a falling-off of both area and produce of chicory, grass and clover seeds, maize, onions, pumpkins, tobacco, and turnips. Cauliflowers, cabbages, and rye showed a falling-off in the area under crop, but an increase in the yield. The other minor crops named in the table are not of much account at present, and the figures fluctuate from year to year.

Hops.

349. 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, and in the year under notice the area under crop and the produce thereof were both slightly higher than in the previous year, although the former was not quite so high as in 1890-91, and the latter not quite so high as in 1889-90.

Tobacco.

350. 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

* Exclusive of those grown in gardens.

article suitable for the use of man. For several years past a parasite fungus, locally called "blue mould," has caused serious damage to the tobacco crop, so much so as to cause many tobacco growers to abandon the industry. It appears that "blue mould" is unknown in the United States, where a very large area is under tobacco culture. Experiments have been made with the object of destroying the spores of the fungus, and plants grown from seed introduced from Java are said to be absolutely free from the disease. It is considered by experts that if this scourge could be removed a prosperous future would be in store for the tobacco industry.

351. In 1888, tobacco was grown in the United States over an area of 747,326 acres, and the crop is estimated to have amounted to 5 million cwt., which 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., whilst the average annual net exports during the same period were 2,143,500 cwt., valued at £3,192,300, and during the four years 1888-91 they averaged 2,021,800 cwt., valued at £6,125,600. The following figures show the average crop during a series of years in the principal countries of the world:—

Tobacco
crop in
various
countries.

TOBACCO CROP IN VARIOUS COUNTRIES, 1881 TO 1890.*

	cwt.		cwt.
United States	4,455,856	Belgium	59,044
Russia (1884)	1,500,000	Holland	56,030
Austria-Hungary	1,195,864	Ceylon...	50,996
Germany	811,452	Bulgaria	45,666
France...	390,551	Cochin-China (1885-89)	44,530
Japan	368,965	Switzerland	39,368
Sumatra (1880-89)	214,344	Servia	29,526
Java	163,916	Australasia (1889-91)	†23,640
Greece	† 151,173	Sweden	13,405
Italy	89,149	Finland	3,937
Turkey	70,000	Other countries	2,756
Roumania	60,579		

352. The annual consumption of tobacco in Victoria ranges from 2·61 lbs. to 3·55 lbs. per head of the population, the average during a series of years being nearly three (2·93) lbs.‡ This is a larger average than that obtaining in fourteen 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, and since supplemented by some figures given by M. Paul Leroy-Beaulieu.§

Consump-
tion of
tobacco in
various
countries.

* The figures, except those for Australasia, have been taken from a report published by the U.S. Department of Agriculture, Washington Government Printing Office, 1893.

† In 1888-9 the yield was 70,486 cwt.

‡ In 1887, the proportion was 2·61 lbs., in 1888, 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.

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.		lbs.
Holland ...	6·92	Victoria ...	2·93	Tasmania ...	1·85
United States ...	4·40	Austria-Hungary ...	2·73	Russia ...	1·82
New South Wales ...	3·53	Finland ...	2·73	New Zealand ...	1·75
Queensland ...	3·49	Norway ...	2·29	United Kingdom ...	1·38
Western Australia ...	3·26	Denmark ...	2·24	South Australia ...	1·32
Switzerland ...	3·24	Canada ...	2·11	Italy ...	1·28
Belgium ...	3·15	France ...	2·05	Spain ...	1·10
Germany ...	3·00	Sweden ...	1·87		

Beet sugar
in European
countries.

353. Beet for the manufacture of sugar has been as yet only 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 countries, prevent sugar-making from being carried on at a profit. The following statement, however, of the quantity of beet sugar made annually during the five years 1886 to 1890 in the different European countries in which that product is manufactured may be useful and interesting at the present time :—

BEET-ROOT SUGAR PRODUCED IN VARIOUS EUROPEAN COUNTRIES, 1886 TO 1890.*

Countries.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.
	Tons.	Tons.	Tons.	Tons.	Tons.
Germany... ..	812,011	934,987	943,998	974,949	1,240,088
France	294,668	492,098	386,616	459,390	762,752
Austria-Hungary ...	371,042	516,703	421,842	514,973	738,147
Russia and Poland...	532,057	467,493	434,367	518,068	467,493
Belgium	47,635	78,736	138,518	143,500	196,839
Holland and other countries	36,907	49,210	117,375	130,937	137,788
Total	2,094,320	2,539,227	2,442,716	2,741,817	3,543,107

Beet sugar
in the
United
States.

354. The manufacture of beet sugar is now carried on in the United States, where, on the authority of the *Statistical Journal of Paris*, the production during the five years ended with 1884 averaged 337,000 tons per annum. According to Mr. McCarty,† two of the largest manufactories are at Philadelphia, and Watsonville (California), and the manufacturers state that within the next five years the United States will export 1,000,000 tons of this sugar annually.

* Taken from a table published in the Report (No. 73) of the Department of Agriculture of the United States, dated May, 1890, page 209. The figures are there given in metric tons of 2,204·6 lbs. These have been turned into Imperial tons of 2,240 lbs.

† The *Annual Statistician*, 1890, page 599. San Francisco and New York.

355. The following statement of the annual production of cane Cane sugar. sugar in most of the countries in which this description of sugar is grown has been derived from various sources:—

CANE SUGAR PRODUCED ANNUALLY IN VARIOUS COUNTRIES.

	Tons.		Tons.
Argentine Republic ...	60,000	Réunion ...	32,200
Australia ...	70,000	Sandwich Islands ...	60,000
Brazil ...	202,000	United States ...	110,400
China ...	100,000	West Indies (British) Barbadoes	58,600
Egypt ...	32,600	" " Jamaica	27,000
Guiana (British) ...	110,800	" " Trinidad	65,400
" (French and Dutch)	8,300	" " Other Islands	60,000
India (British) ...	220,000	" (French) Guadaloupe	49,600
Java ...	316,000	" " Martinique	45,000
Manilla ...	180,600	" (Spanish) Cuba ...	598,000
Mexico ...	30,000	" " Porto Rico	77,800
Mauritius ...	120,200		
Natal ...	12,000	Total ...	2,676,500
Peru ...	30,000		

356. According to the following figures, Victoria, although not Consump- consuming so much sugar per head as three of the other Australasian tion of sugar in Victoria and other countries. colonies, would appear to consume much more than any European country, the average quantity being $90\frac{3}{4}$ lbs., or nearly 22 lbs. more than the United Kingdom, which consumes more than twice as much per head as any country on the European Continent. It must, however, be remembered that in Victoria 15 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	Portugal ...	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		

* For countries out of Australasia, 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 issue of this work for 1887-8, Volume II., paragraph 1,145.

Vines.

357. In 1892-3 the area under vines (28,052 acres) exceeded that returned in 1891-2 by 2,700 acres, was nearly a third more than in 1890-91, and was also much larger than in any other previous year. Of the total area in 1892-3, however, only 16,155 acres were bearing, and 11,897 were not bearing. The number of vine growers returned was 2,541. The grapes gathered amounted to 344,002 cwt.; whilst the quantity of raisins made (chiefly at Mildura) was 1,805 cwt., and of currants 134 cwt. The quantity of wine returned was 1,695,000 gallons, or more than that in 1891-2 by 140,000 gallons, and also more than that in any other previous year excepting 1890-91, when over 2 million gallons were produced. The wine industry received 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. Frequent searches have been made in the infected ground, but no trace of the insects has been found since 1891, and there is every reasonable ground for the belief that phylloxera has been stamped out.* Planting is now permitted in this district, but only on lands not previously used as vineyards. An account of the visitation of the phylloxera in Victoria, and of the measures taken for its suppression, will be found in the *Victorian Year-Book*, 1888-9.†

State
assistance
to wine
industry

358. The following regulations for the distribution of the sum of £5,000, voted by Parliament for assisting in the development of the wine industry, have recently been passed by the Executive Council:—

REGULATIONS FOR DISTRIBUTION OF VOTE FOR DEVELOPING THE
WINE INDUSTRY.

“A sum not exceeding £5,000 will be set apart for developing the wine industry. Out of the sum so set apart advances may be made to any company registered under the *Companies Act* 1890 having a paid-up capital of not less than £2,000, and having as its directors a majority who are *bona fide* wine growers, for the purpose of assisting such company in building wine cellars, fermenting houses, and appurtenances, and purchasing and erecting vats, casks, stills, machinery, and appliances for the manufacture of wine and spirits from the juice of the grape.

“The sum or sums to be advanced to any one company under these regulations shall not exceed in the whole the sum of £1,000, nor shall any such advance exceed 10s. for each £1 exclusive of any advance under these regulations paid away by the company in respect of services sanctioned by the Minister.

“Any sum advanced to any such company under these regulations shall be by way of loan only in the first instance, but the same shall be subject to become the absolute property of the company at the expiration of three years from the 30th day

* Since this was written the phylloxera has been discovered in several vineyards in the Bendigo district. Stringent measures for its suppression are now (February, 1894) being taken.

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

of June, 1894, if at the completion of that period the Minister shall be satisfied that the company during such period was and still is *bona fide* engaged in the object for which it was established.

“No advance shall be made to any company in respect of any buildings erected or to be erected elsewhere than on the land, the fee simple whereof, free from encumbrances, is vested in such company.

“Any company desirous of obtaining an advance under these regulations shall forward to the Secretary for Agriculture an application setting out the amount desired and the purposes in respect of which the same is required, and if any part of such advance is required for the purpose of erecting buildings such company shall give particulars of the land, and furnish to the Secretary for Agriculture copies of the plans of the buildings.

“In the case of all applications for an advance under these regulations, the company making the same shall forward to the Secretary for Agriculture copies of the company’s prospectus, if any, and articles of association, and a list of its directors and shareholders, with their profession, trade, or calling, and addresses, together with such other particulars as the Minister may from time to time require.

“The Minister may, if he thinks fit, approve of any such applications, either in whole or in part, or subject to any modification, or may refuse the same; but no such approval shall operate to confer any right or claim on the company to be paid any part of the amount until the company has executed a first mortgage or bill of sale, as the case may require, over its property, or over so much thereof as the Minister may deem sufficient to secure the repayment of any money to be advanced, should the company not become entitled to the same absolutely, and then only if so far as and when the following conditions have been complied with:—

- (a) There has been produced to the Secretary for Agriculture the vouchers, verified if required by statutory declaration, evidencing that the company has actually expended of its own money on services approved by the Minister, £1 for each 10s. claimed to be advanced; and
- (b) That every such claim is made on or before the 30th day of June, 1894 and is in respect of expenditure incurred by the company on or before that date.”

359. According to the United States census of 1890, the extent of land in that country under vines (about a third of which were non-bearing) was 400,000 acres, of which about half was in the State of California. The quantity of wine made was 24,000,000 gallons, nearly two-thirds of which was in California. The value of the land devoted to vines, and of the plant for wine manufacture, was about 32 millions sterling, of which 18 millions was in California.

Vines and wine making in United States.

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

Wine production in various countries.

* 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.

ANNUAL PRODUCTION OF WINE IN VARIOUS COUNTRIES.

Country.	Year.	Area under Vines.	Wine Produced. (000's omitted.)
		Acres.	Gallons.
Algeria	1888	217,716	72,073,
Australasia*	1889-90	48,099	3,604,
Austria-Hungary	1888	1,562,127	277,379,
Azores, Canaries, Madeira ... ..	...	...	3,300,
Cape of Good Hope	1888	...	4,491,
Chile and La Plata ... ..	...	...	44,000,
France	1889	4,801,680	809,512,
Germany	1886	180,310	99,000,
Greece	1888	185,250	38,720,
Holland	1885	...	81,994,
Italy	1882-88	4,759,275	607,838,
Portugal	1887	503,880	94,160,
Roumania	1886	253,629	33,000,
Russia ... ..	...	...	66,000,
Servia ... ..	...	...	44,000,
Spain ... ..	...	4,310,404	350,000,
Switzerland ... ..	...	110,656	24,200,
Tunis	1888	8,151	308,
Turkey and Cyprus ... ..	...	222,300	57,200,
United States	1887	98,800†	33,000,†
Total ... ..	...	...	2,743,779,

Wine
consumed
in various
countries.

361. The wine made in Victoria, added to that imported after deducting that exported, amounts in 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	·20
New South Wales	·83	Canada	·14

Exports of
tea from
various
countries.

362. No attempt has yet been made to grow tea in Victoria for commercial purposes, although the tea plant flourishes in gardens

* For area and produce in 1892-3, see "Australasian Statistics" in Appendix *post*, Tables XV and XVI.

† These figures differ materially from those given in paragraph 359 *ante*, which are those derived from the returns of the U.S. census of 1890.

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 statement, taken from *Mulhall's Dictionary of Statistics*,* shows the average annual exportation of tea from various countries during the two years 1887 and 1888:—

TEA EXPORTED ANNUALLY FROM VARIOUS COUNTRIES.

					Millions of lbs.
China	...	...	...	...	290†
India	...	...	...	...	90
Japan	...	...	...	...	40
Ceylon	...	...	...	...	19
Paraguay	...	...	...	...	10
Java	...	...	...	...	7
Total					456

363. The following figures, showing the annual consumption of tea in various countries, have been gathered from the best authorities:—

Consumption of tea 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.
Western Australia	... 10·70	Russia	... ·61
Victoria	... 10·01	Denmark	... ·37
Queensland	... 8·96	Persia	... ·13
Australia	... 8·68	Portugal	... ·12
New South Wales	... 7·55	Switzerland	... ·10
South Australia	... 7·24	Norway	... ·09
New Zealand	... 7·23	Germany	... ·07
Tasmania	... 5·35	Belgium	... ·03
United Kingdom	... 4·70	Sweden	... ·03
Canada	... 3·69	France	... ·03
United States	... 1·40	Austria-Hungary	... ·02
Holland	... 1·16	Spain	... ·01

364. From these figures it appears that the average consumption of tea is much larger in British than in Foreign Countries, and that the Australasian colonies stand at the head of the list with an annual consumption varying from $5\frac{1}{2}$ to $10\frac{3}{4}$ 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 1 lb. per head.

Consumption of tea in Australasia and elsewhere.

365. The following is the extent of land returned as under gardens and orchards in the last two years. Market gardens are included as

Gardens and orchards.

* Page 566—Routledge & Sons Limited, London, 1891.

† In 1889 the exports of tea from China were 2,049,083 piculs, amounting, on the assumption that a picul is equal to 133½ lbs., to 273,211,067 lbs.

well as gardens attached to farms, but not gardens or orchards kept merely for pleasure or private use :—

LAND UNDER GARDENS AND ORCHARDS, 1892 AND 1893.

					Acres.
1891-2	...	...	...	...	38,238
1892-3	...	...	...	...	39,926
Increase					<u>1,688</u>

366. An attempt was for the first time made in the year under notice to obtain a statement of the quantity of fruit grown throughout the colony. It is known that the returns understate the truth, inasmuch as many growers, not expecting that the inquiry would be made, kept no account—and were unable to make any estimate—of the quantity of fruit they gathered. The following totals have been made up from the figures furnished to the collectors of statistics :—

FRUIT GATHERED, 1892-3.

			Cases.				Cwt.
Apples	...	...	406,542	Raspberries	...	...	16,132
Pears	...	...	66,959	Strawberries	...	...	7,194
Quinces	...	...	46,386	Gooseberries	...	...	10,841
Medlars	...	...	13	Mulberries	...	...	50
Plums	...	...	169,609	Blackberries	...	...	2
Cherries	...	...	90,944	Currants (black, red, white)	...	...	1,093
Peaches	...	...	38,473	Melons	...	...	1,017
Apricots	...	...	27,474	Rhubarb	...	...	4,060
Nectarines	...	...	116	Tomatoes	...	...	6,236
Oranges	...	...	2,516				lbs.
Lemons	...	...	1,889	Almonds	...	...	14,289
Loquats	...	...	421	Walnuts	...	...	11,553
Figs	...	...	893	Filberts	...	...	200
Persimmons	...	...	5	Chestnuts	...	...	100
				Olives	...	...	7,504

367. An attempt was also made to obtain a return of the honey and beeswax produced. The following are the figures, which are known to be imperfect, as bees are extensively kept on small holdings and farms devoted exclusively to grazing, which the collectors are not called upon to visit :—

			Lbs.
Honey produced	...	...	958,403
Beeswax „	...	...	28,784

368. Ensilage was returned as having been made on 363 farms, situated in 95 shires, in 1892-3, the principal crops used being maize, oats, and grass, but returns were obtained besides of ensilage made from rye, peas, beans, lucerne, carrots, cabbage, thistles, weeds, and “orchard rubbish.” The total quantity made was set down as 34,681 cubic yards, as against 27,199 cubic yards in the previous year. The

Fruit gathered.

Produce of bee-hives.

Ensilage.

largest returns of ensilage were obtained from the following shires:— Lilydale, where 4,038 cubic yards were made on 6 farms; Ballan, 1,815 cubic yards on 7; Avon, 1,786 cubic yards on 8; Benalla, 1,613 cubic yards on 30; Alexandra, 1,566 cubic yards on 10; Boroondara, 1,176 cubic yards on 13; Warrnambool, 1,094 cubic yards on 5; Gordon, 1,072 cubic yards on 13; Mansfield, 859 cubic yards on 13; Warragul, 835 cubic yards on 8; Glenelg, 817 cubic yards on 4; Swan Hill, 806 cubic yards on 9 farms. The number and capacity of the silos were not given.

369. Land in fallow is included in the area under tillage. The number of acres in this condition in 1893 was 493,744, or 98,555 more than in the previous year. Land in fallow.

370. The Victorian water-works are of two classes, viz., those intended chiefly for irrigation purposes, and those designed chiefly for domestic supply. A full account of the *Water Act* 1890 (54 Vict. No. 1,156), which provides for the conservation, management and distribution of water in the colony, will be found in a former issue of this work.* Waterworks of Victoria.

371. The more important irrigation works, or those connected with the principal rivers which will form the main supply in some cases for several local schemes, are undertaken by, and are under the entire control of, the State. These are known by the name of National Works. The total expenditure from loans to the 30th June, 1893, on three of the principal works—the Goulburn National, Loddon, and Kow Swamp Works,† was about £773,607. These works have been completed since the last issue of this work.† National Irrigation Works.

372. On the 30th June, 1893, there were 30 Irrigation and Water Supply Trusts—many of which draw their main supply of water from the National Works—with jurisdiction over 2,743,449 acres of land, having an irrigable area of 1,843,304 acres, of which 353,662 acres are capable of being irrigated annually from the works constructed or in course of construction. The present value of the irrigable lands, on a low basis of calculation, is set down as £6,888,076, and the annual rateable value of the same as £295,932. Of the 30 schemes 4 have been completed, 23 are in progress, and 3 had not been commenced. The aggregate borrowing power of the Trusts is limited Irrigation and Water Supply Trusts.

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

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

to £1,511,517, of which the Government have agreed to advance £1,363,731, the balance to be obtained in the open market; whilst the amount actually advanced to the 30th June, 1893, was £872,547.* There are, at present, two storage reservoirs under the control of Trusts, viz., the Wartook Reservoir, near Horsham, with a capacity of 1,035 million cubic feet, and Murphy's Lake, near Kerang, with one of 51 million cubic feet.

Chaffey
Irrigation
colony.

373. The Mildura Irrigation Colony, established by the Messrs. Chaffey under the *Waterworks Construction Encouragement Act 1886* (50 Vict. No. 910), which is the most important private irrigation work in Victoria, has been several times referred to in previous issues of the *Victorian Year-Book*. An interesting account of the progress and prospects of this settlement, taken from a Special Report on Irrigation by the Chief Engineer of Water Supply, was published in an Appendix to the last issue of this work.†

Waterworks
and Water
Works
Trusts.

374. There were 55 Waterworks Trusts in existence on the 30th June, 1893, consisting of 12 rural and 43 urban trusts, 6 of the former also providing urban supplies to 10 towns; several of them are almost identical with the municipal councils. The rural schemes have numerous weirs, dams, and tanks, supplying an area of 4,034,200 acres, of an annual rateable value of £590,000; whilst the estimated cost of the works was £456,982. The urban works completed have a storage capacity of over 408 million gallons, and were estimated to cost £406,888; they supply a population of 53,068, who possess property of the annual rateable value of £310,000. The amount of loans authorized to be advanced to these bodies was £792,046, of which £754,974‡ had been advanced up to the 30th June, 1893. The interest due, but remaining unpaid at that date, was £41,549.§ Of the total amount, £21,698 was due on account of only two trusts.

Waterworks
under Go-
vernment.

375. Prior to the constitution of the Waterworks Trusts, extensive works for the storage and supply of water for domestic, mining, and, to a limited extent, for irrigation purposes, had been constructed by the Government and by Local Bodies in various parts of the colony. The principal of these, however—the Yan Yean Waterworks—has been transferred to the Melbourne and Metropolitan Board of Works. The following table contains a list of such of the works continued under Government control in 1892-3; also a statement of the estimated storage capacity, and the total cost of each scheme:—

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

† See *Victorian Year-Book*, 1892, Vol. II., page 500. For population, rateable property, etc., of Mildura Shire, see Vol. I., p. 76.

‡ Including liabilities transferred, £51,377.

§ Of this sum £7,769 has since been paid.

WATERWORKS UNDER GOVERNMENT CONTROL.

Town or District.	Reservoir or Source of Supply.		Cost.
	Where Situated.	Storage Capacity in Gallons.	
COLIBAN SCHEME.			£
Taradale ...	Malmsbury ...	3,255,000,000	1,069,254
	Taradale ...	65,000	
Castlemaine and Chewton	Expedition Pass ...	120,000,000	
	Red Hill ...	1,250,000	
	Old Post-Office Hill ...	2,000,000	
	Barker's Creek ...	629,135,000	
Fryerstown ...	Specimen Gully ...	2,618,000	
Maldon ...	Crocodile Gully ...	5,407,000	
Bendigo ...	Green Gully ...	1,500,000	
	Big Hill ...	68,000,000	
	Big Hill Tank ...	300,000	
	Crusoe Valley ...	320,000,000	
	New Chum Tank ...	23,000	
Bendigo District	Solomon's Gully ...	1,250,000	
	Spring Gully ...	150,000,000	
	Upper Grassy Flat ...	58,860,000	
Eaglehawk ...	Lower Grassy Flat ...	26,800,000	
Raywood ...	Sparrow Hawk ...	1,500,000	
Sebastian ...	Lightning Hill ...	7,000,000	
	Raywood ...	2,500,000	
Lockwood and Marong ...	Sebastian ...	239,200	
	Green Gully ...	3,500,000	
GEE LONG AND SUBURBS	Upper Stony Creek ...	354,000,000	357,337
	Lower Stony Creek ...	143,000,000	
	Anakie (pipe head) ...	900,000	
	Lovely Banks ...	6,000,000	
	Newtown Tank ...	500,000	
Total ...		5,161,347,200	1,426,591

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

Melbourne Water-works.

* For particulars of the constitution of the Board, see *Victorian Year-Book*, 1892, Vol. I., paragraph 49.

the Maroondah River, the Graceburn and Donnelly's Creek to Melbourne, but without at present any provision for storing the surplus winter waters thereof, except the small service reservoirs in the suburbs at Preston, Essendon, Caulfield, Kew, and Surrey Hills. By means of these systems Melbourne is provided with an ample supply of pure water at a high pressure. The Yan Yean is an artificial lake situated 22 miles from the city, 602 feet above sea level. It covers an area of 1,360 acres, or rather more than two square miles, and has a drainage area of 56,000 acres. The total length of aqueduct and mains is 244 miles, and of reticulation pipes (under 12 inch diameter) 1,059 miles. The following are the storage capacities of the various reservoirs on the 30th June, 1893:—

STORAGE CAPACITY OF MELBOURNE WATERWORKS, 1892-3.

			Supply in Gallons.
Main reservoir ...	Yan Yean ...	...	6,400,000,000
Subsidiary reservoir	Jack's Creek ...	...	60,000,000
„	Morang (pipe head) ...	...	3,000,000
„	Preston (storage) ...	...	15,000,000
„	Essendon (storage 1) ...	...	6,000,000
„	„ („ 2) ...	...	1,000,000
„	Caulfield ( „ ) ...	...	10,000,000
„	Kew ...	...	3,000,000
„	Surrey Hills (storage) ...	...	9,000,000
Total ...			6,507,000,000

Revenue
and expen-
diture of
Melbourne
Water-
works.

