

## PART 7.—PRODUCTION.

1154. 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.

Alienation of  
Crown  
lands.

1155. 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 connexion with land which is only conditionally purchased, but, when this occurs, such explanation will be given as will prevent a mistake.

Ambiguity  
of the term  
“aliena-  
tion,” as  
applied to  
Crown  
lands.

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

† 54 Vict. No. 1106.

Crown lands  
alienated,  
1893.

1156. The land finally alienated from the Crown in fee simple during 1893 amounted to 321,089 acres, of which 321,061 acres were sold, and 28 acres were granted without purchase. The total extent was larger by 76,000 acres than in 1892, and also much larger than in any year since 1888; it was, however, much less than in any of the nine years ended with 1888, during which period the extent alienated annually usually exceeded 420,000 acres.

Crown lands  
sold by  
auction.

1157. Of the area sold, 6,546 acres, or 2 per cent., were disposed of by auction, and 757 acres under pre-emptive rights, private contracts, &c., 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 1893 was 4,075 acres less than in 1892, and 809 acres less than in 1891; whilst it was only about half the area in 1889 or 1890, 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  
alienated to  
end of 1893.

1158. The total extent of Crown lands sold and finally parted with in Victoria up to the end of 1893 was 16,926,749 acres, and the extent granted without purchase was 15,655 acres. The whole area alienated in fee simple was thus 16,942,404 acres, of which 6,652,678 acres, or 39 per cent., were sold by auction, and nearly the whole of the remainder was originally acquired by selection under the system of deferred payments.

Crown lands  
selected.

1159. 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 16,078,300 acres. For 10,202,705 acres of this area the purchase has been completed, whilst the remainder, amounting to 5,875,595 acres, represents the whole area still in process of alienation under the deferred payment system at the end of 1893. At the end of 1892 the amount due to the State for lands in process of alienation was £2,133,925,\* of which, however, only £652,045 was in arrear.

Selectors'  
unpaid  
purchase  
money.

Crown lands  
unalienated.

1160. 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 22,817,999 acres, it will follow that the residue, representing the Crown lands neither alienated nor in process of alienation, amounted at the end of 1893 to 33,427,761 acres.

\* At the end of 1894 the balance was £1,904,493.

1161. 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 8,342,828 acres, and 15,579,705 acres occupied under lease or licence for various terms of years—from the extent unalienated and unselected, already stated to have been 33,427,761 acres, it will be found that the available area is narrowed to 9,505,228 acres, of which about 1,342,000 acres are in the Mallee country. This will be at once seen by the following table, which shows the position of the public estate at the end of 1893 :—

PUBLIC ESTATE OF VICTORIA ON 31ST DECEMBER, 1893.

Condition of Land.	Approximate Number of Acres.
<i>Private Land.</i>	
Land alienated in fee simple ... ..	16,942,404*
Land in process of alienation under deferred payments ...	5,875,595*
<i>Crown Lands.</i>	
Roads in connexion with the above ... ..	1,499,000†
Water reserves ‡ ... ..	273,779
Reserves for agricultural colleges and experimental farms	154,172§
Timber reserves and State forests ‡ ... ..	1,956,895
State education endowment reserves ‡ ... ..	1,592,400
Reserves in Mallee country ... ..	390,346
Other reserves ‡ ... ..	216,300
Unsold land in towns, beds of rivers, &c., &c. ... ..	2,259,936
Lands in occupation under—	
Pastoral leases ... ..	1,394,989
Mallee pastoral leases ... ..	9,434,601
Grazing area leases ... ..	4,241,384
Grazing licences for auriferous lands ... ..	505,197
Swamp leases ... ..	3,534
Available for occupation at end of 1893—	
In Mallee country ... ..	1,341,846
In other parts ... ..	8,163,382
<b>Total area of Victoria ... ..</b>	<b>56,245,760</b>

\* Including Mildura (250,000 acres), of which 49,603 acres have already been alienated, and 200,397 acres are conditionally alienated. At the end of 1894 the extent alienated was 17,262,536, and in process of alienation 5,735,732 acres.

† Including roads in Mallee country, estimated at 155,207 acres.

‡ 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.

|| Of this area 4,825,630 acres are temporarily held under grazing licences, renewable annually; only 57,553 acres of it may be sold by auction.

Crown lands  
available for  
settlement.

1162. It will be observed that at the end of 1893, 22,817,999 acres, or about 41 per cent. of the whole area of the colony, were already alienated or in process of alienation; 8,342,828 acres, or 15 per cent., were occupied by reserves, &c.; 15,579,705 acres, or 28 per cent., were occupied under lease\* for pastoral purposes; and 9,505,228 acres, or 16 per cent., were available for immediate occupation.