377. The total expenditure to the 30th June, 1893, on the construction of the Melbourne Waterworks was £3,585,590. The gross revenue received since the opening of the works at the end of 1857* has amounted to £3,536,419, whilst the expenses of maintenance and management amounted to only £496,210. During 1892-3 the revenue received† amounted to £189,018 as against £201,183 in the previous year; and the expenditure on maintenance and management (exclusive of repayments) to £38,302, as against £37,730 in the previous year. The net revenue in 1892-3 was thus £150,716, being equivalent to 4·20 per cent. of the mean capital cost,‡ as compared with £163,453, or 4·77 per cent., in 1891-2. A reference to a previous table§ will show that the loans raised (£2,349,939) for the construction of the works now bear an average nominal rate of only 3·93 per cent. On the 30th June, 1893, the accumulated net profit remaining after payment of all interest and expenses was £73,162.

* Although the works were commenced in 1853, they were not opened until the 31st December, 1857.

† The annual revenue receivable is about £197,000, or about £8,000 more than the actual receipts as given above.

‡ Or the mean of the capital cost at the beginning and end of the year.

§ See table following paragraph 318 in Vol. I.

378. The Coliban Scheme provides water for domestic and mining purposes, as well as for irrigation to a limited extent, to the Bendigo and Castlemaine districts. The chief reservoir of this scheme, which is near Malmsbury, has a capacity of 3,255 million gallons. The cost of the works to the 30th June, 1893, was £1,069,254; whilst the gross revenue during the year 1892-3 was £22,358; and the expense of maintenance and supervision, £10,345. The net revenue was thus £12,013, being equivalent to 1·123 per cent. of the capital cost, as compared with £12,611, or 1·179 per cent., in 1891-2; and £10,748, or 1·005 per cent., in 1890-91. The deficiency in 1892-3, after allowing interest on the capital cost at the rate of 4½ per cent., was £36,104. Coliban scheme.

379. The Geelong Waterworks provide water for domestic supply to Geelong and suburbs. The chief storage works in this scheme are the Upper and Lower Stony Creek reservoirs, having a capacity of 497 million gallons, and the whole scheme has cost up to the 30th June, 1893, £357,337. The gross revenue for 1892-3 was £10,946, and the cost of maintenance £3,011. The net revenue was thus £7,935, or 2·221 per cent. of the capital cost, as against £6,824, or 1·910 per cent., in 1891-2, and £6,843, or 1·915 per cent., in 1890-91. After allowing interest on capital at 4½ per cent., the deficiency for 1892-3 was £8,145. Geelong Waterworks.

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

381. Prior to the establishment of Waterworks Trusts, advances were made from the Government loan account to various municipalities to enable them to construct waterworks for their respective districts—the principal to be gradually repaid into a sinking fund. The number of such municipalities was 22, which possessed 21 reservoirs, having a total capacity of nearly 1,578 million gallons, as well as other sources of supply. The expenditure from loans on these works was £677,753, of which £605,296 remained unpaid on the 30th June, 1893. The works supply a population of about 77,600; the chief of these reservoirs are those at Ballarat, now under the Ballarat Water Commission, having an aggregate capacity of nearly 842 million gallons. The Gong Gong reservoir alone contains 427 million gallons; Waterworks under Local Bodies.

the Beechworth reservoir at Lake Kerferd, 191 million gallons; the Clunes reservoir at Newlyn, 207 million gallons; and the Talbot reservoir at Evansford, 200 million gallons.

Capacity
and cost of
reservoirs.

382. By the following summary of the total storage capacity of reservoirs and the total cost of these and other works for the conservation of water referred to in the foregoing tables and paragraphs, it is shown that the former amounts to over fourteen thousand million gallons, and the latter to nearly six and a half millions sterling:—

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

Waterworks under—	Storage Capacity of Reservoirs.	Cost of Schemes.	Expenditure from Loans to 30th June, 1893.
	Gallons.	£	£
Government—			
Coliban	4,656,947,200	1,069,255	1,069,255
Geelong	504,400,000	357,832	357,832
Goldfields	492,000,000	59,653	Nil.
Metropolitan Board of Works	6,507,000,000	3,585,590	3,218,669*
Local Bodies	1,578,000,000	688,081	677,753
Waterworks Trusts—			
Urban Works†	297,000,000	} 792,046†	754,974
Rural „	‡		
Total	14,026,347,200	6,459,083	4,498,508

Rainfall in
Victoria,
1892.

383. According to information furnished by the Department of Water Supply, the average rainfall over the whole surface of Victoria during the year 1892 was 25·99 inches, representing a volume of water of about 36 cubic miles, that for 1891 and 1890 being about 36 and 40 cubic miles respectively. The lowest and highest monthly averages for the year were:—February, ·32 inch; October, 2·86 inches.

Water con-
sumption
in Mel-
bourne,
1891-2.

384. The following is the average daily consumption of water for all purposes for each month of the last two years in the water district of Melbourne and suburbs. According to the experience of the two years, the consumption rises steadily and rapidly from a minimum in June to a maximum in January or February (September being the only exception), and then falls again in like manner. In 1892 the mean daily consumption per head for the whole

* Nearly half this has been advanced by the Government from its own resources.

† Inclusive of works in progress. See also paragraph 374 *ante*.

‡ Rural works consist mainly of weirs, dams, and tanks.

year was 49·02 gallons, varying from 37·37 gallons in June to 64·3 gallons in January :—

DAILY AVERAGE CONSUMPTION OF WATER IN MELBOURNE AND SUBURBS, 1891 AND 1892.

Month.	1891.	1892.
	Gallons.	Gallons.
January	31,291,732	30,973,228
February	33,244,491	30,073,148
March	29,926,454	26,255,232
April	25,908,553	21,486,663
May	21,283,089	20,323,734
June	20,223,868	18,099,934
July	23,110,600	18,957,184
August	23,141,164	19,961,269
September	22,860,373	19,492,298
October	24,528,040	22,360,872
November	25,177,922	25,294,888
December	28,717,809	28,450,395
Mean for year ...	25,784,508	23,477,404

NOTE.—The maximum consumption for one day in 1892 was 40,000,000 gallons, and the minimum 13,000,000 gallons.

385. The average daily consumption of water per head throughout the year in the districts reached by the water supply of Melbourne and suburbs is 49 gallons, or more than the average daily consumption in nine, and less than in ten, of the following towns :—

Water consumption in towns.

WATER CONSUMPTION IN VARIOUS TOWNS.

	Average daily consumption of water, per head (gallons).		Average daily consumption of water, per head (gallons).
Rome	160	Melbourne	49
Marseille	158	Auckland	44
Washington	143	Paris	36
Chicago	102	London	31
Ottawa	102	Sydney	25
Wellington	80*	Dresden	15
Boston	73	Naples	15
Dunedin	64†	Berlin	13
New York	61	Madrid	3
Hobart	60	Calcutta	2‡

386. In the original scheme for the disposal of the sewage of the metropolis, drawn up by Mr. Mansergh, it was recommended that the sewage should be conveyed to two pumping stations,

Mansergh's sewerage scheme for Melbourne.

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

† In 1884 it was as high as 91 gals., the reduction being due to the use of the "waterphone."

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

wherefrom it was to be forced to high levels and to be allowed to flow by gravitation to two sewage farms situated on the opposite coasts of Port Phillip Bay. The capital cost of the scheme was calculated to be £5,030,800 within the first eight years, and the ultimate cost to be £5,816,500; it was expected that it would take five years to execute the main works, and at least eight years to completely sewer the whole district. For the eighth year the gross annual charge, including an allowance of £214,481 for repayment of principal and interest at the rate of $3\frac{1}{2}$ per cent. in 50 years (viz., £176,078 towards interest, and £38,403 in reduction of principal), was set down at £249,303, towards which at least £81,140 (equivalent to the net profit in 1888-9*) would, it was expected, be defrayed from the water revenue, leaving a net charge of £168,163 to be provided for from the proceeds of a rate of 5·29d. in the £1 levied on all rateable property, which it was assumed would steadily increase at the rate of $2\frac{3}{4}$ per cent. per annum, commencing with £5,806,521 in 1888. It was also estimated that after the payment of the principal in the time stated, the water revenue would alone be sufficient to pay the whole of the working cost. It was calculated that the rate levied would probably never exceed 5·29d. in the £1.

Modified
scheme
adopted by
Melbourne
and Metro-
politan
Board of
Works.

387. Since Mr. Mansergh's report, however, circumstances have considerably altered. Instead of it being possible to raise loans at $3\frac{1}{2}$ per cent., assumed in the report, $4\frac{1}{2}$ per cent. has to be paid; the annual surplus from water revenue, moreover, has dwindled from £81,140* in 1888-9 to £65,000, and will probably fall still lower; and, although the value of rateable property had risen from £5,800,000 in 1888 to £6,690,000 in 1892, there will probably be a large depreciation in this respect in the immediate future, whilst the annual rate of increase of such property assumed by Mr. Mansergh— $2\frac{3}{4}$ per cent.—can now no longer be relied on. These considerations induced the Melbourne and Metropolitan Board of Works†—under whose direction the works are being carried out—to considerably modify the original scheme, although adopting generally the principal recommendations. Accordingly it has been decided to provide eventually for a population of 1,000,000 in 30 years instead of 1,700,000 in 50 years, and to curtail the provision for rain water to a minimum consistent with sanitary efficiency, thus enabling the carrying capacity

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

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

of the sewers to be reduced from 50 to 30 cubic feet of sewage matter per head per diem, by which means, moreover, the sewers will be more easily maintained in a good sanitary condition during their early history; to concentrate all the sewage over one farm instead of two, for which purpose a block of 8,847 acres of red loamy soil averaging 30 feet overlying basalt has been purchased near the Werribee River; also to have one pumping station and one outfall sewer instead of two. By these modifications it is estimated that a total saving of £1,500,000 will be effected in the capital cost at the outset. The following are the estimates of the cost of the original and the modified scheme for the year 1898, when, it is assumed, the district will be completely sewered; also the Board's estimate of the ultimate cost:—

RELATIVE ESTIMATES OF COSTS OF METROPOLITAN SEWERAGE SCHEMES.

Item.	Mansergh's M. Scheme to—	Board's Modified Scheme to—	
	1898.	1898.	1919.
	£	£	£
Main Sewers ...	2,199,714	1,839,694	1,839,694
Pumping Stations ...	300,000	200,000	700,000
Rising Mains ...	83,456	100,000	200,000
Outfalls ...	1,169,286	250,000	350,000
Ventilation ...	45,000	45,000	45,000
Flushing Chambers ...	45,000	45,000	45,000
Screening Apparatus ...	10,000	10,000	10,000
Local Sewers ...	559,721	559,721	559,721
Farm Preparation ...	72,550	72,550	133,750
Farm Channels ...	88,000	88,000	168,416
	4,572,727	3,209,965	4,051,581
Contingencies ...	457,273	320,996	405,158
Total ...	5,030,000*	3,530,961	4,456,739

388. The district over which the Board exercises control consists of 18 cities, towns, and boroughs, and 6 shires, embracing a total area of 98,900 acres, and containing an estimated population on the 31st December, 1892, of 474,810 inhabitants. The annual value of rateable property in the district about the same time was £6,691,000, which, at 1s. in the £1, the maximum rate the Board is empowered to levy in any one year, would yield a revenue of £334,550. Although the Board has effected a saving of £1,500,000 in the capital cost to 1898, there will, owing to the altered circumstances already referred

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

* The exact amount was £5,030,800. The ultimate cost in 1939 was estimated at £5,816,500.

to, be little if any saving in the annual charge, if allowance be made for the fact that no provision is made in the Board's estimates for the redemption of loans. The annual charge to ratepayers for interest and expenses alone will be close on £129,000, equivalent to not quite 5d. in the pound, whereas the cost of dealing with nightsoil under existing arrangements is only about £70,400. The additional cost of connecting the houses with the sewers will be about £12 each on the average, to be defrayed by the householders. The following is a comparison of the two estimates:—

ESTIMATED ANNUAL COST OF SEWERAGE SCHEMES IN 1898.

	1. Mansergh's Scheme. (£5,030,800)	2. Board's Scheme. (£3,530,961)
Interest	£176,078 (3½%)	£158,850 (4½%)
Redemption of principal...	38,403	...
Working expenses	34,822	35,000
	£249,303	£193,850
<i>Less</i> —Water revenue	81,140	65,000
	£168,163	£128,850*
Charge to ratepayers		
Charge per £1 of annual value of rateable property	5¼d.†	4¾d.‡

Expenditure
on sewerage
to date.

389. To enable it to commence the works, the Board has raised loans amounting to £2,640,000,§ at 4 and 5 per cent. The total amount it is authorized to borrow is £5,000,000, exclusive of Government loans amounting to £2,389,934 outstanding on 30th June, 1893, which were originally contracted by the Government but taken over by the Board. The expenditure on the construction of sewerage works to the 30th June, 1893, was £591,040, of which £29,069 was for surveys, £5,433 on main sewers, £234,982 on the outfall sewer, £188,315 on the sewage farm, and £65,543 on the pumping station and rising mains.

Leases and
rental of
farms.

390. Throughout Victoria, the duration of leases of farms from private persons was returned in 1892-3 as averaging from 2½ to 6 years, the extreme figures being 1 year and 15 years. The average rental of agricultural land per acre was stated to be from 7s. 2d. to 21s. 2d., the extreme figures being 2s. and 50s. The average rental of pastoral land per acre was stated to be from 2s. 5d. to 8s., the extreme figures being 1s. 6d. and 17s. 6d. It may be mentioned that 3s. 6d. per annum for as much land as will carry one sheep to the

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

† Or a small fraction over 4d. if no provision were made for redemption of loans.

‡ Assuming the rateable value of property to stand at the same value in 1898 as it did in 1892 to allow for any stagnation that might take place.

§ See also paragraphs 380 and 381 in Vol. I.

acre is considered a fair rental; thus land capable of carrying two sheep to the acre ought to be let for 7s. per acre per annum.*

391. Each collector of statistics is required to furnish a statement of the prices of the principal articles of agricultural produce in his district at the time he makes his rounds. The prices, being those prevailing in the place where the crops are grown, are generally lower than those obtaining in Melbourne, which are quoted at the end of Part Interchange, *ante*. The following is an average deduced from the returns of all the districts during each of the last 24 years:—

PRICES OF AGRICULTURAL PRODUCE, 1870 TO 1893.

During February and March.	Wheat.		Oats.		Barley.		Maize.		Hay.	Potatoes.		Turnips.		Mangolds	
	per bushel.		per bushel.		per bushel.		per bushel.		per ton.	per ton.		per ton.		per ton.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	s.	d.	s.	d.	s.	d.
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	11½	3	6¼	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	0½	2	3½	4	8	3	6½	63	69	11	...	24	11	
1881	4	1¾	2	3	4	11¼	5	0	60	46	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	
1891	3	5	2	4	2	9	3	6	55	77	10	32 6	28	7	
1892	4	1	2	2	2	9	3	5	54	64	9	41 3	28	0	
1893	2	9½	1	10½	2	9¾	3	5	46	65	5	35 8	27	9	

392. The prices of all crops were exceptionally low in 1892-3. Thus the prices of wheat, oats, and hay were the lowest during the whole period; the prices of barley and of maize varied but little in the last three years, but were lower than in any previous ones; the price of potatoes was lower than in any years except 1881, 1888, and 1892; the price of turnips was lower on only three previous occasions since 1883, and that of mangolds on only eight since 1869.

* 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.

Years of
highest and
lowest
prices.

393. It will be observed that the price of wheat was highest in 1877, that of oats, barley, and maize in 1874, that of turnips in 1890, that of mangolds in 1870, and that of hay and potatoes in 1889; also, that the price of wheat, oats, and hay was lowest in 1893, that of barley in 1891 and 1892, that of maize in 1892 and 1893, that of potatoes in 1881, that of mangolds in 1876, and that of turnips in 1888.

Price of
wheat in
London.

394. The wholesale price of wheat per Imperial quarter* in London during 1892 varied from about 35s. 4d. in January to 26s. 3d. in December—the average for the year being 30s. 3d. The price showed a marked falling-off on that in the previous year, when it averaged 37s., but was not quite so low as in 1889. In 1893, however, the fall still continued, and the low price obtained was phenomenal, averaging only 26s. 3d. for the first ten months for which the information is available, and falling in April to as low as 25s. In 1889 the price was the lowest recorded since 1761, when it was 26s. 9d.,† but in 1893 it was even lower than in 1761. The following statement of the average *Gazette* prices (wholesale) during the four years ended with 1892 has been taken from an official source,‡ and that of the average price in the first ten months of 1893 has been taken from the *London Statist*:—

AVERAGE PRICE PER QUARTER OF WHEAT IN LONDON.

Month.	1889.		1890.		1891.		1892.		1893.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	30	2	30	1	32	8	35	4	26	0
February	29	6	29	9	32	3	32	6	26	1
March	30	1	29	9	33	10	32	11	25	1
April	29	10	29	10	38	3	31	2	25	0
May	29	9	32	2	40	4	31	5	26	5
June	28	6	32	8	39	9	30	1	27	3
July	29	2	33	8	38	6	29	2	26	7
August	30	9	36	1	39	9	29	7	26	3
September	29	11	32	11	38	5	28	11	26	0
October	29	8	30	11	35	0	28	2	27	8
November	30	1	32	3	37	10	28	1	...	...
December	30	0	32	3	37	6	26	3	...	...
The Year	29	9	31	11	37	0	30	3	...	...

Price of
wheat,
barley, and
oats in
England.

395. Another official authority§ gives the highest, lowest, and average *Gazette* price of wheat, barley, and oats in England and Wales as follows, during each of the eleven years ended with 1891:—

* The Imperial quarter is equal to 8 bushels.

† See Supplement to *The Statist* for 1887.

‡ Giffen's Statistical Abstract for the United Kingdom, 1878 to 1892.

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

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

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

396. The value of the agricultural produce raised in Victoria during the year ended 1st March, 1893, may be estimated at 7½ millions sterling. The following table shows the means whereby such an estimate is arrived at:—

Value of agricultural produce.

VALUE OF AGRICULTURAL PRODUCE,* 1892-3.

Name of Crop.	Gross Produce and Price.			Estimated Value.
			£ <i>s. d.</i>	£
Wheat ...	14,814,645 bushels	@	0 2 9½	2,067,878
Oats ...	4,574,816 "	@	0 1 10½	428,889
Barley ...	774,207 "	@	0 2 9¾	108,873
Other cereals ...	1,362,686 "	@	0 3 6	238,470
Grass and clover seed ...	30,430 "	@	0 4 0	6,086
Potatoes ...	142,623 tons	@	3 5 5	466,496
Onions ...	11,793 "	@	3 5 0	38,327
Chicory ...	223 "	@	10 0 0	2,230
Other root crops ...	27,456 "	@	1 10 0	41,184
Hay ...	740,049 "	@	2 6 0	1,702,113
Green forage ...	249,719 acres	@	2 5 0	561,868
Tobacco ...	658 cwt.	@	2 16 0	1,842
Grapes, not made into wine ...	83,272 "	@	0 10 0	41,636
Raisins ...	202,127 lbs.	@	0 0 9	7,580
Currants ...	15,029 "	@	0 0 4½	282
Wine ...	1,694,745 gallons	@	0 3 0	254,212
Hops ...	7,573 cwt.	@	4 5 0	32,185
Other crops ...	647 acres	@	10 0 0	6,470
Garden and orchard produce	39,926 "	@	30 0 0	1,197,780
	Total ...			7,204,401

* 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.

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

ANNUAL VALUE OF AGRICULTURAL PRODUCE IN VARIOUS COUNTRIES.

	Millions of £.
United States	604
Russia	509
Germany	456
France	444
Austria	322
United Kingdom	266
Italy	178
Spain	136
Australia	76
Canada	58
Argentine Republic	19 $\frac{1}{5}$

Specific
weight of
crops.

398. 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 1892-3, ranged from 56 lbs. to 66 lbs.; oats, from 38 lbs. to 50 lbs.; barley, from 40 lbs. to 60 lbs.; and maize, from 50 lbs. to 60 lbs. In the same year, taking the districts as a whole, the average weight per bushel of wheat was 61 lbs.; of oats, 41 lbs.; of barley, 50 lbs.; and of maize, 56 lbs.

Rates of
agricultural
labour.

399. 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, hop-pickers, and maize-pickers :—

RATES OF AGRICULTURAL LABOUR,† 1892 AND 1893.

Description of Labour.	1891-2.		1892-3.	
	s.	d.	s.	d.
Ploughmen, per week	21	0	19	3
Farm labourers, „	19	2	16	7
Married couples, „	26	1	24	5
Females—Dairymaids „	11	10	11	2
„ Others „	11	0	10	6
Mowers, „	28	0	26	9
„ per acre	5	0	5	2
Reapers, per week	28	4	29	8
„ per acre	12	0	9	3
Threshers, per bushel (without rations) ...	0	8	0	6
Hop-pickers, „ „	0	3 $\frac{1}{2}$	0	3
Maize-pickers, per bag „	0	5 $\frac{1}{2}$	0	5

* Page 168.

† See also table of Wages at the end of Part "Interchange," ante.

400. The values of farming plant and improvements were returned as follow for the year under review and the previous one, also number and power of steam engines used on farms in 1891-2:—

Plant and improvements on farms.

STEAM ENGINES, IMPLEMENTS, AND IMPROVEMENTS ON FARMS, 1892 AND 1893.

	1891-2.	1892-3.
Steam engines, number	930	...
„ „ horse-power	5,766	...
Value of farming implements and machines	£2,865,645	£2,780,242
„ „ improvements on farms	£15,630,677	£15,174,962

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

Machine labour.

MACHINE LABOUR, 1892 AND 1893.

Average Rates paid for—	1891-2.		1892-3.	
	s.	d.	s.	d.
Machine reaping, per acre {	With binding ...		6	11
	Without binding		4	6
„ mowing, „	4	3	4	1
„ threshing, per 100 bushels:—				
With winnowing	17	9	17	8
Without winnowing	12	7	14	4

402. Information as to the numbers of live stock kept was obtained at the recent census, and these are compared in the following table with the numbers for March, 1893, brought on since the census by means of estimates furnished by the municipal authorities:—

Live stock, 1891 and 1893.

LIVE STOCK, 1891 AND 1893.

Period.	Horses.	Cattle.			Sheep.	Pigs.
		Milch Cows.	Exclusive of Milch Cows.	Total.		
5th April, 1891 (enumerated)	436,469	395,192	1,387,689	1,782,881	12,692,843	282,457
March, 1893 (estimated)	439,596	417,177	1,407,527	1,824,704	12,965,306	290,339
Increase ...	3,127	21,985	19,838	41,823	272,463	7,882

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

Goats, asses, and mules.

Stock per
square
mile.

404. There are now in Victoria 5 horses, 21 head of cattle, 148 sheep, and 3 pigs, or, taking the different kinds together, 177 head of stock of these descriptions, large and small, to the square mile. At the census of 1891 there were 5 horses, 20 head of cattle, 144 sheep, and 3 pigs, or, altogether, 172 head of stock to the square mile.

Live stock,
1851 to 1891.

405. The numbers of horses, cattle, sheep, and pigs enumerated in Victoria in the last seven census years were as follow :—

LIVE STOCK, 1851 TO 1891.

Year of Census.		Horses.	Cattle.	Sheep.	Pigs.
1851	... ..	21,219	387,806	6,032,783	9,260
1854	... ..	15,166	410,139	5,594,220	9,137
1857	... ..	47,832	646,613	4,641,548	52,227
1861	... ..	76,536	722,332	5,780,896	61,259
1871	... ..	209,025	776,727	10,477,976	180,109
1881	... ..	275,516	1,286,267	10,360,285	241,936
1891	... ..	436,469	1,782,881	12,692,843	282,457

Equivalent
of livestock
in sheep.

406. It is estimated that one horse or one head of cattle consumes as much grass as ten sheep. Reducing the stock of these kinds to a common standard so far as their food-consuming capabilities are concerned, the increase from census to census will be the more easily realized. The figures are as follow :—

	Live Stock reduced to their equivalent in Sheep.				
1851	10,033,033
1854	9,847,270
1857	11,585,998
1861	13,769,576
1871	20,335,496
1881	25,978,115
1891	34,886,343

Increase or
decrease of
live stock.

407. In the year of the gold discoveries (1851) the live stock in Victoria represented the equivalent of about ten million sheep, but three years later, according to the figures, this equivalent had fallen off by 185,000. Since then, however, there has been a steady increase from period to period, so much so that, in 1891, the equivalent number had become three and a-half times as large as it was in 1851.

Density of
live stock,
1851-91.

408. The live stock to the square mile, reduced to its equivalent in sheep, was as follows at the respective periods :—

In 1851	there was to the square mile the equivalent of 114 sheep.
„ 1854	„ „ „ 112 „
„ 1857	„ „ „ 132 „
„ 1861	„ „ „ 157 „
„ 1871	„ „ „ 231 „
„ 1881	„ „ „ 296 „
„ 1891	„ „ „ 397 „

409. Comparing the equivalent numbers with the population, and omitting fractions, the results for the different periods would be as follow :—

In 1851 there was to each person living the equivalent of 130 sheep.

Year	Equivalent
1851	130
1854	41
1857	28
1861	26
1871	28
1881	30
1891	31

Live stock per head, 1851-91.

410. The population being so small in 1851, it is not surprising that the live stock bore a much larger proportion to it than it has to any subsequent population. The lowest point was reached in 1861, when the figures show an equivalent of only 26 sheep to each individual. Since then the proportion at each period has been larger than that at the previous one.

Large proportion of live stock to population in 1851.

411. The following is a statement of the number of horses, cattle, sheep, and pigs in the various Australasian colonies, according to the returns of the census of 1891 :—

Live stock in Australasian colonies.

LIVE STOCK IN AUSTRALASIAN COLONIES, 1891.

Colony.	Horses.	Cattle.	Sheep.	Pigs.
Victoria ..	436,469	1,782,881	12,692,843	282,457
New South Wales ...	444,163	1,909,009	55,986,431	284,453
Queensland ...	365,812	5,558,264	18,007,234	96,836
South Australia* ...	199,605	574,032	7,050,544	118,083
Western Australia ...	48,999	134,997	2,563,866	32,267
Total ...	1,495,048	9,959,183	96,300,918	814,096
Tasmania ...	31,165	162,440	1,619,256	81,716
New Zealand ...	211,040	831,831	18,117,186	308,812
Grand Total ...	1,737,253	10,953,454	116,037,360	1,204,624

412. Reducing the figures representing the horses and cattle to their equivalent in sheep in the manner already described, and adding the results to the figures representing the sheep, the following numbers are obtained for the different colonies :—

Equivalent of live stock in sheep in each colony.

Colony	Equivalent in Sheep
1. New South Wales ...	79,518,151
2. Queensland ...	77,247,994
3. Victoria ...	34,886,343
4. New Zealand ...	28,545,896
5. South Australia ...	14,786,914
6. Western Australia ...	4,403,826
7. Tasmania ...	3,555,306

* Including the Northern Territory, which contained 11,919 horses, 214,094 head of cattle, 45,902 sheep, and 1,806 pigs.

Density of
live stock
in each
colony.

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

1. Victoria	had to the square mile the equivalent of	397	sheep.
2. New Zealand	„ „ „	273	„
3. New South Wales	„ „ „	257	„
4. Tasmania	„ „ „	135	„
5. Queensland	„ „ „	116	„
6. South Australia	„ „ „	16	„
7. Western Australia	„ „ „	5	„

Victoria
the most
heavily
stocked
colony.

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

Live stock
per head
in each
colony.

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

1. Queensland	had to each person living the equivalent of	186	sheep.
2. Western Australia	„ „ „	79	„
3. New South Wales	„ „ „	70	„
4. { New Zealand	„ „ „	43	„
{ South Australia	„ „ „	43	„
5. Victoria	„ „ „	31	„
6. Tasmania	„ „ „	24	„

Live stock in
Australia
and
Australasia.

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

LIVE STOCK IN AUSTRALIA AND AUSTRALASIA, 1891.

	Live Stock reduced to their equivalent in Sheep.		
	Total Number.	Number to the Square Mile.	Number to each Person living.
Australian Continent	210,843,228	72	68
Australia, Tasmania, and New Zealand	242,944,430	79	62

Live stock in
British
Possessions.

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

LIVE STOCK IN BRITISH POSSESSIONS.

Possessions.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
The United Kingdom ...	1892	2,067,549*	11,519,417	33,642,808	3,265,898
Malta ...	1887	7,171	10,673	14,609	...
Cyprus ...	1887	45,771	42,873	213,578	...
India† ...	1887-8	888,039	46,089,178	25,880,571	518,700
Ceylon ...	1891	4,730	1,064,751	87,391	...
Mauritius ...	1884	12,000	15,000	30,000	30,000
Cape of Good Hope ...	1891	444,147	2,210,834	16,706,106	288,190
Natal ...	1891	62,077	694,347	959,246	45,676
Canada ...	1881-91	1,226,295	4,097,915	3,473,093	1,710,758
Newfoundland ...	1891	6,138	23,822	60,840	32,011
Jamaica ...	1890	69,785	108,221	14,100	...
Falkland Islands ...	1891	3,824	6,321	667,344	54
Australasia‡ ...	1892-3	1,832,815	12,437,165	121,884,669	1,112,316
Fiji ...	1891-2	959	9,861	6,072	1,778

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

LIVE STOCK IN FOREIGN COUNTRIES (000'S OMITTED).

Country.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
EUROPE.					
Austria ...	1890	1,548,	8,644,	3,187,	3,550,
Belgium ...	1880	272,	1,383,	365,	646,
Bulgaria ...	1887	...	...	6,872,	394,
Denmark ...	1888	376,	1,460,	1,225,	771,
France ...	1891	2,883,	13,662,	21,688,	6,096,
Germany ...	1883	3,522,	15,787,	19,190,	9,206,
Greece ...	...	108,	164,	3,465,	180,
Holland ...	1889	276,	1,490,	772,	493,
Hungary ...	1884	1,749,	4,879,	10,595,	4,804,
Italy ...	1890	720,	5,000,	6,900,	1,800,
Norway ...	1890	151,	1,004,	1,412,	121,
Portugal ...	1870	...	625,	2,977,	971,
Roumania ...	1890	595,	2,520,	5,002,	926,
Roumelia (Eastern) ...	1883	44,	371,	1,859,	107,
Russia (European) ...	1888	19,663,	24,609,	44,465,	9,243,
Servia ...	1891	163,	819,	2,964,	909,
Spain ...	1878	310,	2,353,	16,939,	2,349,
Sweden ...	1890	487,	2,399,	1,351,	645,
Switzerland ...	1886	98,	1,211,	342,	394,

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

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

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

LIVE STOCK IN FOREIGN COUNTRIES (000's OMITTED)—*continued.*

Country.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
ASIA.					
Japan ...	1890	1,546,	1,045,	...	...
Java and Madura ...	1885	518,	4,530,	...	...
Russia in Asia ...	1874-83	1,070,	3,716,	10,612,	...
AFRICA.					
Algeria ...	1890	196,	1,217,	9,475,	78,
Egypt ...	1887	21,	462,	958,	...
Orange Free State ...	1890	249,	895,	6,620,	...
AMERICA.					
Argentine Republic ...	1888	5,000,	23,000,	80,000,	300,
Brazil ...	...	...	30,000,	...	...
Costa Rica ...	1891	77,	346,	3	...
Guadeloupe ...	1887	7,	20,	10,	18,
Guatemala ...	1885	118,	494,	460,	195,
Nicaragua ...	1884	...	400,	...	...
Paraguay ...	1891	100,	862,	63,	11,
United States ...	1891	15,498,	54,068,	44,938,	52,398,
Uruguay ...	1887	408,	6,119,	15,905,	...
Venezuela ...	1888	388,	8,476,	5,727,	1,930,

Live stock of the world.

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

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

Countries.	Horses.	Cattle.	Sheep.	Pigs.	Mules and Asses.	Goats.
Europe ...	36,483,	104,430,	187,144,	49,164,	3,155,	18,941,
Asia ...	4,279,	60,847,	39,922,	489,	1,080,	1,647,
Africa ...	1,239,	6,095,	35,589,	547,	390,	12,567,
North America ...	17,717,	57,887,	51,293,	48,059,	2,392,	45,
South America ...	5,486,	57,610,	96,242,	2,724,	1,666,	2,696,
Australasia* ...	1,787,	11,871,	124,654,	1,156,	...	116,
Oceania ...	4,	132,	13,	33,	...	13,
Total ...	66,995,	298,872,	534,857,	102,172,	8,683,	36,025

Live stock slaughtered

420. The numbers of live stock slaughtered in Victoria are furnished by the local bodies, but it is probable the returns do not in every case include the animals slaughtered by private persons, and on farms and stations, and, therefore, that more were really slaughtered

* Corrected according to the most recent colonial returns. Northern Territory of South Australia and Fiji are included.

than the figures show. The following were the numbers returned for 1891 and 1892, those for the latter year being larger than those for the former in the case of sheep and pigs, but smaller in the case of cattle :—

LIVE STOCK SLAUGHTERED, 1891 AND 1892.

Year.	Cattle and Calves.	Sheep and Lambs.	Pigs.
1891	263,314	2,285,008	162,004
1892	249,919	2,439,026	198,118
Increase ... ..	...	154,018	36,114
Decrease	13,395	...	...

421. The purposes to which the carcasses of the slaughtered animals were appropriated in 1892 were returned as follow:—

Purposes for which stock was slaughtered

PURPOSES FOR WHICH LIVE STOCK WAS SLAUGHTERED, 1892.

Description of Live Stock.	Numbers Slaughtered for—			
	The Butcher and Private use.	Preserving or Salting.	Boiling down for Tallow or Lard.	Total.
Cattle and Calves	248,450	1,315	154	249,919
Sheep and Lambs	2,358,520	10,300	70,206	2,439,026
Pigs	115,165	82,930	23	198,118
Total	2,722,135	94,545	70,383	2,887,063

422. In the 10 years ended with 1891, the returns show the average number slaughtered annually for preserving and salting to have been of cattle 709, of sheep and lambs 55,570, and of pigs 62,100. These numbers as regards pigs and cattle are below, but as regards sheep are much above, the numbers slaughtered for the same purposes in 1892.

Stock slaughtered for preserving.

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

POULTRY, 1881 AND 1891.

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

Increase or decrease of poultry.

424. It is seen that in ten years an increase of 45,645 took place in the numbers of keepers of poultry, also a considerable increase in all the different kinds of poultry except geese, which were fewer in 1891 than in 1881 by 3,500.

Imports of eggs.

425. With such large numbers of poultry, it might reasonably be supposed that Victoria would be able to obtain from her own resources enough eggs to supply the wants of her population, but this is not the case. In 1891 as many as 45,877 gross of eggs (6,575,760), valued at £22,658, were imported, and this although they were subject to an import duty of 2s. per gross, from which £4,550 was realized.

Imports of poultry.

426. It may also be mentioned that the surplus of imports over exports of poultry in 1891 amounted to 5,444 heads, valued at £2,236. There is no import duty on poultry.

Poultry in Australasian colonies.

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

POULTRY IN FOUR AUSTRALASIAN COLONIES, 1891.

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

Poultry at the Cape of Good Hope.

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

Wool season in Victoria.

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

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

about the end of February. From March to September inclusive, small sales of oddments are held intermittently.*

430. The quantity of wool produced in Victoria during the year 1892 may be set down as 80,505,334 lbs.,† valued at £3,523,954. 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 76,503,635 lbs., valued at £3,957,901.

Wool produced, 1891 and 1892.

431. The following is a statement of the quantity and value of wool produced in the various Australasian colonies in 1891 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 Australasian colonies, 1888 to 1891.

WOOL PRODUCED IN THE AUSTRALASIAN COLONIES, 1888 TO 1891.‡

Colony.	1888.	1889.	1890.	1891.
QUANTITY.	lbs.	lbs.	lbs.	lbs.
Victoria	54,143,961	56,954,721	55,559,286	76,503,635
New South Wales ...	236,638,426	258,233,636	236,685,713	329,027,828
Queensland	50,675,289	59,228,753	55,714,370	81,122,900
South Australia ...	41,650,088	39,352,984	35,869,797	47,087,181
Western Australia ...	8,475,240	9,501,695	6,969,380	8,783,073
Tasmania... ..	7,134,438	6,383,921	9,152,281	9,542,953
New Zealand	87,291,513	105,779,923	105,762,060	109,096,326
Total	486,008,955	535,435,633	505,712,887	661,163,896
DECLARED VALUE.	£	£	£	£
Victoria	2,577,107	2,449,368	2,862,088	3,957,901
New South Wales ...	9,167,534	10,501,664	9,002,229	10,960,820
Queensland	2,258,365	2,680,134	2,533,409	3,462,215
South Australia ...	1,334,589	1,354,377	1,297,454	1,545,430
Western Australia ...	423,762	395,903	261,325	329,365
Tasmania... ..	317,423	292,770	430,373	429,450
New Zealand	3,386,504	4,213,358	4,348,009	4,323,985
Total	19,465,284	21,887,574	20,734,887	25,009,166

432. It appears by the figures that Victoria, in 1891, produced less than a fourth as much wool as New South Wales, and rather more than seven-tenths as much as New Zealand. She, however,

Wool produced in each colony.

* Information furnished by Mr. Edmund Jowett, of the Australian Mortgage Land and Finance Company, Melbourne.

† The quantity of Victorian wool exported in 1892, according to the Customs returns, was 142,887,730 lbs., or nearly twice as much as the total given above as produced in Victoria. There is no doubt, however, that a considerable quantity of that imported across the border really belongs to Victorian capitalists.—(See footnotes on pages 34 and 35 ante.)

‡ For later figures see Table XVIII. in Appendix C., post.

produced nearly the same quantity as Queensland, and more than half as much again as South Australia. Western Australia, notwithstanding the immense extent of her territory, produced even less than the small island of Tasmania. The wool clip in 1891—judging from the net exports in the same year—was larger by nearly a third than in 1890, and by nearly a fourth than in 1889, in all the colonies.

Wool produced in four years compared.

433. The figures also show that the wool produced in the Australasian colonies in 1891 was more by $155\frac{1}{2}$ million pounds than in 1890, by $125\frac{3}{4}$ million pounds than in 1889, and by over 175 million pounds than in 1888; and, further, that the value returned for such wool was greater in 1891 than in 1890 by £4,274,279, than in 1889 by £3,121,592, and than in 1888 by £5,543,882.

Exports of Australasian wool, 1892.

434. According to the Customs returns of the various colonies nearly 660 million lbs. of wool were exported from the Australasian colonies direct to other countries during the year 1892, and of this about four-fifths were sent from the Australian continent. The following are the quantities from each colony given in lbs. :—

EXPORTS OF WOOL FROM AUSTRALASIAN COLONIES, 1892-3
(000's OMITTED).

Colony.	Lbs.	Colony.	Lbs.
Victoria	163,956,	Western Australia ...	8,385,
New South Wales ...	233,132,	Tasmania	5,342,
Queensland	75,287,	New Zealand	118,110,
South Australia ...	55,604,		
		Grand Total	659,816,

Destination of Australasian wool, 1892-3.

435. According to the same returns 76 per cent. of Australasian wool in 1892 was sent to London, $22\frac{1}{2}$ per cent. to the continent of Europe, $1\frac{1}{5}$ per cent. to America, and small quantities to Singapore, Hong Kong, Italy, India, and Mahé. The following are the figures :—

DESTINATION OF AUSTRALASIAN WOOL, 1892-3 (000's OMITTED).

Country.	Quantity sent thereto.	
	Lbs.	Proportion per cent.
Europe—		
United Kingdom	499,829	75·8
Germany	55,287	8·4
Belgium	47,828	7·2
France	45,623	6·9
United States	7,982	1·2
Singapore	2,550	·4
Other countries	717	·1
Total	659,816	100·0

Fall in price of wool.

436. The average price per lb. of Victorian wool in 1892, based upon its declared value before leaving this colony, as obtained from

the Customs returns of exports, was 9d. for greasy wool, 14½d. for scoured, and 14¼d. for washed—whilst the average for the whole was 9¾d., as against 10¾d. in 1891, not quite 10¾d. in 1890, nearly 10½d. in 1889, not quite 10½d. in 1888, nearly 10½d. in 1887, 11¾d. in 1886 and 1885, and 12¾d. in 1884. There was thus a fall in the price as compared with all the previous years named—of 3½d. per lb. as compared with 1884, of 1½d. per lb. as compared with 1885 and 1886, and from ¾d. to 1d. as compared with other years. This would depreciate the wool produced in Victoria during 1892 between £128,000 and £341,000 as compared with the average price in the years immediately preceding, by about £550,000 as compared with the average price in 1886 or 1885, and by over £1,000,000 as compared with the price in 1884.*

437. In the foregoing paragraph, the price given is the average 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:—

Price of wool in Melbourne.

AVERAGE PRICE PER LB. OF WOOL (FLEECE) IN MELBOURNE, 1885 TO 1894.

Year.	Greasy.		Clean.†	
	Merino.	Crossbred.	Fleece Washed.	Scoured.
	d.	d.	d.	d.
1884-5	10½	9	20	19
1885-6	8½	8	16	15
1886-7	10½	9	17	18
1887-8	9½	8	15½	16
1888-9	10½	10	18	17½
1889-90	11½	11	18½	19½
1890-91	10	9	15	16½
1891-2	9	8¾	13½	15
1892-3	8¾	8½	13	14½
1893-4	8½	8¾	13	14½

NOTE.—These figures cannot be taken as more than an approximate indication of the values of wool, especially in the grease. For instance, the average value of 1893-4 is quoted slightly below that of 1892-3, but allowing for the fact that the 1893 clip was heavier in yolk than its predecessor, the basis of the market—i.e., the value per pound of clean wool—was in the season 1893-4 slightly higher.

438. According to returns obtained from the selling brokers, the average price per bale‡ of all wool sold in Melbourne and Geelong was £11 8s. in the season 1890-91, as compared with £14 17s. 11d. in

Average price of wool sold in Victoria, 1890 and 1891.

* See also Part "Interchange," ante, where the export value of all wool—not Victorian wool only—is dealt with.

† Comprising both merino and crossbred.

‡ Only about 10 per cent. of this wool on the average was washed or scoured.

1889-90, thus showing a falling-off of $23\frac{1}{2}$ per cent. in the average value. No later information is available.

Wool production and distribution of the world.

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

WOOL PRODUCTION AND DISTRIBUTION OF THE WORLD
(000'S OMITTED).

Countries.	Wool Produced, 1891.	Net Surplus Exported (+), or Net Deficiency Imported (-) 1890-91.
EUROPE.		
	lbs.	lbs.
United Kingdom	147,475,	- 319,183,
France	124,803,	- 298,396,
Germany	54,894,	- 263,670,
Belgium	4,409,	- 71,222,
Austria-Hungary	54,301,	- 35,578,
Italy	21,385,	- 14,900,
All other European Countries	8,818,	- 10,645,
Portugal	10,362,	- 7,253,
Sweden	3,307,	- 5,087,
Spain	66,138,	+ 7,088,
Russia and Poland	291,500,	+ 53,603,
Total Europe	787,392,	- 965,243,
Australasia	661,164,	+ 654,876,
Argentine Republic	376,700,	+ 261,037,
Cape Colony and Natal	128,682,	+ 92,436,
Uruguay	42,000,	+ 48,368,
East Indies	72,000,	+ 33,172,
Russia (Asiatic)	66,000,	*
Mesopotamia	31,555,	*
Turkey (Asiatic), Persia, Afghanis- tan, Beluchistan, and Thibet }	20,500,	*
Peru	6,700,	*
Persia	3,470,	*
Egypt	2,800,	*
Brazil	1,875,	*
British North American Provinces	12,000,	- 6,717,
United States	307,100,	- 126,666,
All other Countries	48,000,	+ 15,868,
Total out of Europe	1,780,546,	+ 972,374,*
Grand Total	2,567,938,	+ 7,131,*

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

Chief wool-producing and wool-consuming countries.

440. It will be observed that the annual wool production of the world amounts to nearly two thousand six hundred million lbs., of which about 30 per cent. is grown in Europe, more especially in Russia, France, and the United Kingdom; and that 70 per cent. is grown in other countries, but chiefly Australasia, Argentine, the

* Information not available or incomplete.

United States, and Cape Colony in the order named. Moreover, it will be noticed that the annual requirements of Europe, in addition to its own natural supply, amounts to nearly one thousand million pounds weight, the three greatest consumers being the United Kingdom, France, and Germany, and next—but much below these—Belgium and Austria-Hungary. Fully two-thirds of the total requirements were supplied by Australasia, a little over a fourth by the Argentine Republic, and less than a tenth by the Cape Colony and Natal. The United States, even, have to import $126\frac{2}{3}$ million lbs.

441. The average price in 1891 of Australian wool in London, as officially computed from the returns of imports by the Agricultural Department* of the Privy Council, was $1\frac{1}{4}$ d. lower than in 1890, and also lower than in any previous year, except 1886, when it was $\frac{1}{2}$ d. lower than in 1891. The following are the results obtained for the twenty-three years ended with 1891:—

Price of Australian wool in London.

AVERAGE PRICE OF AUSTRALIAN WOOL IN LONDON, 1869 TO 1891.

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

442. The estimated average weight of a fleece of greasy wool grown in Victoria is $5\frac{1}{2}$ lbs. for merino, and 6lb. for crossbred and longwool; the former varying from a maximum of $9\frac{1}{2}$ lbs. (which was averaged by a flock of 11,000) to a minimum of $3\frac{1}{2}$ lbs.; and the latter from a maximum of 9 lbs. to a minimum of $4\frac{1}{2}$ lbs.†

Weight of greasy fleeces.

443. The estimated loss in weight of Victorian grown wool in scouring clean, fit for the manufacturer, is about 55 per cent. (yield 45 per cent.) on merino, about 40 per cent. (yield 60 per cent.) on crossbred, and about 30 per cent. (yield 70 per cent.) on Lincolns and other longwools; whilst the estimated loss in weight for hot-water washed merino is about 16 per cent. (yield 84 per cent.), and for cold washed about 36 per cent. (yield 64 per cent.).†

Loss of weight in scouring.

444. The average annual quantity of milk yielded by milch cows varies considerably. The quantity, as well as the richness, of milk depends not only on the amount and quality of the feed or pasture, but also on the breed of the cattle. In England, where the pastures are good and stall feeding is largely resorted to, and much attention is paid to the breed, it is reckoned at 500 gallons per annum; but in Victoria it is considered on the average not to exceed 290

Dairy produce.

* Report dated December, 1892, page 97

† Estimates furnished by Mr. Edmund Jowett.

gallons, or about four-fifths of a gallon per diem. In Victoria the yield of cream usually varies from 8 to 15 per cent. (by measure), and that of butter-fat from $2\frac{3}{4}$ to 5 per cent. (by weight), which is equivalent to from $3\frac{3}{5}$ to $1\frac{4}{5}$ gallons of milk to every pound of butter;* whilst 3·5 per cent., or 2·7 gallons to the pound of butter, is considered a fair average, although in exceptional cases it rises as high as $5\frac{1}{2}$ per cent.—equivalent to 1·6 gallon per pound. In the butter factories about 12 per cent. of cream, and $2\frac{1}{2}$ gallons of milk to every pound of butter—equivalent to nearly $3\frac{3}{4}$ (3·72) per cent. of butter-fat—is the usual yield; but it is asserted that the richness of milk sent to factories is below the average. It is estimated that, to obtain a given quantity of butter, about 11 per cent. more milk is required by the hand skimming, than by the separator process, and a further allowance should be made of, say, 6 per cent. to cover losses of cream in hot weather; hence it follows that it would take 2·9 gallons of milk, such as is used in factories, to produce one pound of hand-made butter. It is stated that the best results are obtained from cows fed on green feed in its natural state, or made into pit chaffed ensilage. The following is an estimate of the quantity and value of the dairy produce of the colony for 1892-3, based on returns furnished and on the assumed yield of milk:—

QUANTITY AND VALUE OF DAIRY PRODUCE OF VICTORIA, 1892-3.