Classification  
of available  
land.

1163. Following the classification provided for under the existing Land Act, the estimated available area of Crown lands at the end of 1893 may be divided as follows:—

CLASSIFICATION OF LAND AVAILABLE FOR SETTLEMENT AT  
END OF 1893.

				Acres.
Pastoral lands in mallee country ...	...	...	...	1,341,846
"    other parts of colony ...	...	...	...	1,652,146
Agricultural and grazing lands ...	...	...	...	5,330,756
Auriferous lands ...	...	...	...	1,034,532
Swamp lands ...	...	...	...	84,820
May be sold by auction ...	...	...	...	61,128
				9,505,228
Total ...	...	...	...	9,505,228

Amount  
realized on  
Crown land  
alienated  
in 1893.

1164. The amount realized for Crown lands finally alienated in 1893 was £354,840, or at the rate of £1 2s. 1d.† 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 £31,015, or an average of £4 14s. 9d. per acre; and the proportion sold otherwise than at auction realized £323,825, or an average of £1 0s. 7d. per acre.

Deferred  
payments  
on land sold  
by auction.

1165. 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 1893 the balance outstanding was £92,811, out of a total of £852,604 purchase money during the last nine years; the principal received being £759,793 as well as £32,619 for interest.

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

† In view of the fact that payment for the greater portion extended over a term of years without interest, the actual average price was much less than this. See paragraph 1166.

‡ 48 Vict. No. 812, section 71.

1166. From the period of the first settlement of the colony to the end of 1893, the amount realized by the sale of Crown lands was £25,609,041, or at the rate of £1 10s. 4d. 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 ten years without interest, the amount of purchase money is really equivalent to only 15s. 6d. per acre, and if it be extended over twenty years, it is reduced to 12s. 6d. per acre.

Amount realized, 1836 to 1893.

1167. The private land in the colony consists practically of the areas shown in the first two lines of the last table, amounting to 22,818,000 acres, of which, however, the purchase of 5,875,600 acres was incomplete. The capital value of this land has been estimated, on the basis of municipal values, at close on 227 millions sterling, and its unimproved value at 132¼ millions. Lands held under lease from the Crown and rated by municipalities are included in the valuation. The following are the values for the urban and rural districts of the colony, the basis of the calculation being also shown :—

Capital and unimproved value of private land in Victoria.

CAPITAL VALUE OF LAND, WITH AND WITHOUT IMPROVEMENTS, BASED ON ANNUAL RATEABLE VALUE, 1893.

District.	Annual Rateable Value.	Number of Years' Purchase (Assumed).	Capital Value of Land—	
			With Improvements.	Unimproved.*
	£		£	£
Urban † ...	7,148,446	16	114,375,136	57,187,570
Rural ...	5,631,154	20	112,623,080‡	75,082,050‡
Total ...	12,779,600	17·76	226,998,216	132,269,620

1168. An estimate has been made of the number of freeholders and of the total unimproved values of estates of different annual, capital,

Freeholders and landed estates of different sizes.

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

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

‡ Of which about £2,000,000 represents the amount due to the Government for selections of which the purchase was not completed.

and unimproved values, and the results are shown in the following table :—

ESTIMATED NUMBER OF FREEHOLDERS AND TOTAL UNIMPROVED VALUES OF LANDED ESTATES OF DIFFERENT VALUES, 1893.

Classification according to Value.			Estimated Number of Freeholders.	Total Unimproved Value.
Municipal Annual Value.	Capital Value.	Unimproved Value.		
Under £20 ...	Under £355 ...	Under £210 ...	104,300	£ 15,754,128
£20 to £30 ...	£355 to £533 ...	£210 to £315 ...	27,000	14,795,100
£30 to £40 ...	£533 to £710 ...	£315 to £420 ...	15,100	13,454,500
£40 to £50 ...	£710 to £890 ...	£420 to £525 ...	10,300	11,313,450
£50 and upwards	£890 and upwards	£525 and upwards	28,200	76,952,442
Total ... ..			184,900	132,269,620
				2,000,000
				130,269,620

Selection of public lands, 1893.

1169. During the year 1893, 878 applications were granted for the selection of 123,906 acres under the deferred payment system. Of this extent 123,404 acres were selected for agricultural purposes, in allotments limited to 320 acres; 371 acres, in allotments limited to 20 acres, for purposes of residence or cultivation on or near gold-fields; and 131 acres (by 1 selector) for wattle cultivation. The purchase money for these selections, chiefly payable by instalments extending over a period of twenty years, amounted to £126,623. 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, 1893.