Yield of Milk.				Gallons.
Consumed in its natural state	...	...	...	41,560,250
Made into butter ($2\frac{3}{4}$ gallons to the lb.)	...	...	...	74,349,830
Made into cheese (1 gallon to the lb.)	...	...	...	5,071,250
Total				120,981,330

Value of Milk, Cheese, and Butter.				Value.
				£
Consumed in its natural state, @ 8d. per gallon	...	...	...	1,385,340
Butter made (27,036,300 lbs.)†, @ 9d. per lb.	...	...	...	1,013,860
Cheese made (5,071,250 lbs.)‡, @ 6d. per lb.	...	...	...	126,780
Total				2,525,980

NOTE.—The total milk yield is estimated by allowing 290 gallons per annum to each of the 417,177 milch cows in the colony. About $\frac{3}{4}$ pint per head per diem is considered a fair allowance for the quantity consumed in its natural state.

* The butter generally referred to in this paragraph is factory butter, which is composed of 83 per cent. of butter-fat, $12\frac{1}{2}$ per cent. of water, $1\frac{1}{2}$ per cent. of casein (or curd), and 3 per cent. of added salt. Hand-made butter contains about 3 per cent. less butter-fat, but 2 per cent. more casein, and 1 per cent. more water. About 50 lb. of butter-fat in every 100 lbs. of milk cannot be extracted by the latest system—about 3 lb. being left in the separated milk (as against 75 lb. by the skimming process), and 2 lb. (as against only 1·5 lb. by the old method) in the butter-milk. The number of gallons of milk (assuming a gallon to equal 10·3 lbs.) required for one pound of factory butter may be obtained from the percentage of butter-fat (f) by means of the following formula:—

$$\frac{8\cdot06}{f-5} = x \text{ gallons.}$$

† An allowance has been added of 15 per cent. for butter, and 25 per cent. for cheese made on small farms, etc., which were not visited by the collectors of statistics. For returns of butter and cheese made, see table following paragraph 475 *post*.

445. A considerable impetus has been given to the butter industry in Victoria by the bonuses granted by the Government, and the opening up of an extensive trade in that article—under the supervision of the Department of Agriculture—with the United Kingdom, to which country nearly $6\frac{1}{2}$ million lbs. of butter, valued at £322,056, was shipped in 1892, as compared with $3\frac{3}{4}$ million lbs., valued at £186,400, in 1891. Exports of Victorian butter.

446. Victoria and New Zealand are the only Australasian colonies which export butter and cheese, the export trade of the former being of quite recent growth. In 1891, the net export of butter in Victoria was 4,337,534 lbs., and in New Zealand 4,416,160; but of cheese only 82,261 lbs. in the former as against 4,451,552 lbs. in the latter. The whole of these quantities, however, were not available for countries outside of Australasia, as the other colonies required a large proportion of it, there having been a net import of butter in New South Wales of 838,296 lbs., in Western Australia of 546,744 lbs., in Queensland of 303,617 lbs., in Tasmania (lard included) of 267,673 lbs., and in South Australia of 7,230 lbs.; also a net import of cheese in Queensland of 965,878 lbs., in Western Australia of 186,693 lbs., in New South Wales of 150,463 lbs., in Tasmania of 4,794 lbs., and in South Australia of 3,726 lbs. Thus the net export of Australasia beyond the colonies in 1891—chiefly to the United Kingdom—was 6,790,134 lbs. of butter and 3,222,259 lbs. of cheese. During the five years 1885-90, New Zealand exported on an average 3,125,360 lbs. of butter and 2,957,181 lbs. of cheese. The manufacture of condensed milk has not yet been developed in any of the colonies. Export of dairy produce in Australasian colonies.

447. The following table shows the net imports or exports (as the case may be) of butter and cheese in the principal countries of the world for an average of ten years and for a recent year (1890-91); the countries being arranged first according to continents and next according to the magnitude of their demand or supply of butter in 1890-91. It will be noticed that the net imports and exports of the countries as a whole do not nearly balance one another, as might have been expected:— World's demand for and supply of dairy products.

IMPORTS OR EXPORTS OF BUTTER AND CHEESE IN VARIOUS COUNTRIES OF THE WORLD (000'S OMITTED).

Countries.	Butter.		Cheese.	
	Net Surplus Exported (+) or Net Deficiency Imported (-).		Net Surplus Exported (+) or Net Deficiency Imported (-).	
	Average, 1881-90.	1890-91.	Average, 1881-90.	1890-91.
	lbs.	lbs.	lbs.	lbs.
EUROPE.				
United Kingdom	-183,908,	-229,558,	-201,319,	-219,960,
Belgium	-11,751,	-22,438,	-4,029,	-7,793,*
Germany	+13,610,	-4,116,	-4,597,	-16,213,
Switzerland	-2,201,	-3,111,	+53,338,	+47,838,
Portugal	-2,492,	-2,369,	-791,	-738,
Greece	-526,	-626,	-176,	-96,
Cyprus	-191,	-221,	+291,	+178,
Roumania	-23,	+7,	+2,424,	+2,039,
Spain	-18,	+27,	-2,370,	-2,876,
Bulgaria	+264,	+136,	+3,092,	+3,923,
Italy	+6,083,	+6,017,	-11,629,	-4,500,
Austria-Hungary... ..	+10,757,	+8,961,	-2,069,	-2,403,
Russia and Poland	+10,003,	+10,564,	+746,	+953,
Sweden and Norway	+21,082,	+26,600,	-928,	-812,
France	+60,306,	+73,415,	-24,613,	-16,494,
Denmark	+39,883,	+77,780,	-1,112,	-1,022,
Netherlands	+114,839,	+78,368,	+63,682,	+66,177,
Total Europe	+75,717,	+19,436,	-130,060,	-151,799,
ASIA.				
Java	-711,	-463,	...	...
India	-225,	-297,	-566,	-735,
Cochin-China, Tonkin, etc....	-154,	-145,	-145,	-148,
Japan	-183,	-213,	-45,	-52,
Total Asia	-1,273,	-1,118,	-756,	-935,
AFRICA.				
Egypt	-1,732,	-1,488,	-3,499,	-3,470,
Cape of Good Hope	-1,005,	-428,	-1,170,	-1,020,
Natal	-202,	-140,	...	...
Total Africa	-2,939,	-2,056,	-4,669,	-4,490,
NORTH AMERICA.				
United States	+18,631,	+14,806,	+96,834,	+73,270,
Canada	+7,183,	+3,502,	+72,563,	+106,641,
Mexico	-36,	-36,	-470,	-451,
Newfoundland	-2,020,	-1,696,	...	...
Total North America	+23,758,	+16,576,	+168,927,	+179,460,

* Includes net import of milk.

IMPORTS OR EXPORTS OF BUTTER AND CHEESE IN VARIOUS COUNTRIES OF THE WORLD (000'S OMITTED)—*continued.*

Countries.	Butter.		Cheese.	
	Net Surplus Exported (+) or Net Deficiency Imported (-).		Net Surplus Exported (+) or Net Deficiency Imported (-).	
	Average, 1881-90.	1890-91.	Average, 1881-90.	1890-91.
	lbs.	lbs.	lbs.	lbs.
WEST INDIES ...	-4,349,	-4,655,	+532,	-515,
SOUTH AMERICA.				
British Guiana ...	-670,	-638,	-249,	-254,
French Guiana ...	-83,	-93,	-111,	-82,
Argentine Republic ...	-29,	-40,	-2,491,	-2,553,
Paraguay ...	-4,	-5,	-21,	-40,
Uruguay ...	...	..	-471,	-340,
Chile ...	+76,	+94,	+134,	+147,
Total South America ...	-4,710,	-682,	-3,209,	-3,122,
Australasia ...	+1,494,*	+6,790,	+1,658,*	+3,222,
Tahiti ...	-36,	-36,	-11,	-11,
New Caledonia ...	-41,	-49,	-58,	-64,
Grand Total ...	+91,621,	+34,206,	+31,290,	+21,746,

NOTE.—The information in this table was taken chiefly from a report issued by the U.S. Department of Agriculture on the "Production and Distribution of the Principal Agricultural Products of the World."

448. The following is an estimate of the gross value of pastoral produce raised on holdings of all descriptions in 1892-3:—

VALUE OF PASTORAL PRODUCE, 1892-3.

Nature of Produce.	Value.
	£
Milk, butter, and cheese, as per statement, page 256 ...	2,525,980
Estimated value of stock produced in 1892:—	
Cattle, 417,177, viz., 278,118 @ £8, and 139,059 (calves) @ 30s.	2,433,532
Sheep, 3,241,326, @ 7s. 6d.	1,215,497
Pigs, 87,102, @ £2 10s.	217,755
Horses, 21,980, @ £8	175,840
Excess of exports over imports of wool, Customs value ...	3,484,224
Estimated value of wool used in the colony for manufacturing purposes, 1,059,458 lbs., @ 9d.	39,730
Total ...	10,092,558

* From New Zealand to the United Kingdom only for the five years 1886-90.

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, 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 3½ 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

Australasian
fresh meat
in London.

449. Australian-killed fresh meat was delivered in London for the first time in the year 1880, when the supply consisted of 60 carcasses of beef and 555 of mutton. New Zealand fresh meat was first delivered in 1882. Victoria is only just commencing to develop this industry. The following, according to the Agricultural Department of the Privy Council,* are the quantities delivered from Australasia in the eleven years ended with 1891, by which it will be seen that a large increase has taken place during the last four years:—

AUSTRALIAN AND NEW ZEALAND KILLED FRESH MEAT DELIVERED
IN LONDON, 1881 TO 1891.

				Cwt.					Cwt.
1881	...	...	...	11,300	1887	...	...	...	302,140
1882	...	...	...	34,540	1888	...	...	...	398,960
1883	...	...	...	93,420	1889	...	...	...	533,680
1884	...	...	...	222,560	1890	...	...	...	695,180
1885	...	...	...	230,400	1891	...	...	...	813,720
1886	...	...	...	294,220					

Price of
meat in
London.

450. In the same eleven years the average prices of beef and mutton in London, by the carcass, are quoted as follow†:—

AVERAGE WHOLESALE PRICE OF BEEF AND MUTTON IN LONDON,
1881 TO 1891.

				Beef per lb.					Mutton per lb.
1881	...	...	...	4½d. to 7¼d.					5d. to 9d.
1882	...	...	...	4¾d. „ 8d.					5½d. „ 9½d.
1883	...	...	...	5d. „ 8d.					5¾d. „ 9¾d.
1884	...	...	...	4¼d. „ 7¾d.					5d. „ 8¾d.
1885	...	...	...	3¾d. „ 6¾d.					4¼d. „ 7½d.
1886	...	...	...	3½d. „ 6¼d.					4d. „ 8d.
1887	...	...	...	3d. „ 5¾d.					3¼d. „ 7d.
1888	...	...	...	3¼d. „ 6¼d.					3¾d. „ 7¾d.
1889	...	...	...	3½d. „ 7¼d.					5d. „ 9d.
1890	...	...	...	3½d. „ 7¼d.					6¾d. „ 9½d.
1891	...	...	...	4¼d. „ 7½d.					5½d. „ 8¾d.

State expen-
diture on
rabbit
destruction.

451. Active operations for the destruction of rabbits on Crown Lands were first undertaken by the Government in 1880, and from

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.

* Report for 1892, page 82.

† *Ibid.*, pages 92 and 93.

that date to the middle of 1893 sums amounting to £275,256 had been expended with that object.* The following are the amounts spent in each year :—

STATE EXPENDITURE ON RABBIT EXTERMINATION, 1880-1893.

£			£		
1879-80	...	1,280	1886-7	...	21,065
1880-81	...	2,600	1887-8	...	20,551
1881-2	...	12,890	1888-9	...	17,621
1882-3	...	9,883	1889-90	...	24,860
1883-4	...	10,063	1890-91	...	37,913
1884-5	...	22,177	1891-2	...	39,535
1885-6	...	24,833	1892-3	...	29,985

NOTE.—These amounts include expenditure on labour, inspectors' salaries, material, cartage, etc., and for destroying rabbits on unoccupied Crown lands.

452. The following account of the measures adopted during the year 1892 to exterminate rabbits and other vermin has been taken from the report of the chief inspector, who estimates the area more or less infested throughout the colony at 37,750,000 acres, of which 1,350,000 acres were unoccupied Crown lands† :—

Rabbit
extermi-
nation.

Circumstances have been very favourable for destruction by means of poison, and of which every advantage has been taken with the result of an appreciable reduction in the number of rabbits. In the majority of the shires good work has been done.

Great difficulty is still experienced in the north-eastern districts, owing to the timbered and broken country affording shelter for the rabbits, and until land is cleared of ferns, scrub, and fallen timber it is not possible to complete the work of rabbit destruction.

The use of wire netting supplied by shire councils from loans granted by the Government is found to be of great value.

Invested unoccupied Crown lands have received proper attention, and good results have been obtained. The area of such land is increasing in consequence of commons being abolished, and licensees and lessees under some of the sections of the *Land Act* abandoning their holdings. A comparatively new mixture for poisoning has during the year been used, viz., phosphorus and pollard. This mixture has been efficacious in the north-eastern districts. Phosphorized wheat and other preparations have also been satisfactorily used.

Digging out burrows and destroying harbour and cover are, in my opinion, the most effectual means of clearing the land of vermin.

Two hundred and eleven convictions under penal clauses of the Act have been obtained, and fines and costs awarded amount to £818; and for charges and expenses under section 17 the sum of £4,391 has been received.

There were destroyed during the year 1,346 wild dogs and 7,590 foxes, at a cost of £2,002, shire councils and vermin boards paying a similar amount.

The expenditure for the year amounted to £33,448, viz., £13,374 for salaries of inspectors; £2,002 paid as subsidy to shire councils, etc., towards cost of destruction of dogs and foxes (councils contributing a like amount); and £18,072 for wages of men working Crown lands, materials, etc.

* For an account of the efforts made to exterminate, see issue of this work for 1891, Vol. II., paragraph 566.

† For particulars of the provisions of the *Vermin Destruction Act 1890* (54 Vict., No. 1153) see issue of this work for 1892, Vol. II., paragraph 565

Exports of
rabbit
skins.

453. In the sixteen years ended with 1892, over $57\frac{1}{2}$ millions of rabbit skins, valued at £347,000, have been exported from Victoria. In addition to these, many have been used in the colony by hat manufacturers* and others, and large numbers have doubtless been destroyed or allowed to decay. The following are the exports of rabbit skins in the period referred to:—

EXPORTS OF RABBIT SKINS, 1877 TO 1892.

Year.	Rabbit Skins Exported.		Year.	Rabbit Skins Exported.	
	Number.	Value.		Number.	Value.
1877	700,565	£ 5,790	1886	910,609	£ 6,800
1878	711,844	6,206	1887	2,663,314	16,294
1879	1,036,372	7,322	1888	3,967,533	20,759
1880	3,309,408	21,674	1889	3,429,015	12,303
1881	4,473,108	32,217	1890	4,913,351	25,667
1882	4,929,432	37,538	1891	6,359,210	31,367
1883	4,245,596	30,364	1892	7,501,864	31,905
1884	4,963,371	37,243			
1885	3,424,259	23,548	Total ...	57,538,851	346,997

Rabbits sent
to market
in Mel-
bourne.

454. The number of couples of rabbits and brace of wildfowl received at the Melbourne fish market, the number sold, and the number condemned, during the last seven years, were as follow:—

RABBITS AND WILDFOWL SENT TO MELBOURNE MARKET.

Year.	Number of Couples of Rabbits.			Brace of Teal and Duck.		
	Sold.	Condemned.	Total.	Sold.	Condemned.	Total.
1886-7 ...	346,856	4,460	351,316	13,572	...	13,572
1887-8 ...	418,618	2,272	420,890	98,737	365	99,102
1888-9 ...	474,384	13,458	487,842	40,936	349	41,285
1889-90 ...	606,568	11,567	618,135	54,314	1,375	55,689
1890-91 ...	676,796	5,955	682,751	87,728	82	87,810
1891-2 ...	572,426	17,977	590,403	159,437	541	159,978
1892-3 ...	617,773	19,275	637,048	68,770	125	68,895
Total ...	3,713,421	74,964	3,788,385	523,494	2,837	526,331

Flour mills.

455. In 1893, as compared with 1892, a decrease of 9 occurred in the number of mills—wholly in those employing steam-power—of 377 in the amount of horse-power, of 48 in the number of pairs of stones, and of 52 in the number of hands employed, but there was an increase

* Mr. E. Shaw, the manager of the Denton Mills Hat Factory, Abbotsford, reports that about 600 dozen rabbit skins weekly, or 374,400 yearly, are used in that establishment.

of 27 in the sets of rollers in use. The wheat operated upon increased by over 75,000 bushels; but the flour made decreased by nearly 6,900 tons,* and the other grain operated upon by nearly 84,500 bushels. A decrease of £35,600, moreover, took place in the estimated value of machinery, lands, and buildings :—

FLOUR MILLS, 1892 AND 1893.

Year ended March.	Number of Mills.	Mills employing—		Amount of Horse-power of Machinery.	Number of Pairs of Stones.	Number of Sets of Rollers.
		Steam-power.	Water-power.			
1892 ...	93	89	4	3,511	171	494
1893 ...	84	80	4	3,134	123	521
Increase	...	...	...	...	...	27
Decrease	9	9	...	377	48	...

Year ended March.	Number of Hands employed.	Grain operated upon.		Flour made.	Approximate total Value of—		
		Wheat.	Other.		Machinery and Plant.	Lands.	Buildings.
		bushels.	bushels.	tons.*	£	£	£
1892 ...	737	8,892,090	313,724	194,782	343,250	88,248	200,000
1893 ...	685	8,967,198	229,277	187,908	322,250	87,079	186,536
Increase	...	75,108	...	...	...	...	...
Decrease	52	...	84,447	6,874	21,000	1,169	13,464

456. The following was set down as the value of grain operated upon, and of flour, meal, etc., produced in flour mills, in 1891, and in the previous census year, 1881 :—

Value of materials used and produced.

FLOUR MILLS, 1881 AND 1891.

	1880-81.	1890-91.
Value of materials operated upon	£1,412,099	£1,620,125
„ articles produced	1,651,351	2,043,604
Increased value	£239,252, or 17 per cent.	£423,479, or 26 per cent.

457. The number of breweries returned in 1893 was 5 less than in 1892, and there was a general falling-off under all heads. The number of hands employed decreased by 133, the beer brewed by 1,630,000 gallons, and the value placed upon machinery, plant, land, and buildings by nearly £304,000 :—

Breweries.

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

BREWERIES, 1892 AND 1893.

Year ended March.	Number of Breweries.	Breweries employing—		Amount of Horse-power of Machinery.	Number of Hands employed.	Materials used.		
		Steam-power.	Manual Labour only.			Sugar.	Malt.	Hops.
1892 ...	68	58	10	758	1,173	lbs. 12,077,520	bushels. 788,184	lbs. 866,705
1893 ...	63	54	9	693	1,040	11,680,816	705,272	751,714
Decrease	5	4	1	65	133	396,704	82,912	114,991

Year ended March.	Beer made.	Approximate Total Value of—		
		Machinery and Plant.	Lands.	Buildings.
1892 ...	gallons. 17,505,463	£ 222,410	£ 914,049	£ 374,189
1893 ...	15,875,073	216,061	624,837	365,858
Decrease ...	1,630,390	6,349	289,212	8,331

458. The values of the sugar, malt, and hops used, and of the beer made, were returned for the last two census years. The following are the figures given :—

BREWERIES, 1881 AND 1891.

	1880-81.	1890-91.
Value of materials used ...	£442,885	£491,932
„ beer made ...	780,501	971,489
Increased value ...	£337,616, or 76 per cent.	£479,557, or 97 per cent.

459. The beer made in Victoria during 1892-3 amounted to 15,875,073 gallons; and the quantity imported, after deducting exports, was 975,191 gallons. These numbers gave a total consumption of 16,850,264 gallons, or an average of $14\frac{1}{2}$ gallons per head. The consumption of beer per head was in 1891-2 $16\frac{1}{3}$ gallons, in 1890-91 $17\frac{2}{3}$ gallons, in 1889-90 $19\frac{2}{5}$ gallons, in 1888-9 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. It will be noticed that there has been a falling-off in the consumption of nearly 2 gallons per head since 1891-2, and of $5\frac{1}{2}$ gallons since 1888-9.

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

Value of materials used and produced.

Consumption of beer per head.

Beer brewed in various countries.

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

United Kingdom (1885)	gallons. ... 989,890,	Austria-Hungary (1884)	gallons. ... 272,624,
Holland (1884)	... 932,228,	Belgium (1885)	... 206,074,
United States (1888)	... 819,640,	France (1883)	... 189,618.

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

Consumption of beer in various countries.

ANNUAL CONSUMPTION OF BEER PER HEAD IN VARIOUS COUNTRIES.

United Kingdom	gallons. ... 28·74	Tasmania	gallons. ... 10·02
South Australia	... 20·04	New Zealand	... 9·59
Germany	... 19·38	Switzerland	... 8·15
Victoria	... 19·36	Austria-Hungary	... 6·83
Holland	... 19·05	France	... 4·53
New South Wales	... 11·94	Canada	... 3·05
United States	... 10·74	Sweden	... 2·52
Queensland	... 10·23		

462. Six distilleries were returned both in 1893 and 1892. Although an increase took place in the power of machinery, and of 19 in the hands employed, the quantity of spirits distilled was less by 78,400 gallons, and the value of lands, buildings, etc., depreciated by nearly £5,000. The following are the figures for the two years:—

Distilleries.

DISTILLERIES, 1892 AND 1893.

Year ended March.	Number of Distilleries.	Amount of Horse-power of Machinery.	Number of Hands employed.	Spirits made.	Approximate Value of—		
					Machinery and Plant.	Lands.	Buildings and Improvements.
1892	6	146	108	gallons. 456,515	£ 64,000	£ 33,800	£ 66,500
1893	6	211	127	378,086	64,000	29,100	66,250
Increase	...	65	19	...	...	...	...
Decrease	...	...	...	78,429	...	4,700	250

463. According to the following figures, which (except those for the Australasian colonies) have not been obtained from an official source, and therefore must be taken only for what they may be worth, the average consumption of spirits per head appears to be much the greatest in Denmark and Sweden. Moreover, the consumption in Victoria is less than in New South Wales (slightly), Western Australia, or Queensland, but greater than in New Zealand, Tasmania,

Consumption of spirits in various countries.

* 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.

or South Australia, the latter two of which colonies stand at the very bottom of the list:—

ANNUAL CONSUMPTION OF SPIRITS PER HEAD IN VARIOUS COUNTRIES.

			Gallons.				Gallons.
Denmark	...	...	4·30	Victoria	...	...	1·12
Sweden	...	...	4·20	Switzerland	...	...	1·04
Scotland	...	...	2·10	United Kingdom	...	...	1·00
Holland	...	...	2·08	Germany	...	...	·95
Russia*	...	...	1·65	France	...	...	·85
Queensland	...	...	1·59	New Zealand	...	...	·78
Western Australia	...	...	1·46	England	...	...	·77
United States	...	...	1·34	Austria-Hungary	...	...	·63
Ireland	...	...	1·33	Tasmania	...	...	·59
Canada	...	...	1·19	South Australia	...	...	·49
New South Wales	...	...	1·15				

464. The same number of tobacco manufactories was returned in 1893 as in 1892, although the power employed was changed in two cases from steam to gas and manual labour respectively, but there was a general falling-off under every head except the value of lands and buildings. Thus the hands employed were fewer by 99, and the value of machinery and plant lower by about £11,600 than in 1892, whilst the quantity of tobacco manufactured was smaller by 3 per cent., and the number of cigars fewer by nearly one-fourth:—

TOBACCO MANUFACTORIES, 1892 AND 1893.

Year ended March.	Number of Establishments.	Establishments employing—			Amount of Horse-power of Machinery.	Number of Hands employed.		Quantity of—		Number of Cigars Manufactured.	Approximate Total Value of—		
		Steam-power.	Gas-power.	Manual Labour.		Males.	Females.	Tobacco Manufactured.	Snuff Manufactured.		Machinery and Plant.	Lands.	Buildings.
								lbs.	lbs.		£	£	£
1892 ..	13	5	..	8	84	515	172	1,064,797	1,100	10,146,900	58,532	40,060	38,350
1893 ..	13	3	1	9	71	431	157	1,033,643	964	7,771,950	46,976	40,113	43,269
Increase ..	..	..	1	1	..	..	..	..	..	..	..	53	4,919
Decrease ..	..	2	..	..	13	84	15	31,154	136	2,374,950	11,556	..	..

NOTE.—In addition to the other manufactures, 1,670,000 cigarettes were made in 1892, and 5,340,000 in 1893.

465. According to the returns of the last two censuses the value of the materials used and articles produced in tobacco manufactories was as follows in 1881 and 1891:—

* It is believed that the actual consumption in Russia is larger, and that much privately distilled spirits are consumed which are not taken into account.

Tobacco
manufac-
tories.

Value of
raw and
manufac-
tured
materials.

		1880-81.		1890-91.
Value of materials used	...	£126,450	...	£118,070
„ articles produced	...	199,320	...	239,627
Increased value	...	£72,870, or 58 per cent.	...	£121,557, or 103 per cent.

466. Of all the industries seriously affected by the general stagnation in the building trades, the most depressed are perhaps the brickyards and potteries, the number of which fell off in 1893, as compared with 1892, by 42—or, by one-fifth. All the items under this industry, moreover, show decreases varying from 25 to 60 per cent. The hands employed fell off by nearly 1,000, or 43 per cent.; the number of bricks made by over 127 millions, or by 61 per cent.; the value of pottery by 39 per cent.; and the value of the plant, lands, and buildings by £385,420, or by 44 per cent. The following are the comparative figures for the two years:—

BRICKYARDS AND POTTERIES, 1892 AND 1893.

Year ended March.	Number of Brick-yards and Potteries.	Number of Machines in use.		Brickyards employing—			Amount of Horse-power of Machinery.	Number of Hands employed.
		For tempering or crushing Clay.	For making Bricks or Pottery.	Machines worked by—		Manual Labour.		
				Steam.	Horses.			
1892 ...	215	234	168	63	103	49	2,385	2,342
1893 ...	173	175	111	48	76	49	1,878	1,346
Decrease	42	59	57	15	27	...	507	996

Year ended March.	Number of Bricks made.	Approximate Total Value of—			
		Pottery made.	Machinery and Plant.	Lands.*	Buildings.
		£	£	£	£
1892 ...	207,269,840	79,319	266,942	365,579	237,591
1893 ...	80,172,000	48,535	153,298	177,126	154,268
Decrease ...	127,097,840	30,784	113,644	188,453	83,323

467. The establishments for tanning and wool-washing were less numerous by 10, the number of hands employed by 203, and the horse-power of the machinery by 51, in 1893 than in 1892, and although an increase of 110 took place in the number of tanpits, the hides tanned were fewer by 23,500, the skins by nearly 216,000, the skins stripped by nearly 190,000; and also a decrease of over 1,500,000 lbs. in the quantity of wool washed. The returns also show

* The figures in this column apply to purchased lands only. Thirty of the brickyards in 1892, and twenty-three in 1893, were on Crown lands.

a decrease of over £52,000 in the value of plant, lands, and buildings connected with that industry. The following are the particulars for the two years:—

TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS,
1892 AND 1893.

Year ended March.	Number of Establishments.	Establishments employing—					Amount of Horse-power of Machinery.	Number of Hands employed.	Number of Tan Pits.
		Steam-power.	Wind-power.	Water-power.	Horse-power.	Manual Labour only.			
1892	128	69	1	1	9	48	885	1,695	3,220
1893	118	65	3	2	11	37	834	1,492	3,330
Increase ... ..	...	...	2	1	2	...	...	...	110
Decrease	10	4	...	...	...	11	51	203	...

Year ended March.	Number Tanned of—		Number of Skins Stripped of Wool.	Other Wool Washed.	Approximate Total Value of—		
	Hides.	Skins.			Machinery and Plant.	Lands.*	Buildings.
1892	355,655	1,569,911	2,275,745	lbs. 11,222,779	£ 115,732	£ 109,378	£ 140,096
1893	332,130	1,354,048	2,085,911	9,676,276	105,034	85,288	122,600
Decrease	23,525	215,863	189,834	1,546,503	10,698	24,090	17,496

468. An estimate of the value of the materials used and articles produced in tanneries, fellmongeries, and wool-washing establishments was obtained in the last two census years. The following are the figures:—

TANNERIES, FELLMONGERIES, AND WOOL-WASHING ESTABLISHMENTS,
1881 AND 1891.

	1880-81.	1890-91.
Value of materials used	£1,008,531	£793,679
„ articles produced	1,406,274	1,226,853
Increased value	£397,743, or 39 per cent.	£433,174, or 55 per cent.

469. An Act† to encourage the growth of the several species of acacia, locally known as “wattle,” the bark of which is of great value

* The figures in this column apply to purchased land only. Six of the establishments in 1892, and three in 1893, were on Crown lands. In these cases no valuation of land is given.

† *The Wattle Trees Cultivation Act* 1889 (53 Vict. No. 1,037), repealed and re-enacted by 54 Vict. No. 1157.

Value of materials used and produced.

Wattle cultivation.

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 larger on good land, its bark producing qualities are said to be greatest on poor arid soils. The provisions of the Act were not largely availed of during 1891 or 1892, chiefly, no doubt, owing to the difficulty in finding available Crown lands suitable for wattle cultivation. During the latter year 10 applications for leases over an area of 6,184 acres were received, and 11 lessees of grazing areas applied to convert their holdings into wattle leaseholds. The applications of three of the latter, for an area of 2,265 acres, and of 11 of the former, for an area of 3,536 acres, were approved during the year.

470. The forest saw mills, or those established for the purpose of cutting native timber at or near the place at which it is grown, were separated from the town saw mills for the first time in 1890-91. The following are the statistics of the industry referred to for the last two years:—

FOREST SAW MILLS, 1892 AND 1893.

	1892.	1893.
Number of forest saw mills	165	143
Number using steam power	159	140
Number using water power	6	3
Horse-power of steam engines	2,723	2,253
Hands employed	2,047	1,626
Superficial feet of timber produced	69,259,132	52,975,500
Value of timber produced	£277,035	£211,902
„ machinery and plant	£190,450	£143,430
„ lands	£31,795*	£22,425*
„ buildings	£40,465	£27,318

471. The number of woollen mills returned was the same in 1893 as in 1892, and only one increase took place under the various particulars relating to that industry, viz., in the number of blankets manufactured. Whilst there was a lesser power of machinery and

* In 1892, 70 of these mills, and in 1893, 69 were upon Crown lands. In these cases no valuation of the land is given.

286 fewer hands employed, there was also a decrease of £48,790 in the value of plant, lands, and buildings; of about 1,400,000 lbs. in the quantity of wool used; of 211,570 in the number of yards of tweed, cloth, and flannel made; of 266 in the number of shawls made; and of 9,102 in the number of spindles used.

WOOLLEN MILLS, 1892 AND 1893.

Year ended March.	Number of Woollen Mills.	Number of Spindles.	Horse-power of Machinery.	Quantity of Wool used.	Goods Manufactured : Quantity of—		
					Tweed, Cloth, Flannel, etc.	Blankets.	Shawls.
				lbs.	yards.	pairs.	number.
1892 ...	7	27,280	895	2,474,441	1,196,747	3,033	1,336
1893 ...	7	18,178	555	1,059,458	985,177	3,117	1,070
Increase	...	...	...	...	...	84	...
Decrease	...	9,102	340	1,414,983	211,570	...	266

Year ended March.	Hands employed.		Approximate Total Value of—		
	Males.	Females.	Machinery and Plant.	Lands.	Buildings.
			£	£	£
1892 ...	428	410	180,460	8,132	64,657
1893 ...	292	260	156,472	7,331	40,656
Decrease	136	150	23,988	801	24,001

472. The value of the raw material used in woollen mills, and of the articles produced, was returned in 1881 and 1891. The following are the figures :—

WOOLLEN MILLS, 1881 AND 1891.

	1880-81.	1890-91.
Value of materials used ...	£89,412	£94,932
„ articles produced ...	168,710	170,687
Increased value ...	£79,298, or 89 per cent.	£75,755, or 80 per cent.

473. Thirty-six soap and candle works, or two more than in 1892, were returned in 1893, although the hands employed decreased by 56. The weight of soap made in the year under review was more by 2,223 cwt. than that in the previous year, and the weight of candles made by 1,943 cwt.; whilst the valuation placed upon the machinery, lands, and buildings was higher by £33,700 than in 1892 :—

Value of articles used and produced.

Soap and candle works

SOAP AND CANDLE WORKS, 1892 AND 1893.

Year ended March.	Number of Establishments.	Establishments employing—			Amount of Horse-power of Machinery.	Number of Hands employed.	Soap made.	Candles made.	Approximate Total Value of—		
		Steam power.	Gas power.	Manual Labour only.					Machinery and Plant.	Lands.*	Buildings.
1892 ...	34	26	1	7	651	431	cwt. 139,540	cwt. 60,837	£ 86,495	£ 80,051	£ 55,181
1893 ...	36	26	1	9	652	375	141,763	62,780	100,130	95,035	60,220
Increase	2	...	...	2	1	...	2,223	1,943	13,635	14,984	5,039
Decrease	...	...	...	...	...	56	...	...	...	...	...

NOTE.—In addition to the other manufactures, 16,080 cwt. of soda crystals were made in 1892, and 17,632 cwt. in 1893.

474. The value of the raw material used, and of the articles produced, in soap and candle factories was returned for the twelve months preceding the last two censuses, with the following result:—

SOAP AND CANDLE WORKS, 1881 AND 1891.

	1880-81.	1890-91.
Value of raw materials used ...	£288,340	£229,903
„ articles produced ...	450,924	348,316
Increased value ...	£162,584, or 56 per cent.	£118,413, or 52 per cent.

475. The number of butter and cheese factories returned in 1892-3 was 109—of which 86 were exclusively for butter, 14 for cheese only, and 9 for both products—as compared with 74 in the previous year. The great majority of the factories employed steam power—the horse-power of engines being 896—and the hands employed numbered 360, whilst the capital invested in machinery and plant, lands, and buildings was £174,098. The quantity of factory-made butter was over 13 million lbs., and of cheese 947,000 lbs.; but in addition to this, 10,320,079 lbs. of butter and 3,110,463 lbs. of cheese were made on farms, which are not returned as factories, although they employ over 14,000 hands exclusively in dairy work.† The following are the particulars relating to the factories for the last two years:—

BUTTER AND CHEESE FACTORIES, 1892 AND 1893.

Year ended March.	Number of Factories.	Establishments employing—			Horse-power of Steam Engines.
		Steam-power.	Horse-power.	Manual Labour.	
1892 ...	74	67	1	6	586
1893 ...	109	102	2	5	896
Increase	35	35	1	...	310
Decrease	...	...	...	1	...

* The figures in this column apply to purchased land only. One of these establishments in 1892 and two in 1893 were on Crown lands. In these cases no valuation of the land is given.

† See also paragraphs 444 to 446 ante.

BUTTER AND CHEESE FACTORIES, 1892 AND 1893—*continued.*

Year ended March.	Hands employed.		Quantity made.		Approximate Total Value of—		
	Males.	Females.	Butter.	Cheese.	Machinery and Plant.	Lands.	Buildings.
			lbs.	lbs.	£	£	£
1892 ...	283	30	5,842,942	818,282	57,913	29,339	38,382
1893 ...	332	28	13,189,766	946,531	88,519	29,230*	56,349
Increase ...	49	...	7,346,824	128,249	30,606	...	17,967
Decrease ...	...	2	...	...	...	109	...

NOTE.—In connection with the above there were in 1893 120 creameries, or collecting establishments, employing 135 males and 6 females, with machinery and plant valued at £37,910, and lands and buildings valued at £17,290. In 1892 there were 65 creameries employing 93 males and 9 females, with plant valued at £2,279, and lands and buildings valued at £8,976.

Bacon and
ham curing
works.

476. The following particulars relating to bacon and ham curing establishments were returned in the last two years. It will be noticed that in 1892-3, as compared with the previous year, there was an increase of 2 in the number of establishments and of 12 in the number of hands employed, but a decrease of nearly half a million pounds in the quantity of bacon and ham cured, and of £9,140 in the value of lands and machinery, which, however, was partly counterbalanced by an increase of £5,200 in the value of buildings:—

BACON AND HAM CURING ESTABLISHMENTS, 1892 AND 1893.

Year ended March.	Establishments employing—			Horse-power of Steam Engines.	Hands employed.	
	Steam Machinery.	Wind Machinery.	Manual Labour.		Males.	Females.
1892 ...	12	1	9	108	154	4
1893 ...	14	2	8	123	165	5
Increase ...	2	1	...	15	11	1
Decrease ...	...	...	1	...	...	...

Year ended March.	Bacon and Ham Cured.	Approximate Total Value of—		
		Machinery and Plant.	Lands.	Buildings.
	lbs.	£	£	£
1892 ..	7,245,496	12,625	37,390	18,170
1893 ...	6,767,425	11,825	29,050†	23,400
Increase ...	...	...	...	5,230
Decrease ...	478,071	800	8,340	...

NOTE.—In addition to the bacon and hams cured in factories, 2,251,021 lbs. were returned as having been cured on farms, making a total for the colony of 4,026 tons 1 cwt. 94 lbs.

* Thirteen of these establishments were on Crown lands. In these cases no valuation of the land has been given.

† Two of these establishments were on Crown lands. In these cases no valuation of the land has been given.

477. The manufactories and works—exclusive of flour mills, breweries, distilleries, tobacco manufactories, brickyards, potteries, tanneries, fellmongeries, wool-washing establishments, woollen mills, and soap and candle works—were less numerous by 22 than those returned in 1892, the falling-off having occurred in those employing steam, water, and gas power, and manual labour, whilst there was an increase in those employing wind and horses. There was also a decrease of 379 in the horse-power of the machinery but a slight increase in its value, besides a considerable reduction (15 per cent.) in the number of hands employed—5,608 in the case of males and 890 in the case of females. The value of lands and buildings was also lower by over £746,000 as compared with the previous year. The totals of the two years are subjoined:—

MANUFACTORIES, WORKS, ETC., 1892 AND 1893.

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

Year ended March.	Number of Manufactories, Works, etc.	Manufactories, etc., employing—						Horse-power of Machinery.
		Steam.	Water.	Gas.	Wind	Horses.	Manual Labour only	
1892 ...	2,577	1,058	17	403	1	25	1,073	21,465
1893 ...	2,555	1,052	11	392	3	38	1,059	21,086
Increase	...	...	...	...	2	13	...	...
Decrease	22	6	6	11	...	...	14	379

Year ended March.	Number of Hands employed.		Approximate Total Value of—		
	Males.	Females.	Machinery and Plant.	Lands.*	Buildings.
1892 ...	36,515	7,699	£ 5,785,806	£ 3,372,508	£ 3,166,363
1893 ...	30,907	6,809	£ 5,788,869	£ 2,832,246	£ 2,960,440
Increase	...	...	3,063	...	...
Decrease	5,608	890	...	540,262	205,923

NOTE.—Exclusive of stone-breaking and tar-pavement works, which numbered 22 in 1892 and 17 in 1893. These works being carried on in connexion with quarries, it is found impossible to separate them therefrom. See table following paragraph 484 *post*.

478. By summarizing the returns of manufactories and works of all descriptions—including not only such as are embraced in the foregoing table, but also those excluded therefrom—it is found that during 1892-3 the total number of establishments decreased by 189, and the hands employed were fewer by 9,033; those of them which use steam or gas decreased by 73, the amount of horse-power by 2,136, and the machinery, lands, and buildings were set down as lower in value by

* 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 175 in 1892 and 179 in 1893.

nearly $1\frac{3}{4}$ million sterling. The returns of the two years are contained in the following table:—

MANUFACTORIES, WORKS, ETC., 1892 AND 1893.

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

Year ended March.	Total Number of Establishments.	Number of Establishments using Steam or Gas Engines.	Horse-power of Machinery.	Number of Hands employed.	Approximate Value of Lands,* Buildings, Machinery, and Plant.
1892 ...	3,141	1,785	30,780	52,225	£ 16,472,859
1893 ...	2,952	1,712	28,644	43,192	14,756,321
Decrease ...	189	73	2,136	9,033	1,716,538

Names of manufactories.

479. The manufacturing establishments of all kinds respecting which returns are obtained are named in the following table, and their numbers are given for 1890-91 and 1892-3. For the former, which was the census year, are also given the approximate values of materials used and of articles produced, and for the latter year the number of hands employed, and the approximate value of machinery, plant, land, and buildings. 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:—

MANUFACTORIES, WORKS, ETC., 1891 AND 1893.

Description of Manufactory, Work, etc.	1890-91.			1892-3.		
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
BOOKS AND STATIONERY.		£	£			£
Account-book manufactories, manufacturing stationers	11	152,360	248,900	11	867	232,490
Printing and lithographic printing establishments†	162	459,858	1,363,086	180	3,570	1,150,030
Photo-lithographic works ...	1	...	...	1	...	...

* 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 212 in 1892, and 207 in 1893.

† Including paper-bag manufactories.

MANUFACTORIES, WORKS, ETC., 1891 AND 1893—continued.

Description of Manufactory, Work, etc.	1890-91.			1892-3.		
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
MUSICAL INSTRUMENTS.						
Organ-building establishments ...	3	£ 6,300	£ 10,100	3	37	£ 6,950
Pianoforte manufactories ...	3	750	1,900	3	10	2,270
CARVING FIGURES, ETC.						
Wood carving and turnery works ...	15	3,595	9,710	18	80	21,175
DESIGNS, MEDALS, AND DIES.						
Die-sinkers, engravers, medallists, trade-mark makers	8	5,635	14,149	8	59	16,780
PHILOSOPHICAL INSTRUMENTS, ETC.						
Electric-lighting apparatus manufactory	3	1,420	3,450	2	8	2,620
Philosophical instrument manufactories	2	540	900	2	8	3,150
SURGICAL INSTRUMENTS.						
Surgical instrument, truss—manufactories	4	1,056	4,806	4	16	6,300
ARMS, AMMUNITION, ETC.						
Blasting powder, cartridge, dynamite, etc.—manufactories	6	14,804	27,070	6	70	52,190
Fuze manufactory ...	1	...	...	1	...	...
Shot manufactories ...	2	1,600	2,184	1	...	...
MACHINES, TOOLS, AND IMPLEMENTS.						
Agricultural implement manufactories	71	263,714	692,125	81	1,127	175,077
Boiler and pipe-covering manufactory	1	...	...	1	...	...
Cutlery, tool—manufactories ...	9	10,350	26,110	9	36	20,730
Domestic implement* manufactories ...	6	4,500	14,400	5	53	5,680
Iron foundries and engineering establishments†	190	1,166,516	2,480,941	180	5,091	1,350,281
Nail manufactories ...	4	15,810	22,692	4	48	16,400
Pattern-makers ...	5	1,000	5,470	6	16	4,000
Sheet-iron and tin works ...	53	119,644	240,000	59	541	122,801
CARRIAGES AND HARNESS.						
Carriage lamp manufactories ...	2	1,500	3,800	2	13	3,100
Coach, waggon, etc.—manufactories ...	205	238,096	506,625	202	1,968	324,062
Perambulator manufactories ...	2	620	1,869	2	12	3,850
Saddle, harness—manufactories ...	73	80,423	154,076	69	459	80,870
Saddle-tree, etc., manufactories ...	3	1,350	4,400	3	44	5,340
Whip manufactories ...	3	2,610	7,400	2	7	565

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

† Including brass-founders.

MANUFACTORIES, WORKS, ETC., 1891 AND 1893—continued.

Description of Manufactory, Work, etc.	1890-91.		1892-3.			
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
SHIPS AND BOATS.						
Ship, boat—builders	10	£ 3,999	£ 10,957	8	53	£ 8,060
Ships' wheels, blocks, etc.—manufactory	1	...	...	1	...	...
Graving-docks, patent slips, etc. ...	7	...	...	7	159	425,690
HOUSES, BUILDINGS, ETC.						
Architectural modelling works * ...	13	4,557	11,788	12	37	23,150
Enamelled mantelpiece manufactories.	5	8,820	18,800	1	...	...
Lime and cement works	34	14,361	46,868	26	189	42,157
Venetian blind manufactories ...	9	16,293	21,866	10	56	12,415
FURNITURE.						
Bedding, flock, and upholstery manufactories	33	89,532	118,859	25	208	68,092
Bedstead manufactory	1	...	...	1	...	...
Cabinet works, including billiard-table makers	71	141,589	321,892	64	756	169,920
Earth-closet manufactories	2	2,200	7,495	2	16	4,850
Iron-safe manufactories	2	1,600	4,800	2	10	3,850
Looking-glass manufactories	4	13,968	21,200	3	27	6,740
Picture-frame makers, etc.	9	13,582	17,248	8	36	11,160
CHEMICALS.						
Chemical works	15	57,080	151,362	15	208	72,110
Dye works	5	238	1,397	9	98	18,330
Essential oil manufactories	12	6,660	19,090	15	121	8,098
Ink, blacking, blue, washing-powder, etc.—manufactories	7	43,658	79,950	7	123	17,555
Japanning works	1	...	...	1	...	...
Paint, varnish—manufactories ...	2	6,990	17,000	3	12	21,200
Printing ink manufactories... ..	2	4,000	8,500	3	10	7,980
Salt works	4	250	1,500	5	32	5,520
TEXTILE FABRICS.						
Woollen mills	7	94,932	170,687	7	552	204,459
DRESS.						
Boot manufactories	92	476,366	844,202	87	3,341	199,699
Clothing manufactories	105	621,671	1,127,887	93	4,330	262,876
Fur manufactories	8	20,470	37,665	7	55	12,154
Hat, cap—manufactories	17	44,569	93,058	17	466	66,945
Hosiery manufactories	3	6,160	10,145	3	39	6,500
Oilskin, waterproof-clothing—manufactories	5	24,620	48,800	6	224	17,435
Umbrella and parasol manufactories ...	10	37,542	59,620	11	117	18,645

* Including ventilator manufactories.

MANUFACTORIES, WORKS, ETC., 1891 AND 1893—continued.

Description of Manufactory, Work, etc.	1890-91.			1892-3.		
	Number of Establishments.	Approximate value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
FIBROUS MATERIALS.						
Rope, twine, mat, bag, sack—manu- factories	13	£ 161,356	£ 227,122	13	283	£ 82,120
Sail, tent, tarpaulin—manufactories ...	9	70,162	85,431	8	40	12,220
ANIMAL FOOD.						
Bacon-curing establishments ...	...	...	...	24	170	64,275
Butter factories ...	32	80,549	118,486	} 109	360	174,098
Cheese factories* ...	20	23,595	43,856			
Butterine factories ...	...	...	...	1	...	...
Meat-preserving establishments ...	24	200,530	281,100	3	164	14,380
Milk-condensing works ...	1	...	...	...	...	...
VEGETABLE FOOD.						
Biscuit manufactories ...	7	157,816	283,716	8	600	153,150
Confectionery works ...	13	79,920	147,450	15	414	100,990
Flour mills ...	104	1,620,125	2,043,604	84	685	595,865
Jam, pickle, vinegar, sauce—manu- factories	17	77,624	137,069	19	321	78,135
Macaroni works ...	1	...	...	1	...	...
Maizena, oatmeal, starch — manu- factories†	4	129,200	153,800	5	188	116,762
DRINKS AND STIMULANTS‡						
Aërated waters, gingerbeer, liqueur, etc.—works	160	195,997	365,930	167	827	297,443
Breweries ...	68	491,932	971,489	63	1,040	1,206,756
Coffee, chicory, cocoa, mustard, spice— works†	13	35,587	60,322	10	124	73,190
Distilleries ...	6	41,469	106,937	6	127	159,350
Malthouses ...	16	166,515	217,596	18	124	181,364
Sugar, treacle—refineries ...	3	435,000	575,000	4	425	294,500
Tobacco, cigars, snuff—manufactories	13	118,070	239,627	13	588	130,358
ANIMAL MATTERS.						
Boiling-down, tallow-rendering— establishments	14	70,578	92,252	16	88	19,105
Bone mills and bone manure manu- factories	11	27,955	53,380	14	87	33,710
Brush manufactories ...	8	23,680	47,750	8	142	15,090
Catgut manufactory ...	1	...	...	...	...	...
Curled hair manufactories ...	4	5,000	10,400	4	28	9,520
Glue, oil—manufactories ...	3	3,221	5,246	3	31	12,300

* 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. See paragraph 475 ante.

† Some of these factories also make coffee, cocoa, spice, etc.

‡ Places where wine is made are not included.

MANUFACTORIES, WORKS, ETC., 1891 AND 1893—continued.

Description of Manufactory, Work, etc.	1890-91.		1892-3.			
	Number of Establishments.	Approximate value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery Plant, Land, and Buildings.
		Materials used.	Articles produced.			
ANIMAL MATTERS—continued.						
Leather belting (machinery) manufactories	2	£ 11,372	£ 14,972	2	7	£ 8,625
Morocco, fancy leather—manufactories	5	6,925	16,700	5	29	3,342
Portmanteau, trunk—manufactories ...	7	3,620	7,498	7	25	6,671
Soap, candle—works ...	33	229,903	348,316	36	375	255,385
Tanneries, fellmongeries, and wool-washing establishments	132	793,679	1,226,853	118	1,492	312,922
VEGETABLE MATTERS.						
Bark mills ...	6	26,700	37,100	5	31	4,540
Basket-making works ...	11	4,940	18,182	7	43	6,630
Broom manufactories* ...	3	16,200	20,100	2	43	8,010
Chaff-cutting, corn-crushing—works†	220	544,314	738,941	215	882	232,298
Cooperage works ...	30	23,667	47,405	30	158	35,912
Cork manufactories ...	3	4,400	9,164	3	9	6,420
Fancy-box, hat-box—manufactories ...	6	7,940	16,763	4	99	17,150
Paper manufactories ...	2	27,500	61,000	3	176	132,700
Sawmills, moulding mills, joinery, etc.—works	321	1,127,857	2,600,298‡	71	1,410	526,182
Saw mills—forest ...	...	...	...	143	1,606	193,173
Straw board manufactory ...	1	...	...	1	...	...
COAL AND LIGHTING.						
Electric-light works ...	4	4,100	18,500	6	101	152,075
Gasworks ...	30	288,967	628,867	41	1,198	2,575,404
Ironfounders' charcoal factory ...	1	...	...	1	...	...
STONE, CLAY, EARTHENWARE, AND GLASS.						
Asphalt paving material works ...	2	3,690	8,250	...	...	...
Asbestos works ...	1	...	...	1	...	...
Brickyards and potteries ...	233	...	534,284	173	1,346	484,692
Cement tile works ...	1	...	...	...	...	...
Filter manufactories ...	2	2,000	4,000	2	12	1,800
Glass manufactories, works ...	6	7,190	42,000	8	263	50,190
Stone and marble sawing, polishing—works	54	109,558	228,187	49	627	96,069
WATER. §						
Ice manufactories ...	6	4,536	8,354	8	36	82,359
Hydraulic works ...	...	...	...	1	...	...

* 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.

‡ Including £608,759, value of timber sawn from Victorian logs.

§ Works for the storage and supply of water are not included in the manufacturing tables. For information relating to these, see paragraph 374 *et seq.*

MANUFACTORIES, WORKS, ETC., 1891 AND 1893—continued.

Description of Manufactory, Work, etc.	1890-91.		1892-3.			
	Number of Establishments.	Approximate value of—		Number of Establishments.	Hands Employed.	Approximate value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
GOLD, SILVER, AND PRECIOUS STONES.		£	£			£
Goldsmiths, jewellers, and electroplaters (manufacturing)	26	142,447	190,675	23	227	63,090
Royal mint	1	...	...	1	50	*68,000
METALS OTHER THAN GOLD AND SILVER.						
Brass and copper works—gasalier manufactories	26	29,446	65,885	27	346	74,879
Lead, pewter, and zinc—works ...	4	24,688	47,032	3	21	35,900
Pyrites works	1	...	...	1	...	...
Smelting works	3	14,122	18,300	2	20	8,300
Wire-working establishments ...	12	9,670	24,256	13	98	19,690
Total where only one return was received†	...	11,163	22,007	...	191	146,931
Total	3,104	12,006,233	22,390,251	2,952	43,192	14,756,321

480. In 1891, which was the year of the census, an enquiry was made respecting the value of the materials used and articles produced in all manufactories. This enquiry was responded to in most instances, and in cases where the information was not given the value has been estimated upon the same proportions as obtained in similar works respecting which information was supplied. The result is given in the third and fourth columns of the last table. The totals and difference between them—to which has been added an estimate for the value of the bricks and pottery made—together with similar results for the previous census year are as follow:—

VALUE OF RAW AND MANUFACTURED MATERIALS, 1881 AND 1891.

	1880-81.		1890-91.
	£		£
Value of materials operated upon	7,997,745	...	12,006,233
„ articles produced	13,370,836	...	22,390,251
Increased value ...	5,373,091, or 67 per cent.		10,384,018, or 86 per cent.
Bricks at £1 per 1,000	53,566	...	241,928
Value of pottery	34,600	...	68,160
Total value of manufactured articles, less cost of raw material	5,461,257	...	10,694,106

* Exclusive of land, estimated at £85,000.

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

Summary of
manufac-
tories at
three
periods.

481. By comparing the particulars respecting these manfactories, as returned in 1893 and in the first year of each of the two previous quinquennia, considerable increases at each successive period will be found except in regard to the number of establishments and hands employed at the last period. The number of establishments increased by 9 per cent. between 1883 and 1888, and by 3 per cent. between 1888 and 1893, the horse-power of steam engines by 31 and 32 per cent. in those intervals respectively; the hands employed increased by 7 per cent. between the first and second periods, but were fewer at the last than at either of the former ones; and the value of machinery, plant, lands, and buildings increased by 48 per cent. in the first, and by 17 per cent. in the second, interval. It would appear that the tendency is to employ steam power in preference to manual labour, and whereas only $47\frac{1}{2}$ per cent. of the establishments employed steam power in 1883, nearly 58 per cent. did so in 1893. The following is the comparison referred to:—

SUMMARY OF MANUFACTORIES, WORKS, ETC., 1883, 1888,
AND 1893.

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 Plant.
1883 ...	2,612	1,248	16,612	45,698	£ 8,519,486
1888 ...	2,854	1,522	21,707	49,084	12,633,988
1893 ...	2,952	1,712	28,644	43,192	14,756,321

Persons
engaged
in manu-
factories,
1891.

482. The persons returned at the census of 1891 as engaged in manufacturing industries numbered 96,013, viz., 67,718 males and 28,295 females. These include not only the individuals working in factories properly so called, but those employed in workrooms, shops, and other establishments of a less important character than those which the persons who collect statistics from year to year are called upon to visit. The census figures, which are as follow, must therefore considerably exceed those representing the hands employed in factories as given in previous tables:—

PERSONS ENGAGED IN MANUFACTURING INDUSTRIES, ACCORDING TO
THE CENSUS OF VICTORIA, 1891.*

	Males.	Females.
Working in books and publications	4,228	507
„ musical instruments	165	...
„ prints, pictures, and art materials	316	14
„ ornaments and minor art products	815	91
„ equipment for sports and games	21	...
„ types, designs, medals, and dies	293	57
„ watches, clocks, and scientific instruments	768	11
„ surgical instruments and appliances	16	3
„ arms and explosives	66	21
„ machinery, implements, and tools	4,843	2
„ carriages and vehicles	3,693	13
„ harness, saddlery, and leatherware	1,839	14
„ ships, boats, and their equipment	588	...
„ house and shop fittings	7,618	17
„ furniture	2,408	224
„ chemicals and by-products	203	50
„ textile fabrics	568	361
„ dress	10,063	26,067
„ fibrous materials and fabrics	297	59
„ animal food	498	14
„ vegetable food	4,650	302
„ drinks, stimulants, and narcotics	2,030	113
„ animal matters	1,561	12
„ vegetable matters	4,493	49
„ fodder and seeds	197	1
„ paper	131	227
„ stone, clay, earthenware, and glass	3,099	18
„ gold, silver, and precious stones	627	21
„ metals other than gold and silver	10,604	25
„ fuel, lights, and electric and hydraulic energy... ..	1,020	2
Total	67,718	28,295

483. The system of compiling the census returns of occupations not having been quite uniform throughout the Australasian colonies, it is necessary to make certain eliminations before correct comparisons can be made, which being done, the number of persons engaged in manufacturing in Victoria is reduced for the time being from 96,013 to 88,694. They remain, however, more numerous, and continue to bear a higher proportion to the population, than do the corresponding classes in any of the other Australasian colonies. Next to Victoria, the highest position is occupied by New Zealand, and the next by New South Wales, Tasmania being at the bottom of the list. The number and proportion in each colony were as follow:—

Manufacturers in Australasian colonies.

* Exclusive of Chinese and Aborigines. For details under the different heads, see *General Report on the Census of 1891*, by H. H. Hayter, C.M.G. : Brain, Melbourne, 1893.

PERSONS ENGAGED IN MANUFACTURING* IN SIX AUSTRALASIAN COLONIES, 1891.†

Colony.	Manufacturers.	
	Number.	Proportion to the Population.
		Per cent.
1. Victoria ...	88,694	7·83
2. New Zealand ...	42,893	6·90
3. New South Wales ...	74,559	6·65
4. Western Australia ...	2,769	5·64
5. Queensland ...	21,795	5·56
6. Tasmania ...	7,460	5·10

484. The stone quarries, stone-crushing and tar-pavement works returned in 1893 were fewer by 76 than in 1892, and the hands employed showed a falling off of 571. The output of stone fell off by 440,000 cubic yards, and a decrease also appears in the power of steam engines, and in the value of stone raised, plant, and lands. The following are the figures for the two years:—

STONE QUARRIES,‡ ETC., 1892 AND 1893.

Year ended March.	Number of Quarries, etc.	Cubic Yards of Stone raised.				Steam Engines in use.	
		Bluestone.	Slate and Flagging.	Sandstone and Freestone.	Granite.	Number.	Horse-power.
1892 ...	179	792,773	1,050	20,251	745	25	834
1893 ...	103	367,738	820	5,403	1,900	23	470
Increase ...	...	...	...	...	1,155	...	...
Decrease ...	76	425,035	230	14,848	...	2	364

Year ended March.	Number of Hands employed.	Approximate Total Value of—			
		Stone raised.	Machinery and Plant.	Lands.§	Buildings.
		£	£	£	£
1892	1,300	163,215	100,102	86,805	13,815
1893	729	75,367	80,403	79,570	15,048
Increase	...	...	...	...	1,233
Decrease	571	87,848	19,699	7,235	..

485. According to the estimate of the Mining Department, the gold raised in Victoria in 1892 was 654,456 oz., which is more than

* Exclusive of Aborigines.

† Not including South Australia, the occupation returns of which have not yet been compiled.

‡ Including stone-crushing and tar-pavement works.

§ The figures in this column apply to purchased land only; 26 of the stone quarries in 1893, and 39 in 1892, were on Crown lands, and in these cases no valuation of the land has been given.

Stone quarries.

Gold raised, 1891 and 1892.

the quantity obtained in 1891 by 78,056 oz., representing, at £4 per oz., an increased value of £312,224.* The following are the figures for the two years:—

QUANTITY AND VALUE OF GOLD RAISED IN 1891 AND 1892.

Year.	Gold raised in Victoria.	
	Estimated Quantity.	Value, at £4 per oz.
1891	oz. 576,400	£ 2,305,600
1892	654,456	2,617,824
Increase	78,056	312,224

486. Ever since 1871 the quantity of gold raised from year to year has, as a rule, been steadily diminishing. Exceptions took place in 1880 to 1882 (when for the time a decided improvement occurred), 1888, and 1892. In the last-named year the yield was the largest since 1886. The subjoined figures give an estimate of the quantity of gold raised in 1871 and each subsequent year:—

Gold raised,
1871 to
1892.

ESTIMATED QUANTITY OF GOLD RAISED, 1871 TO 1892.

1871	oz. 1,355,477	1882	oz. 898,536
1872	1,282,521	1883	810,047
1873	1,241,205	1884	778,618
1874	1,155,972	1885	735,218
1875	1,095,787	1886	665,196
1876	963,760	1887	617,751
1877	809,653	1888	625,026
1878	775,272	1889	614,839
1879	758,947	1890	588,561
1880	829,121	1891	576,400
1881	858,850	1892	654,456

487. Carrying on to the end of 1892 the calculations given in previous years, the following may be estimated as the total quantity and value of the gold raised in Victoria from the period of its first discovery, about the middle of 1851. The figures give an average per annum during the whole period of about 1,382,600 oz., which is two and one-tenth times the quantity raised in 1892:—

Gold raised,
1851 to
1892.

ESTIMATED TOTAL QUANTITY AND VALUE OF GOLD RAISED IN VICTORIA, 1851 TO 1892.

Gold raised in Victoria.	Estimated Quantity.	Value, at £4 per oz.
Prior to 1892	oz. 57,415,759	£ 229,663,036
During 1892	654,456	2,617,824
Total	58,070,215	232,280,860

* For recommendations contained in the Reports of Royal Commission on Gold Mining made in 1890 and 1891, see issue of this work for 1890-91, Vol. II., paragraph 598.

Gold raised
in Austral-
asian
colonies.

488. Since the first discovery, in 1851, of gold in Australasia, nearly 91 million ounces have been raised in the various colonies, nearly two-thirds of 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 six or seven years gold has been raised in that colony on the Kimberley, Murchison, and Yilgarn (Coolgardie) goldfields, no reliable information as to the quantity has been obtained:—

GOLD PRODUCE IN AUSTRALASIAN COLONIES, 1851 TO 1892.

Period.	Victoria.	New South Wales.	Queensland.	South Australia.	Tasmania.	New Zealand.
	oz.	oz.	oz.	oz.	oz.	oz.
1851 to 1855	11,218,772	1,920,200	...	...	...	...
1856 to 1860	12,712,946	1,360,763	4,127	...	...	35,845
1861 to 1865	8,341,464	2,233,001	52,580	...	...	2,288,088
1866 to 1870	7,105,820	1,309,911	512,803	...	3,504	3,218,916
1871 to 1875	6,130,962	1,612,227	1,319,952	24,685	25,296	2,412,446
1876 to 1880	4,136,753	639,435	1,668,819	59,910	154,883	1,596,899
1881 to 1885	4,081,269	624,835	1,327,366	88,366	235,973	1,237,456
1886 to 1890	3,111,373	546,726	2,598,254	130,218	169,017	1,028,571
1887 ...	617,751	110,288	425,923	36,569	42,609	203,869
1888 ...	625,026	87,503	481,643	16,763	39,610	201,219
1889 ...	614,839	119,759	739,103	20,833	32,333	203,211
1890 ...	588,561	127,760	610,587	29,738	23,451	193,193
1891 ...	576,400	153,336	576,439	35,533	48,769	251,996
1892 ...	654,456	156,870	615,558	30,218	45,110	238,079

Gold pro-
duce of
Austral-
asia, 1851
to 1892.

489. According to the above figures, together with an estimate for Western Australia, the total quantity of gold raised in each colony from 1851 to 1892 has been as follows:—

SUMMARY OF GOLD PRODUCE OF AUSTRALASIA, 1851 TO 1892.

Victoria ...	oz.	58,070,215	South Australia ...	oz.	368,930
New Zealand...	...	12,308,296	Western Australia ...	...	248,157†
New South Wales	...	10,557,304			
Queensland ...	...	8,630,472*	Total ...	...	90,865,926
Tasmania ...	...	682,552			

Value of
gold raised
in Austral-
asia.

490. The average value of the gold raised varies in the different colonies. If it be estimated at £4 per ounce, the total value would be £363,463,704, or if at £3 15s. per ounce, it would be £340,747,222.‡

* The estimate for Queensland is higher by 45,426 ounces than that furnished by the Registrar-General of Queensland and published by the "Australasian Statistics, 1892," for which see Table XIX. in Appendix C., at end of this volume.

† For Western Australia, the yield prior to 1889 has been estimated roughly at 100,000 oz., and to this has been added the quantities which have since appeared in the export returns. This however, is admittedly considerably below the actual production.

‡ Pure gold is worth £4 4s. 11½d., and standard gold (22 carats fine) £3 17s. 10½d.

491. By the following table—which, with the exception of the figures for Australasia, has been taken from the report for 1892 of Mr. Edward O. Leech, director of the United States Mint—it appears that during the four years ended with 1891 the world's annual production of gold has averaged nearly 6 million ounces, and appears to be increasing, being larger in 1891 than in any of the three previous years; the largest quantities in 1891—in almost equal proportions—having been produced in Australasia and the United States, and the next largest in Russia:—

Gold produce of the world, 1888 to 1891.

GOLD PRODUCE OF EACH COUNTRY, 1888 TO 1891.*

Countries.	1888.	1889.	1890.	1891.
	oz.	oz.	oz.	oz.
Australasia ...	1,499,556	1,745,570	1,595,625	1,672,784
Europe—				
Great Britain ...	7,071	3,118	1,607	3,246
Russia ...	1,030,215	1,120,695	1,023,433	1,167,076
Sweden ...	2,443	2,379	2,828	3,536
Germany ...	57,599	62,934	59,495	59,495
France ...	...	12,857	12,857	6,428
Austria-Hungary ...	58,499	70,648	67,627	73,412
Turkey ...	321	321	321	321
Italy ...	4,757	4,757	4,757	4,821
Asia—				
British India ...	32,721	72,673	96,715	120,661
China ...	435,267	435,267	257,779	257,779
Corea ...	47,506	47,506	36,256	36,256
Japan ...	19,478	19,478	12,278	24,589
Africa ...	24,781	415,275	478,177†	686,746
America—				
Canada ...	53,774	72,320	72,320	80,548
United States ...	1,604,432	1,586,304	1,588,490	1,604,432
Mexico ...	47,088	33,846	37,092	48,374
Salvador & Costa Rica ...	7,264	7,264	7,264	7,264
Colombia ...	145,088	165,885	178,710	167,910
Venezuela ...	68,463	88,873	55,991	48,342
Guiana (British) ...	14,464	28,349	54,416	87,041
Guiana (Dutch) ...	15,653	15,653	26,164	21,471
Guiana (French) ...	26,517	26,517	26,517	26,517
Brazil ...	21,535	21,535	21,535	21,182
Peru ...	5,078	4,500	3,343	3,632
Bolivia ...	2,893	2,893	2,893	3,246
Chile ...	94,915	69,491	69,491	69,491
Argentine Republic ...	1,511	3,953	3,953	3,953
Uruguay ...	3,375	3,375	4,500	4,500
The World ...	5,332,264	6,144,236	5,802,434	6,315,053

* See U.S. Mint Report, 1892, 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. For 1892, the world's production of gold was estimated by the same authority at 5,610,579 ozs.

† The yield of gold in South Africa in 1892 was about 1,210,000 oz.

Value of the world's gold produce, 1888-1891.

492. According to the figures, the gold raised in the world during 1891, if valued at £4 per ounce, would be £25,260,212; or if at £3 15s. an ounce, it would be £23,681,449. During the four years the value of the whole quantity raised (23,593,987 oz.) would be £94,375,948 at the former, or £88,477,451 at the latter valuation.

Gold derived from alluvial and quartz working.

493. Of the gold which was raised during 1892 in Victoria, 452,498 oz. was obtained from quartz reefs, and 201,958 oz. from alluvial deposits. These figures, as compared with those of the previous year, show an increase of 64,646 oz. in the yield of quartz reefs, and of 13,410 oz. in that of alluvial workings. The respective proportions of quartz and alluvial gold raised were 67 and 33 per cent. in 1891, and 69 and 31 per cent. in 1892.

Value of gold per miner.

494. The value of gold raised in Victoria in proportion to the number of miners at work* fell to its lowest point in 1879, when it only amounted to £76 1s. 2d. per head; and reached its highest point in 1892, when it was £111 6s. 3d. per head. Moreover, the average in later as compared with earlier years has improved in this respect. The following figures, which have been derived from returns supplied by the Secretary for Mines, express this proportion for the last twenty-two years:—

VALUE OF GOLD PER MINER,† 1871 TO 1892.

	£	s.	d.		£	s.	d.
1871	93	6	1½	1882	95	19	7¾
1872	93	17	1½	1883	95	6	3½
1873	93	16	2½	1884	106	14	6¼
1874	99	8	3	1885	108	15	9¼
1875	104	4	4	1886	104	18	4
1876	89	19	6¾	1887	96	17	2
1877	82	6	1¾	1888	97	8	7
1878	82	12	11½	1889	101	2	3
1879	76	1	2¼	1890	98	15	7
1880	81	18	11¾	1891	97	0	6
1881	95	11	9½	1892	111	6	3

Value of gold per alluvial and quartz miner.

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

* For the number of gold miners at work in 1892, see paragraph 128, Volume I.

† 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*.

VALUE OF GOLD PER ALLUVIAL AND QUARTZ MINER,
1878 TO 1892.

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 $\frac{1}{2}$	118	8	7
1880 ...	49	14	2	129	11	7 $\frac{3}{4}$
1881 ...	62	0	9 $\frac{3}{4}$	141	19	2 $\frac{1}{2}$
1882 ...	68	14	1 $\frac{1}{2}$	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 $\frac{1}{2}$	144	13	11 $\frac{1}{2}$
1887 ...	68	5	4	125	12	0
1888 ...	76	17	7	121	8	11
1889 ...	78	13	11	124	11	7
1890 ...	74	10	10	120	18	6
1891 ...	69	19	5	119	9	8
1892 ...	78	7	5	137	0	4

496. The estimated yield of gold in the year 1893 was 671,127 oz. as against 654,456 oz. in 1892. The yield in 1893 was thus nearly 16,700 oz. more than in the preceding year; and was, moreover, much larger than in any previous year since 1885. Estimated gold yield, 1893.

497. Exclusive of the amounts paid by a few private companies, respecting which the Mining Department was unable to obtain information, the following are the dividends paid by gold mining companies in Victoria, in each of the four quarters of 1892. The total shows an increase of nearly £105,000 on the previous year:— Dividends of gold mining companies.

DIVIDENDS OF GOLD MINING COMPANIES, 1892.

Quarter ended 31st March	...	...	...	£113,360
„ 30th June	...	...	...	136,032
„ 30th September	...	...	...	185,963
„ 31st December	...	...	...	184,991
Total in 12 months				£620,346

498. Of the steam engines employed in connexion with gold mining, about a sixth are used on alluvial and five-sixths on quartz workings. The following is the number of engines in use and their horse-power in each of the last nineteen years:— Steam engines used in mining.

STEAM ENGINES USED IN GOLD MINING, 1874 TO 1892.

Year.	Number.	Horse-Power.	Year.	Number.	Horse-Power.
1874	1,141	24,866	1884	1,104	26,228
1875	1,101	24,224	1885	1,085	26,627
1876	1,081	23,947	1886	1,072	26,920
1877	1,067	23,416	1887	1,080	27,218
1878	1,036	22,711	1888	1,119	27,472
1879	1,024	22,509	1889	1,123	26,680
1880	1,030	22,499	1890	1,104	27,153
1881	1,034	23,379	1891	1,094	27,812
1882	1,074	24,692	1892	1,112	27,780
1883	1,087	25,933			

Mining
machinery.

499. The value of gold-mining machines of all descriptions, as estimated by the Department of Mines, decreased from £1,848,218 in 1891 to £1,772,524 in 1892. In the latter year, the value of those used in quartz mining was £1,496,418, whilst that of those used in alluvial mining was only £276,106.

Average
yield of
quartz.

500. It is impossible to obtain an exact statement of the yield of auriferous quartz in any year, owing to the fact that many of the owners of machines for crushing quartz are unable to give, or are precluded from giving, information respecting their operations. The officers of the Mining Department, however, succeeded in obtaining particulars respecting the crushing of 772,964 tons in 1891, and 856,535 tons in 1892. The average yield per ton of these crushings was 9 dwt. 4 gr. in the former, and 9 dwt. 23 gr. in the latter year. From similar estimates, extending over a long series of years, and embodying information respecting the crushing of nearly 27,236,000 tons of quartz, an average is obtained of 10 dwt. 8 gr. of gold to the ton of quartz crushed.

Gold from
various
matrices.

501. The following is the estimate of the Mining Department* of the gross and average yield of over 48 millions of tons of the various minerals and drifts from which gold is obtained in Victoria. The quantity of gold included in the estimate is about two-sevenths of the total yield of the Victorian gold-fields from the period of the first gold discoveries to the end of 1892:—

* *Mineral Statistics 1892, Statement No. 6.*

GOLD FROM VARIOUS MATRICES.

Matrix.	Quantity Treated.	Yield of Gold.	
		Total.	Average per ton.
<i>From Quartz Reefs.</i>			
	tons.	oz.	oz. dwt. gr.
Quartz	27,235,608	14,080,531	0 10 8
Tailings and mullock	2,379,693	357,849	0 3 0
Pyrites	147,592	324,243	2 3 22
<i>From Alluvial Workings.</i>			
Washdirt	17,859,242	1,346,710	0 1 12
Cement	458,729	104,117	0 4 12
Total	48,080,864	16,213,450	0 6 18

502. The ten deepest shafts in the colony are those of Lansell's Deep shafts. 180 mine, 2,846 feet; New Chum and Victoria Company, 2,611 feet; New Chum Consolidated Company, 2,435 feet; Lazarus Company, 2,414 feet; Magdala Company, 2,409 feet; New Chum Railway Company, 2,401 feet; Old Chum Company, 2,337 feet; North Old Chum Company, 2,310 feet; Victoria Reef Quartz Company, 2,302 feet; Victory and Pandora Company, 2,300 feet. It thus appears that the greatest depth to which the earth's crust has been pierced in this colony by a shaft is about 2,850 feet. The fifth mine mentioned is at Stawell, all the others are at Bendigo.

503. Some years ago a silver mine was worked at St. Arnaud, in Victoria, but after a time it ceased to be remunerative, and the workings were abandoned. Since the establishment of a branch of the Royal Mint in Melbourne, a certain quantity of silver has been extracted annually from the crude gold lodged there for coining, and latterly the whole quantity of silver produced in Victoria has been from that source. It is difficult to obtain reliable information respecting silver produce, as in consequence of the silver being generally associated with lead and other metals, it is 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. The following, so far as it is known, are the quantities (in fine ounces)

* It is known that in Queensland 225,000 oz. of silver, valued at £36,436, were raised in 1892; 875 tons of silver-lead ore, valued at £21,879, in 1891; 1,913 tons, valued at £56,639, in 1890; 1,104 tons, valued at £61,500, 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. It is roughly estimated that about 3,251,000 oz. have been raised in Queensland up to the end of 1892.

raised in Victoria, New South Wales, Tasmania, and New Zealand, during the thirty years ended with 1892:—

SILVER PRODUCE IN AUSTRALASIAN COLONIES, 1863 TO 1892.

Year or Period.	Victoria.*	New South Wales.	Tasmania.*	New Zealand.*
	oz.	oz.	oz.	oz.
1863 to 1865 ...	10,165	...	...	...
1866 to 1870 ...	8,187	14,621	...	48,186
1871 to 1875 ...	56,106	318,432	...	223,174
1876 to 1880 ...	116,042	335,734	...	110,244
1881 to 1885 ...	119,442	1,060,771	...	82,943
1886 to 1890 ...	136,310	30,753,233	168,500	90,062
1891 ...	30,039	16,680,000	300,000	28,023
1892 ...	35,857	13,697,600†	158,600	22,053
Total to end of 1892 }	512,148	62,860,391‡	627,100	604,685

Value of silver raised in Australasia.

504. The total quantity of silver raised in five of the colonies—including Queensland, for which an estimate has been made—was 67,855,324 oz., which would represent a value, at 4s. § per ounce, of £13,571,065.

Broken Hill silver mines.

505. The bulk of the silver raised in Australasia is from the Broken Hill mines, situated in New South Wales, at or near the Barrier Ranges, close to the eastern frontier of South Australia. The principal mine is that of the Broken Hill Proprietary Company, which has a capital of £384,000 in 960,000 shares of 8s. each, fully paid up. || From the time of the formation of this company on the 13th August, 1885, to the 31st May, 1893, the ore treated (including moisture) amounted to 1,181,506 tons, the total yield of which was 178,787 tons of lead and 43,296,203 fine ounces of silver, of which 8,015,485 ounces of silver and 30,666 tons of lead were produced in the year 1892-3. ¶ There was also during the last six months 408 tons of copper produced. Experiments are being conducted with a view of finding an economical method of treating the large bodies which exist of sulphide ores. The deepest shaft in the mine is over 700 feet, and

* In Victoria and New Zealand, nearly all the silver produced has been extracted from crude gold. The figures for Tasmania are only rough estimates.

† Yield affected by a strike. See paragraph 508 *post*.

‡ No official statement having been published in New South Wales of the quantity of silver raised in that colony in the last six years, the quantities from 1887 to 1892, both inclusive, have been estimated in the office of the Government Statist, Melbourne, from information supplied by the secretaries of the leading mines and smelting companies.

§ This was the average price for fine silver during the last six years, equivalent to 3s. 9d. per oz. standard.

|| Prior to the 12th February, 1890, the share capital was £320,000, divided into 160,000 shares of £2 each. Of the present shares 160,000 are registered in London.

¶ From the neighbouring Broken Hill South mines, moreover, 424,025 ozs. of silver and 2,514 tons of lead were obtained in the year 1892; and 451,311 ozs. of silver and 5,074 tons of lead in 1893.

it has been decided to proceed at once with two deep development shafts to a depth of about 1,500 feet. The dividends and bonuses paid, together with profits resulting from sales of outlying portions of the company's property, allotted to shareholders since the commencement, have amounted in value to £6,696,000, of which £4,952,000 were dividends and cash bonuses. For the six months ended with May, 1893, the profits amounted to £428,247, and the mine paid dividends to the amount of £384,000. The number of men permanently employed at and in connexion with the mine at Broken Hill on 31st May, 1893, was 2,938 (as against 3,203 twelve months previous), of whom 1,099 (as against 1,686 in 1892) were underground, 402 surface miners, and 457 contractors' men (quarrying, etc.), 555 were smelters, 219 were engaged on general construction and repairs, 89 on ore dressing, 70 on the amalgamating mill, and 47 on miscellaneous works. The mine wages and salaries paid during the half-year ended 31st May, 1893 (including contracts) amounted to £133,881, and the smelter wages and salaries to £66,110, besides over £22,976 paid for other services.

506. During the half-year ended 31st May, 1893, 2,667,970 ozs. of refined silver (.996 fine)—being equivalent to 2,872,751 ozs. standard (.925 fine)—belonging to the Broken Hill Proprietary Company was purchased under tender by the banks at an average price per ounce standard of nearly 3s. 2¼d., or about ⅓d. less than what would have been received at the London market prices. The highest price realized was 3s. 2⅝d. on 26th January and 9th February, and the lowest 3s. 1⅙d. per ounce on 19th May. Prices of silver in Melbourne.

507. The average cost of treating ore, including all charges, from the time of its arrival on the smelter floors to the delivery of the bullion on trucks, at the Broken Hill mines during the six months ended 31st May, 1893, was £1 11s., as compared with £1 14s. 9d. in the year 1891-2, per net ton of ore, made up of the following items:—Coke (at £4 19s. 6d. per ton) 15s. 8¼d., limestone 4s. 11d., coal (at £2 5s. per ton) 1s. 3½d., castings 3½d., stores 3¾d., water 3d., labour 7s. 1¼d., superintendence and assaying 5d., all other items (rates, etc.) 8¾d. At Port Pirie, S.A., the cost of smelting a ton of dry ore was only 18s. 4¼d. The six months ended 30th November, 1892, were not taken into account, as the strike occurred during that period. Cost of treating silver ores.

508. The operations at the mines were seriously hampered in the first half of the financial year 1892-3 by a strike, which lasted over four months. The furnaces were shut down on the 4th July, 1892, and no work was resumed until the 25th August; and although smelting Strike at Broken Hill.

operations were recommenced on 4th October with two furnaces, it was not until 27th November that all the furnaces were at work again. The cause of the strike was a desire on the part of the directors to vary the existing agreement with the miners in order to allow of stoping by contract, and as the latter would not consent to this, the former gave a month's notice to terminate the agreement.

509. The next table, with the exception of the figures for Australasia, has been taken from Mr. Leech's Mint Report for 1892; and shows that the world's production of silver during the four years ended with 1891 averaged more than 133 million ounces per annum, and has been increasing at the rate of about 13 million ounces per annum; the largest quantities raised in 1891 being in the United States and Mexico, and the next largest in Australasia, Bolivia, and Germany:—

SILVER PRODUCE* OF EACH COUNTRY, 1888 TO 1891.

Countries.	1888.	1889.	1890.	1891.
	oz.	oz.	oz.	oz.
Australasia	6,726,374	9,500,235	11,560,603	17,156,062
Europe—				
Russia	466,798	462,491	439,285	445,070
Sweden	149,396	137,150	134,385	117,575
Norway	165,435	165,435	178,035	182,084
Germany	1,030,183	6,196,785	5,852,608	6,171,264
Austria-Hungary	1,716,094	1,692,309	1,626,803	1,690,605
Turkey	42,524	42,524	42,524	42,524
Italy	260,607	260,607	260,607	260,607
France	1,587,686	1,587,686	2,601,638	2,285,843
Spain	1,655,377	1,655,377	1,655,377	1,655,377
Great Britain	290,789	280,728	218,373	291,689
Asia—				
Japan	1,363,592	1,363,592	1,184,593	1,391,170
America—				
Canada	297,763	297,763	383,293	400,618
United States	45,780,686	49,996,431	54,496,761	58,326,223
Mexico	31,997,361	42,936,184	38,669,397	40,989,568
Central America	1,546,770	1,546,770	1,546,770	1,546,770
Colombia	773,369	773,369	568,431	1,003,859
Peru	2,419,103	2,419,103	2,114,654	2,406,761
Bolivia	7,407,445	7,407,445	7,407,445	11,978,231
Chile	5,973,623	5,973,623	3,975,805	2,320,170
Argentine Republic	328,684	328,684	471,877	479,494
The World†	111,979,659	135,024,291	135,389,264	151,141,564

* See U.S. Mint Report, 1892, 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.

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

510. At 3s. 9d. per ounce the quantity of silver raised in the world during 1891 would be worth £28,339,043. The quantity raised in the four years ended with 1891 would be worth £93,368,586 at the same valuation.*

Value of the world's silver produce, 1888-1891.

511. Since 1851 almost equal quantities of gold have been contributed by Australasia and the United States, or more than one-third in each case of the production of the whole world, the total quantity of which has amounted to over 251 million ounces. During the same period more than one-third of the world's production of silver has also been obtained in the United States, and a somewhat smaller quantity from Mexico, whilst the quantity from Australasia (the mines of which have only recently been opened up) was equal to little more than a fortieth of the world's production, amounting to over 2,619 million ounces. In connexion with the remarkable depreciation of silver before alluded to,† it is important to note that, whilst the annual production of gold has declined gradually from nearly $6\frac{3}{4}$ million ounces during the decade 1851-60 to $5\frac{1}{2}$ million ounces during 1881-92, the annual production of silver rose, notwithstanding its declining value, from less than 30 million ounces during 1851-60 to nearly 150 million ounces in 1892. The following are the figures for successive decennial or quinquennial periods from 1851 to 1890, also for the years 1891 and 1892:—

World's production of gold and silver, 1851-1892.

WORLD'S PRODUCTION OF GOLD AND SILVER (IN OUNCES TROY),
1851 TO 1892 (000'S OMITTED).

Period.	Australasia.	United States.	Russia.	Other Countries.	Total.
	oz.	oz.	oz.	oz.	oz.
GOLD.					
1851 to 1860 ...	27,253,	26,670,	8,250,	5,140,	67,313,
1861 to 1865 ...	12,915,	10,720,	3,870,	2,675,	30,180,
1866 to 1870 ...	12,151,	12,215,	4,830,	2,485,	31,681,
1871 to 1875 ...	11,526,	9,476,	5,664,	2,354,	29,020,
1876 to 1880 ...	8,257,	9,531,	6,531,	2,760,	27,079,
1881 to 1885 ...	7,595,	7,730,	5,750,	4,178,	25,253,
1886 to 1890 ...	7,584,	8,070,	5,311,	6,764,	27,729,
1891 ...	1,673,	1,605,	1,168,	1,811,	6,257,
1892 ...	1,809,	1,650,	1,169,	2,247,	6,875,
Total Gold ...	90,763,	87,667,	42,543,	30,414,	251,387,

* In 1891 the average price per ounce paid for silver bullion for coinage (standard silver) was rather more than 3s. 9d., or 2½d. higher than the average price for 1890. See table following paragraph 798 in Vol. I.

† Vol. I., paragraph 798.

WORLD'S PRODUCTION OF GOLD AND SILVER (IN OUNCES TROY),
1851 TO 1892 (000'S OMITTED)—*continued.*

Period.	United States.	Mexico.	Australasia.	Other Countries.	Total.
	oz.	oz.	oz.	oz.	oz.
SILVER.					
1851 to 1860 ...	2,330,	146,910,	...	138,680,	287,920,
1861 to 1865 ...	27,970,	76,035,	10,	72,995,	177,010,
1866 to 1870 ...	48,385,	83,735,	71,	83,069,	215,260,
1871 to 1875 ...	121,262,	98,290,	598,	75,732,	295,882,
1876 to 1880 ...	157,622,	98,433,	822,	99,518,	356,395,
1881 to 1885 ...	182,900,	124,003,	2,313,	129,742,	438,958,
1886 to 1890 ...	230,980,	150,520,	32,746,	144,904,	559,150,
1891 ...	58,330,	34,838,	17,156,	34,668,	144,992,*
1892 ...	58,000,	37,066,	14,139,	34,668,	143,873,
Total Silver ...	887,779,	849,830,	67,855,	813,976,	2,619,440,

NOTE.—The figures for Australasia have been estimated in the office of the Government Statist, Melbourne; those for other countries prior to 1871 are derived from estimates by Soetbeer published in *L'Almanach de Gotha*, and those for subsequent years have been taken from *The Commercial and Financial Chronicle of New York* of the 4th February, 1893.

World's relative production of gold and silver, 1873 to 1891.

512. As the annual supply of gold and silver has an important bearing on the price of silver, the ratio of silver to gold production has been deduced for the last 19 years from the figures in the following table, showing the value of the gold, and the quantity and value of the silver, produced in the world for each year since 1872, when the price of silver first began to decline. These are given in the last column, by which it will be seen that the supply of silver relatively to gold was tolerably uniform until 1879, the average of the seven years ended with that date being nearly 13 (12·8) ozs. of silver to 1 of gold; but after that year, the proportion rose rapidly until in 1891, when the production of silver was more than 23 times that of gold:—

PRODUCT OF GOLD AND SILVER IN THE WORLD, 1873-1891
(000'S OMITTED).

Years.	Gold (Value).	Silver.		Proportion in Quantity of Silver Produced to 1 of Gold.
		Quantity.	Value.	
	£	Fine Ozs.	£	
1873	20,042,	63,267,	17,108,	13·4
1874	18,906,	55,300,	14,724,	12·4
1875	20,313,	62,262,	16,162,	13·0
1876	21,604,	67,753,	16,317,	13·3
1877	23,750,	62,648,	15,675,	11·2
1878	24,792,	73,476,	17,634,	12·6
1879	22,708,	74,250,	17,371,	13·9

* These figures differ somewhat from those in the table on page 292, owing probably to a different standard of fineness being taken.

PRODUCT OF GOLD AND SILVER IN THE WORLD, 1873-1891
(000's OMITTED)—*continued.*

Years.	Gold (Value).	Silver.		Proportion in Quantity of Silver Produced to 1 of Gold.
		Quantity.	Value.	
	£	Fine Ozs.	£	
1880	22,188,	74,791,	17,841,	14·3
1881	21,458,	78,890,	18,704,	15·6
1882	21,250,	86,470,	20,465,	17·3
1883	19,875,	89,177,	20,622,	19·1
1884	21,187,	81,597,	18,920,	16·4
1885	22,583,	91,652,	20,326,	17·3
1886	22,083,	93,276,	19,328,	18·0
1887	22,036,	96,124,	19,590,	18·5
1888	22,958,	108,827,	21,288,	20·1
1889	25,726,	125,420,	24,431,	20·7
1890	25,096,	134,380,	29,395,	22·7
1891	26,283,	143,994,	29,638,	23·3

NOTE.—The figures in this table, except those in the last column, which have been calculated in the office of the Government Statist, Melbourne, have been derived from the United States Mint Report for 1892, page 53, where the values have been given in dollars, which have been reduced to sterling money.

513. The relative values of silver and gold have always been variable. Until comparatively recent years, however, the fluctuations have been but slight. In the 102 years, 1687 to 1789, the ratio of the 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 fall in the gold price of silver and consequent difference in value between the two metals has with little intermission been growing steadily year by year, reaching its maximum in 1892, when it took 24·8 parts of silver to be equivalent to 1 part of gold. In 1890 the proportion of silver to 1 part of gold fell suddenly to 19·8, owing, it is believed, to the artificial demand caused by large purchases of bullion by the United States Treasury, but such appreciation did not last long. The following figures show the relative values of the two metals in each of the 22 years, 1871 to 1892:—

Relative values of gold and silver.

RELATIVE VALUES OF GOLD AND SILVER, 1871 TO 1892.*

In 1871	1 part of gold was worth	15·57	parts of silver.
„ 1872	„	15·63	„
„ 1873	„	15·92	„
„ 1874	„	16·17	„

* The relative values for the years prior to 1892 have been taken from the U.S. Mint Report, 1892, page 162.

RELATIVE VALUES OF GOLD AND SILVER, 1871 TO 1892*—*continued.*

	In 1875	1 part of gold was worth	16·59	parts of silver.
	„ 1876	„ „	17·88	„
	„ 1877	„ „	17·22	„
	„ 1878	„ „	17·94	„
	„ 1879	„ „	18·40	„
	„ 1880	„ „	18·05	„
	„ 1881	„ „	18·16	„
	„ 1882	„ „	18·19	„
	„ 1883	„ „	18·64	„
	„ 1884	„ „	18·57	„
	„ 1885	„ „	19·41	„
	„ 1886	„ „	20·78	„
	„ 1887	„ „	21·13	„
	„ 1888	„ „	21·99	„
	„ 1889	„ „	22·09	„
	„ 1890	„ „	19·76	„
	„ 1891	„ „	20·92	„
	„ 1892	„ „	24·82	„

514. Silver, tin, copper, antimony, lead, iron, and coal have been mined for at different times in Victoria, but with the exception of black and brown coal, and small quantities of tin and antimony, no minerals of importance were raised in 1892. The silver obtained in that year was, as has already been stated, extracted at the Mint during the process of refining the gold. The results of tin mining at Mount Wills have proved disappointing, but the low yields are believed to be due rather to the method of treatment than to the poverty of the stone; the yield of this and other mines in 1892 amounted to 408 tons of tin ore, valued at £1,039. Some argentiferous and auriferous lead ores have recently been discovered near Casterton, which promise to give good yields. The following metals also exist in Victoria, but up to this date have not been discovered in paying quantities:—Bismuth, cobalt, cadmium, lead, manganese, molybdenite, osmiridium, silver, and zinc-blende. Various lime-stones and marbles, as well as kaolin and other clays, also exist, and have been worked to a certain extent.

515. Many attempts have been made to mine for coal, but until recently the seams discovered 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

* See footnote on page 295.

† See Parliamentary Paper No. 168, Session 1890, also issue of this work for 1889-90, Vol. II., paragraphs 622 and 624.

Minerals
other than
gold exist-
ing in
Victoria.

Coal.

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 general result of geological surveys and borings appears to indicate that the most promising field for development of the coal resources of the colony may be included within an area roughly defined by Korumburra, Mirboo North, and Foster. The Government Geologist, in his Report for 1891, states that the area occupied by carbonaceous rocks in the Gippsland district exceeds 1,500 square miles, but he hesitates to express an opinion as to the quantity of available coal contained therein; limiting, however, his calculations to an area of a square mile in each locality where coal has been proved to exist by means of borings, and to an average seam of 1 foot in thickness, he estimates the coal proved to exist, in the aggregate, at over 40 million tons. The following are the practical results of successful bores during the last twelve years:—

Kilcunda.—(1880) 24-inch seam, at 158 feet; (1881) 32-inch seam, at 489 feet; 25 to 28-inch seam, at 330 feet; and 30 to 32-inch seam, at 688 feet; (1884) a 21-inch seam, at 295 feet.

Cape Patterson.—(1885) In three bores, a 33 to 34-inch seam, at 110 to 115 feet.

Powlett Valley.—A 28-inch seam, at 468 feet; and a 24-inch seam, at 620 feet.

Narracan Valley.—A 30-inch seam, at 120 feet.

Jeeraling, near Hazelwood.—A 30-inch seam, at 192 feet; a 19-inch seam, at 214 feet; and an 18-inch seam, at 1,650 feet.

Boolarra.—A 41-inch seam in one bore, at 421 feet; and a 42-inch seam in another, apparently the same seam. It has since been found, however, that the quantity of good coal in the former seam is less than was indicated by the bore, there being a large admixture of dark shaly matter, which renders the seam unworkable.

Berry's Creek, near Mirboo.—In one bore, 18 inches of coal at 321 feet; 36 inches, at 430 feet; and 48 inches, at 896 feet. In another bore, 28 inches, at 286 feet; and in another, 54 inches, at 696 feet.

Korumburra.—36 inches of coal, at 80 feet; 36 inches, at 413 feet; 30 inches, at 486 feet; and 41 inches, at 539 feet. As regards the top seam, the indications obtained by the drill have proved correct, and the Coal Creek Proprietary Company has sunk a shaft, and opened out on the seam, and is now sending coal to market. Another bore in the Korumburra and Jeetho Co.'s mine, after passing through various coal seams of from 3 to 15 inches in thickness, showed the following section at 662 feet 6 inches to 667 feet 8 inches:—Coal 10 inches, shale 14 inches, coal (good sample) 38 inches, then shale 6 inches, followed by coal 6 inches; making a total, regarding it as one seam, of 4 feet 6 inches of coal in a thickness, from floor to roof, of 6 feet 2 inches. A second bore in the same ground struck a 3-foot 6-inch seam of hard coal at 202 feet, and an 18-inch seam at 543 feet, besides smaller seams. In the Silkstone Company's ground no less than 15 seams of coal were met with, but the majority were small, varying from 1 to 16 inches in thickness; but a 20-inch seam of good hard coal was found at 170 feet; another, consisting of 2 feet of soft inferior coal, and 1 foot 10 inches of friable coal, with shaly bands at 533 feet; and 15 inches of good coal, the same thickness of shale, and 2 feet more of coal at 557 feet. A bore

* So far as is known, only 104,160 tons of coal have been raised, chiefly from Crown lands, in Victoria up to the present time.

in the Strzlecki Company's ground cut a seam of 2 feet 5 inches at 271 feet; and on the Coal Creek Extended Company's ground a 22-inch seam at 262 feet, and 30-inch seam at 766 feet.

Jumbunna.—In one bore a 58-inch seam, at 374 feet, evidently the continuation of the large outcropping seam known as "Horsley's" seam. In a second bore, a 38-inch seam was pierced at 1,054 feet; and a 33-inch seam, at 1,256 feet; of these the lower is supposed to be the continuation of Horsley's seam. A third bore was continued to 885 feet without reaching the large seam previously met with.

516. In a report by the Coal Test Board to the Minister of Mines, dated 14th December, 1893, the following account is given of the relative economic values of Newcastle coal and of the various kinds of Victorian black coals tested—more especially for locomotive purposes. A further report is to be made on the values of the brown coals, and of mixtures of black and brown coal:—

A.—USE OF COALS ON LOCOMOTIVES.

NEWCASTLE COAL.

The coal used was a fair average sample of that supplied to the Railway Department during the period of testing. This coal is eminently suited for locomotive requirements, with the exception of heavy suburban traffic, when the excessive smoke is objectionable. It is a dense coal, and will stand the strong blast experienced when running with heavy loads on such roads as the main line. It steams freely under all conditions. Combustion takes place with the formation of a large volume of flame, which is somewhat smoky. The quantity of ash and clinker formed is not large, and long runs can be made without cleaning the fire. The coal is easily broken, and the labour of firing is not great. Approximately 61 per cent. of the heat available is utilized. The relation which the corresponding number for other coals bears to 61 indicate the suitability of the conditions to which the other fuels have been treated as compared to Newcastle.

JUMBUNNA COAL.

From our preliminary tests in the small boiler we concluded that this coal, together with the Outtrim and Strzlecki coal, represented a quality of coal wholly distinct from any of the others submitted to us.

The coal appeared to be a good sample, but it is not known how far the sample is truly representative of that obtainable from the mine. The coal supplied was largely surface coal.

This coal is suited to all the requirements of railway work. The relatively small quantity of smoke produced would allow of its being used even for the heaviest suburban traffic. It stands the heavy blast on steep grades, and steams freely under all conditions. During combustion the furnace is filled with a dense bright volume of flame, through which it is difficult to observe the condition of the solid fuel. The flame is almost smokeless. The quantity of ash and clinker formed is considerably less than with Newcastle, and of this so small a quantity remains in the fire-box that a considerable part of the fire-bars are exposed when the fire is burned out at the end of the trip.

The coal is easily broken, and the labour of firing is, if anything, less than with Newcastle. It should be noted, however, that the conditions of treatment were a little more favourable to this coal than to Newcastle. This is the only coal which we have tested in the locomotive which is equal in all respects to Newcastle for locomotive purposes.

COALVILLE COAL.

The coal used was a fair average sample of that supplied to the Railway Department at the time. The behaviour of the coal was very variable.

When working light with a clean fire, the results obtained were very good. But with heavy work, as on the main line, the fire-bars quickly became covered with clinker, and the fuel proved to be practically useless for this work.

If the use of this coal was restricted to lines where the work is light, and where long runs without stoppages are not made, such as suburban traffic or short light country lines, excellent results can be obtained. Care must, however, be taken in firing to prevent the formation of objectionable quantities of smoke. With a clean fire the coal steams freely; it produces a large volume of smoky flame, much resembling Newcastle in this respect.

Under the severe blast to which it is subjected on the main line large masses of fusible clinker are quickly formed which effectually prevent the passage of air, and the total rate of combustion is rapidly diminished; this, in effect, reducing the effective grate area. The conditions of combustion were more favourable than with Newcastle. The difficulties with the fuel being purely mechanical, the impracticability of removing the clinker whilst running being apparent from its fusible nature. The coal is easily handled, but the labour of firing is entirely dependent on the conditions of running.

The ash in the coal obtained at different times varied considerably.

MOE COAL.

The coal tested was that known in the Railway Department as the New Moe. It was a good sample. When the fire was clean it steamed very freely, but produced a considerably quantity of smoke. It worked very well on the Geelong line, the conditions of combustion being especially favourable to it, judging from the high efficiency obtained. It must not, however, be forgotten that the fire was cleaned at Geelong; if this had not been done, the fire-box would have been filled to the door-level with ash long before reaching the end of the return journey.

On the main line, where the fuel consumed is much greater for the same distance run than on the Geelong line, the rapid accumulation of ash soon prevents the passage of sufficient air to the fuel, and the rate of combustion obtainable falls, reducing the speed of the train, or even necessitating stoppages for the purpose of raising the steam pressure and filling the boiler. This coal is not suited for long runs and heavy work.

COAL CREEK COAL.

The coal used was a good sample of that supplied to the Railway Department. Coal Creek coal is fairly well suited to the general requirements of railway work, and may be used with very uniform efficiency on all lines, and under all conditions of blast. The conditions of the test to which it was subjected were, as with several other coals, more favourable than to Newcastle. The coal steams well and burns freely, but leaves a large quantity of loose ash. It is more difficult to break than Newcastle, and thus adds to the labour of firing. This is not of much consequence when doing light work, but is very hard on the fireman when a heavily-laden train experiences adverse winds. From 10 to 12 per cent. more coal is required to perform equal duty with Newcastle. Hence the cost of haulage to country coaling stations should not be overlooked.

NORTH COALVILLE COAL.

The coal obtained for testing purposes was a fair sample of that supplied to the Railway Department at the time. This coal is very similar to the Coalville, but does not form much clinker, and what is formed is usually found in small pieces distributed through the very large quantity of ash produced. The ash from this coal is a larger percentage of the coal consumed than from any other tested on the locomotive.

The smoke produced was less than with Newcastle, but greater than from Coal Creek or Jumbunna.

The coal did not steam well; the exact reason for this is not, however, apparent. Taking into consideration the above facts, it is evident that this fuel is only suitable for light line work, where the frequent terminal stoppages enable the fireman to attend to his fire in a way that is impossible on long-distance trips. It is totally unsuited for heavy work.

The conditions which obtained were not so favourable to that coal as with the majority of others.

KORUMBURRA AND JEETHO COAL.

As with the other coals, the sample obtained was a good average of that supplied. The coal burns freely at first, but as a very large quantity of ash is produced, the difficulty of maintaining steam soon arises.

If a strong adverse wind is blowing, stoppages are necessary in order to raise the steam pressure and fill the boiler. In general characteristics it resembles the Coal Creek coal, but does not steam so freely, and gives a larger percentage of ash.

It is suitable for light work, and produces but little smoke. We might here observe that alterations in the construction of the furnace would probably enable some of the coals to be more generally used.

The economic value of the coals that were not tested on the locomotive was arrived at by taking into account their absolute value as determined by the calorimeter and analysis, and by the furnace trials made when practicable, and comparing these results with a similar coal of which complete tests had been made. But these must be only taken as approximate values of the coals named, for in actual practice difficulties may be met with which would lower the value of the coal, such as bulk of ash, formation of clinker, loss of unconsumed hydro-carbons, etc., etc. The true values cannot be stated until the full tests have been made on the locomotive, but in all probability these values will not be higher than the figures given. The following are the samples that have been so dealt with:—

OUTTRIM COAL.

This in the small boiler trials behaved in a similar manner to Jumbunna, did not give much ash or clinker, steamed very well, did not give much smoke, and in physical appearance was hardly distinguishable from Jumbunna. From their calorific values it will be seen that this is therefore equal to 99·5 per cent. of Jumbunna coal. This fuel is suitable for any of the work for which Jumbunna has been recommended.

STRZLECKI COAL.

This also very closely resembles Jumbunna both in physical appearance and in its behaviour in the furnace, as it steamed well, did not give much clinker or ash, though it will be seen from the table of analyses that it contains more than either Jumbunna or Outtrim, but not sufficient to interfere with its commercial value, which is 97·5 per cent. of the former, and might be used for any of the work required by the railways.

KILCUNDA COAL.

No actual trials were made with this coal, but, as far as can be gleaned from the analysis and calorific test, it would appear to be of about the same value as Strzlecki, but in the furnace difficulties might be found which would alter its apparent value.

COAL CREEK EXTENDED.

This sample in appearance very closely resembles that from the Coal Creek Proprietary Mine, having the same laminated structure and dull black colour. In the furnace it was also found to have the same characteristics, giving little or no smoke and no clinker, but a bulky ash, though more in quantity than the Coal Creek. Their economic values may be taken as being in the same ratio as their absolute values, or as 101·3 : 100.

HAZELWOOD COAL.

This is a coal which stands by itself, not resembling any other sample sent. Analysis shows that it contains 24 per cent. of ash, which is very fusible in the furnace, and, being in such large quantity, renders it absolutely valueless for locomotive purposes.

B.—USE OF COALS FOR OTHER THAN LOCOMOTIVE PURPOSES.

Though the main object of our inquiry has been to determine the relative commercial values of the coals for locomotive use, we consider the data obtained should afford some information as to their relative value for other industrial purposes.

If we consider for a moment the great variety of furnaces and the widely different conditions under which they have to work, both as regards the rate of combustion per square foot and the attention which is paid to proper methods of firing, and other details which affect the efficiency of combustion and transfer of heat, we believe it will be admitted that no single statement can give the relative values of the coals for general purposes. Nevertheless, a careful examination of the data given indicates that the values of the fuels are approximately proportional to their mean calorific values.

It is evident that the above remarks will only hold good when judgment is exercised in the selection of the coal. Each special set of conditions requires that due regard be paid to the physical characteristics of the coal when the selection is made.

For metallurgical purposes, smithwork, gas-making (for lighting and heating), entirely different sets of factors become of importance. We made no attempt whatever to determine the suitability of the coals for such purposes.

We would, however, call attention to the comparative freedom from smoke of many of these coals, and therefore of their value for use on war-ships.

RELATIVE VALUES OF VARIOUS KINDS OF COAL FOR RAILWAY PURPOSES.

The following is a statement of the relative commercial values of the coals referred to for special classes of railway work :—

Name of Coal.	For General Use on all Lines with all Classes of Work.	For Use on Sections where the work is light or for Suburban Traffic.
Newcastle	100	100
Jumbunna	100·2	101·3
Coalville	Not suitable.	95·7
Moe	Not suitable.	95·8
Coal Creek	88·6	87·9
North Coalville	Not suitable.	85·9
Korumburra and Jeetho	Not suitable.	80·9

517. The deposits of brown coal or lignite in Victoria are Brown coal. practically unlimited, and are thought to represent the largest supply of fossil fuel known in the world. For example, at Yarragon, Gippsland, a bore in the tertiary layers of the Moe valley passed through six different layers of lignite or brown coal of from 1 foot to 67 feet in thickness, reaching the mesozoic rocks at 786 feet.* The Coal Commissioners, moreover, in their first progress report,† mentioned one mine in which the thickness of the deposits 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.” A

* See Report of the Secretary of Mines for the year 1892, page 63.

† Parliamentary Paper No. 168, Session 1890.

second progress report,* dated 9th December, 1890, gives the results of a series of practical experiments with a view of ascertaining the value of brown coal for manufacturing, domestic, and other economic purposes. In regard to its illuminating power, as compared with good gas coal—a ton of which should yield from 10,000 to 11,000 cubic feet of gas of from 15 to 17 candle power, and a residue of 12 cwt. of good marketable coke—it was found that, although from 6,447 to 15,083 cubic feet of gas was obtained per ton from the brown coal, the highest degree of luminosity was only 9·3 candle power, and in some cases it was *nil*. For steaming purposes it required from 2·16 to 2·42 tons to do as much work as 1 ton of small Newcastle coal, whilst it required more stoking; and its comparative value for heating purposes was estimated at 8s. 4¾d. per ton, as compared with 15s. 7½d. for Newcastle slack. These experiments were made on the crude coal as it was taken from the mine, and it sometimes contained from 36 to 56 per cent. of water, the minimum being about 18 and the average being about 40 per cent.† In the form of briquettes, however, there was evidence leading to the belief that it would be well adapted for domestic use; and with a view of placing the brown coal industry on a sound and permanent footing, Mr. J. Cosmo Newbery, C.M.G., who was despatched to Europe in accordance with the commissioners' recommendation, obtained information as to the mode of manufacture into briquettes in Germany, the cost of manufacture, and the uses to which the fuel can be applied, all of which are fully treated of in his report. The Secretary for Mines stated in his Annual Report for 1891 that over 1,000,000 tons of brown coal briquettes are annually consumed in Berlin (Germany), in competition with black coal, at 20s. per ton; that the briquettes are used also in Germany as fuel on freight locomotives, which have a special arrangement of fire-box, but that even there the matter has not yet been fully tested. The difficulties to contend with in Victoria in making briquettes appear to be not only a higher rate of wages and shorter hours, but more especially a higher freight from the mine to Melbourne or other market.

518. At the present time the coal-producing colonies of Australasia are, practically, New South Wales, New Zealand, and Queensland, whilst small quantities have been raised in Tasmania and Victoria, the mines in the latter of which are now being rapidly developed.

* Parliamentary Paper No. 213, Session 1890.

† It is reported that good brown coal, containing 18 per cent. of moisture, lost only 1 per cent. of moisture after exposure to the air in an iron shed during eight weeks of hot rainless weather.

In these colonies over $4\frac{3}{4}$ million tons of coal were raised in 1892, 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 1892.

Year.	Tons of Coal raised in—				
	New South Wales.	Queensland.	Tasmania.	New Zealand.	Victoria.
1876	1,319,918	50,627	6,100	...	1,095
1877	1,444,271	60,918	9,470	...	2,420
1878	1,575,497	52,580	12,311	162,218	Nil.
1879	1,583,381	55,012	9,514	231,218	Nil.
1880	1,466,180	58,052	12,219	299,923	3
1881	1,769,597	65,612	11,163	337,262	Nil.
1882	2,109,282	74,436	8,803	378,272	10
1883	2,521,457	104,269	8,872	421,764	428
1884	2,749,109	129,980	7,194	480,831	3,280
1885	2,878,863	209,698	5,334	511,063	800
1886	2,830,175	228,656	10,391	534,353	86
1887	2,922,497	238,813	27,763	558,620	3,357
1888	3,203,444	311,412	41,577	613,895	8,573
1889	3,655,632	265,507	40,300	586,445	14,596
1890	3,060,876	338,344	53,812	637,397	14,601
1891	4,037,922	271,603	45,524	668,794	22,834
1892	3,780,968	257,803	35,669	673,315	23,363

519. The following is a statement of the quantity of coal raised in various countries during one year, the returns being generally those for 1889, except where otherwise indicated :—

Coal raised in various countries.

ANNUAL PRODUCTION OF COAL IN VARIOUS COUNTRIES, 1889.*

	Tons.		Tons.
United Kingdom	176,916,724	Canada	2,719,478
United States	132,419,342	Japan	2,405,757
Germany	84,892,748	British-India (1890)	2,168,521
France	24,588,880	Spain	1,000,000
Austria-Hungary (1888)	24,000,000	Italy (1887)	327,665
Belgium	19,810,000	Sweden	300,000
Chile (average)	10,000,000	Other Countries (estimated)	8,000,000
Australasia (1891)	5,046,677		
Russia (1887)	4,464,174		
China	4,000,000		
		Total	503,059,966

520. According to the estimate of the Mining Department, the following are the values of metals and minerals other than gold raised in Victoria from 1851 to the end of 1892 :—

Minerals other than gold raised.

* Some of the figures in this table have been derived from *The Statistical Year-Book of Canada* for 1890.

VALUE OF MINERALS AND METALS OTHER THAN GOLD,
1851 TO 1892.

Name.	Estimated Value.		
	1851 to 1891.	Year 1892.	Total.
	£	£	£
Silver*	94,930	5,976	100,906
Tin	679,111	1,039	680,150
Copper and copper ore	191,423	...	191,423
Antimony	173,760	2,278	176,038
Calcite and silicate of alumina	305	...	305
Lead	5,419	...	5,419
Iron	12,540	...	12,540
Coal†	73,386	20,044	93,430
Lignite... ..	6,506	3,725	10,231
Kaolin	7,444	...	7,444
Flagging	} 82,904	180	83,084
Slates			
Gypsum	7	...	7
Magnesite	12	...	12
Ores, mineral earthy clays, etc.	10,901	...	10,901
Diamonds	108	...	108
Sapphires, etc.	630	...	630
Total	1,339,386	33,242	1,372,628

Miners for
minerals
other than
gold.

521. The following, according to the estimate of the Mining Department, is the number of men engaged in searching for various kind of minerals and metals other than gold‡ at the end of 1892. The figures show a decrease of 157 in the miners for coal and lignite, of 8 in those for antimony, and of 59 in those for tin; but an increase of 20 in those for slate and flag, and of 9 in those for silver and lead, the net decrease being 192 as compared with 1891:—

MINERS FOR MINERALS OTHER THAN GOLD, 1892.

	Number of Miners.		Number of Miners.
Antimony	27	Slate and flag	50
Coal and lignite	103	Tin	104
Infusorial earth	4		—
Turquoise	10		—
Silver	12	Total	310

Quicksilver
—produce
of the
world.

522. Quicksilver, which is largely used in the recovery of gold, especially from crushed quartz, has not yet been found in Australia in payable quantities. In 1880 and 1881 rather more was produced in the United States than in all the rest of the world, but since 1881

* 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 total quantity of coal raised was 104,160 tons.

‡ For number of gold miners, see paragraph 128, Volume I.

there has been a gradual falling off in the quantity raised there, whilst in 1889 the other quicksilver producing countries—viz., Spain, Austria, and Italy—in which the production of quicksilver has been steadily increasing, produced nearly three times as much as the United States. The following figures, which show the world's production of quicksilver in each of the ten years ended with 1889, were prepared for the coming report of the census of the United States by Dr. David T. Day, of the United States Geological Survey:—

WORLD'S PRODUCTION OF QUICKSILVER, 1880 TO 1889.

Year.				United States.	Spain, Austria, and Italy.	Total.
				Flasks.	Flasks.	Flasks.
1880	...	...	...	59,926	59,242	119,168
1881	...	...	...	60,851	60,082	120,933
1882	...	...	...	52,732	62,489	115,221
1883	...	...	...	46,725	68,394	115,119
1884	...	...	...	31,913	69,915	101,828
1885	...	...	...	32,073	66,281	98,354
1886	...	...	...	29,981	73,070	103,051
1887	...	...	...	33,760	75,027	108,787
1888	...	...	...	33,250	76,664	109,914
1889	...	...	...	26,464	74,772	101,236
Totals				407,675	685,936	1,093,611

523. The revenue derived from the goldfields amounted to £20,047 in 1890-91, and £20,859 in 1891-2. The amount in the latter year was made up of the following items:—

Revenue from gold-fields.

REVENUE FROM GOLDFIELDS, 1891-2.

Miners' rights	...	...	...	...	£6,235
Business licences	...	...	...	...	133
Rents for leases of auriferous and mineral lands	...	...	...	...	10,162
„ mining on private property	...	...	...	...	2,160
Water-right and searching licences	...	...	...	...	1,127
Fees for leases	...	...	...	...	1,042
Total	...	...	...	...	£20,859

524. The State aid to the mining industry during the year 1891-2 was £126,380, as compared with £121,310 in 1890-91.* The former sum is made up of £26,352, cost of the Mining Department and

State aid to mining.

* See page 113 of the first volume of this work.

Mining Boards; £78,388 to assist miners in prospecting operations, and to defray the cost and working expenses of diamond drills; £9,989 for prospecting and boring for coal; and £11,651 for geological and underground surveys, cutting tracks in unexplored regions, etc. The last item includes £621 for sending an expert to Europe to inquire into the treatment of refractory ores, and the manufacture of brown coal briquettes.

Loans to
mining
companies.

525. During the period from 1875-6 to 1879-80, the sum of £21,050 was lent by the State to mining companies, but only £1,237 has been repaid; the balance (£19,813) being written off as non-recoverable.

Diamond
drills.

526. In 1892, inclusive of the cost of wear and tear of diamonds, £31,736 was spent on working diamond drills, of which £20,824 was expended in gold prospecting, and £10,912 in coal prospecting. The average cost of boring with diamond drills was 12s. 10 $\frac{3}{4}$ d. per foot, and with other machines on contract, 5s. 7 $\frac{3}{4}$ d. per foot.

Operations
of diamond
drills.

527. Of the eighteen diamond drills belonging to the Mining Department, six were engaged in prospecting for gold, and twelve for coal, at the end of December, 1892. The number of bores made in 1892 was 151, viz., 131 in search of gold, and 20 in search of coal; the aggregate depth bored was 31,637 feet for gold, and 17,574 feet for coal.

Value of
mining
produce.

528. The estimated value of the produce raised from Victorian mines and quarries in 1892 is summarized as follows:—

VALUE OF MINING PRODUCE, 1892.

	£
Gold	2,617,824
Other metals and minerals	33,242
Stone from quarries	75,367
	<hr/>
Total	2,726,433
	<hr/>

Agricultural,
pastoral,
and mining
produce.

529. The estimated value of the agricultural, pastoral, and mining produce raised in Victoria, during each of the last nineteen 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:—

* For prices of agricultural produce in different years, see table following paragraph 391 *ante*.

VALUE OF AGRICULTURAL, PASTORAL, AND MINING PRODUCE,
1874 TO 1892.

Year.	Estimated Value of—			Total.
	Agricultural Produce.	Pastoral Produce.*	Mining Produce.†	
	£	£	£	£
1874 ...	4,410,436	9,840,562	4,740,679	18,991,677
1875 ...	4,835,894	9,541,551	4,475,876	18,853,321
1876 ...	5,574,239	10,069,570	3,949,135	19,592,944
1877 ...	5,792,898	8,652,471	3,322,264	17,767,633
1878 ...	4,912,745	8,360,265	3,211,990	16,485,000
1879 ...	5,875,313	6,375,965	3,136,527	15,387,805
1880 ...	5,395,021	9,855,800	3,397,661	18,648,482
1881 ...	5,893,874	8,684,218	3,533,658	18,111,750
1882 ...	6,439,972	9,297,812	3,681,245	19,419,029
1883 ...	7,372,143	10,203,914	3,357,252	20,933,309
1884 ...	6,565,527	9,887,229	3,228,738	19,681,494
1885 ...	7,118,388	9,049,679	3,091,244	19,259,311
1886 ...	7,260,735	8,911,336	2,839,120	19,011,191
1887 ...	7,078,653	8,651,599	2,661,625	18,391,877
1888 ...	6,601,601	9,016,573	2,711,024	18,329,198
1889 ...	7,845,739	9,063,910	2,687,098	19,596,747
1890 ...	7,800,139	10,105,498	2,682,444	20,588,081
1891 ...	7,770,658	10,237,952‡	2,503,272	20,511,882
1892 ...	7,204,401	10,092,558	2,726,433	20,023,392

530. The census taken on the 5th April, 1891, enabled an approximate return to be made of the value of articles manufactured in the twelve months prior to that date, and the net result has already been stated to be £10,694,106.§ Since the census there has been a falling-off of nearly 23½ per cent. in the number of hands employed, and on the assumption that the manufacturing produce has decreased in the same proportion, the value in 1892 would be £8,181,000, which amount being added to the figures in the lowest line of the last column in the above table, a total of the gross value of the agricultural, pastoral, mining, and manufacturing produce will be obtained for the year 1892, amounting in the aggregate to £28,204,392.

Agricultural, pastoral, mining, and manufacturing produce.

531. The patents for inventions applied for in 1892 numbered 882, or 74 less than in 1891, and also less than in any previous year since 1887. Since 1854 the total number of patents applied for has been 10,254.

Patents.

* 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.

‡ This would have been much larger only for the adoption of a revised basis of valuation giving a reduced result.

§ See paragraph 480 ante.

Copyrights.

532. The first *Victorian Copyright Act** came into force in December, 1869. Copyrights—especially those for literary productions—have been increasingly numerous during the last nine or ten years, during which period they averaged about 600 per annum; whereas prior to 1883 the largest number registered was 347. The following copyrights have been registered since the passing of the original Act:—

COPYRIGHTS, 1870 TO 1892.

Subject of Copyright.	Copyrights Registered.		
	Prior to 1892.	During 1892.	Total.
DESIGNS.			
Articles of manufacture, chiefly of—			
Metals	378	22	400
Wood, stone, cement, or plaster ...	110	12	122
Glass	19	...	19
Earthenware	24	...	24
Ivory, bone, papier-mâché, etc. ...	88	9	97
Woven fabrics	18	8	26
Miscellaneous	20	...	20
LITERARY PRODUCTIONS.			
Literary works	5,080	767	5,847
Dramatic „	139	3	142
Musical „	115	4	119
WORKS OF ART.			
Paintings	10	3	13
Drawings	40	3	43
Engravings	1,358	20	1,378
Photographs	1,260	15	1,275
Sculpture	5	1	6
Total	8,664	867	9,531

Trade marks.

533. Provision for the registration of trade-marks was established under the *Trade Marks Registration Act* 1876, which came into operation on the 22nd September of that year. The law has since been amended, and is now embodied in the Consolidated Act (54 Vict. No. 1146). The registration of a person as the proprietor of a trade-mark is *prima facie* evidence of his right to its exclusive use, subject to the provisions of the Act as to its connexion with the goodwill of a business. From the period of the commencement of the Act to the end of 1892, 3,406 trade-marks were submitted for registration, and 2,406 were registered. During the year 1892 the number submitted was 434, or 39 more than in 1891, and the number registered was 346, or 10 more than in 1891.

* 33 Vict. No. 350, repealed and re-enacted by 54 Vict. No. 1076.