Selections of Crown Lands for purpose of—	Legislation— <i>Land Act</i> 1890.	Number of Selectors.	Area Selected.	Purchase money payable (Nominal).
Agriculture, with residence	Section 42 * ...	805	116,087	£ 116,087
" without residence	Section 49 * ...	27	2,624	5,248
" in Mallee district.	Section 203 ...	15	4,693	4,693
Residence on gold-fields	Section 22 ( <i>Land Act</i> 1891) * ...	30	371	464†
Wattle cultivation ...	Section 9 ...	1	131	131†
Total ... ..	... ..	878	123,906	126,623

\* Including similar sections under previous Acts. In 1893 six residence selections for 961 acres and eleven gold-fields selections for 313 acres were granted under *The Land Act* 1869; and two non-residence selections for 221 acres under *The Land Act* 1878. In these cases certain rights of selection were preserved under section 2 of the present *Land Act*.

† Estimated.

1170. 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 1893, and in the whole period from 1870 to 1893, 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 1893.

Period.	Number of Selectors of Land.				Total.
	For Purposes of Cultivation.		For Residence and Cultivation near Gold-fields.	For Residence.	
	With Residence.	Without Residence.			
1870 to 1883* ...	79,207	293	13,938	231	93,669
1884 ...	3,918	71	1,002	11	5,002
1885 ...	3,930	68	714	83	4,795†
1886 ...	943	25	173	49	1,190†
1887 ...	147	...	39	15	201
1888 ...	317	...	...	10	327
1889 ...	418	41	...	2	461
1890 ...	518	33	...	...	551
1891 ...	539	37	...	...	576
1892 ...	538	30	...	...	568
1893 ...	820‡	27	31§	...	878
Total ...	91,295	625	15,897	401	108,218

1171. It has been already stated that the area in process of alienation at the end of 1893 was 5,875,595 acres. Assuming an average of 142|| acres to each selector, it would follow that the number of selectors who had not completed their purchases at that date was about 41,400.

1172. 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

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

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

‡ Including fifteen in Mallee district.

§ See footnote (†) *supra*. Including also one for wattle cultivation.

|| See paragraph 1173 *post*.

and that granted without purchase from that conditionally alienated or selected:—

CROWN LANDS ABSOLUTELY AND CONDITIONALLY ALIENATED,  
1870 TO 1893.

Period.	Area Granted, Sold, and Selected.			Total.
	Granted without Purchase.	Sold by Auction.*	Conditionally Alienated.† (Selected.)	
	Acres.	Acres.	Acres.	Acres.
1870 to 1883‡	7,967	1,000,651	13,336,619	14,345,237
1884	74	35,446	734,092	769,612
1885	3,099	26,900	723,523	753,522
1886	1,120	19,281	188,196	208,597
1887	487	19,565	23,092	43,144
1888	522	22,413	53,738	76,673
1889	531	15,639	71,251	87,421
1890	195	12,883	99,307	112,385
1891	338	8,665	99,231	108,234
1892	129	11,988	88,723	100,840
1893	28	7,302	123,906	131,236
Total	14,490	1,180,733	15,541,678	16,736,901

1173. 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-four years the average number of acres taken up by each selector has been 142.

1174. Of the land which has been selected in former years 38,129 acres during 1893, held under 254 licences or leases, were abandoned or forfeited to the Crown in consequence of non-fulfilment of conditions. In 122 cases the licences or leases were declared expired, in 16 cases at the holders' request, in 82 for non-payment of rent, in 12 cases through the land having been sold, and in 22 for non-compliance with conditions, &c. The Treasury profited by such revocations and forfeitures to the extent of £6,667.

1175. 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

\* Including 2,389 acres in 1888, 1,959 acres in 1889, 682 acres in 1890, 1,311 acres in 1891, 1,368 acres in 1892, and 757 acres in 1893 sold by private contract.

† A large proportion of the land referred to in this column may revert, and, as a matter of fact, a considerable quantity has reverted, to the Crown in consequence of non-fulfilment of conditions, &c., and may subsequently be included in re-adjustments of selections, relicensed, sold by auction, or retained by the Crown. See paragraph 1159 *ante*. "Gold-fields" selections are included in this column.

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

Average size of selections.

Selected land forfeited, 1893.

Licence liens.



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 eight years :—

## LICENCE LIENS, 1886 TO 1893.

Year.	Liens Registered.		
	Number.	Area on which Liens were Granted.	Amount Secured.
		Acres.	£
1886 ... ..	326	79,099	38,924
1887 ... ..	305	68,968	34,634
1888 ... ..	405	95,294	48,098
1889 ... ..	267	58,705	30,039
1890 ... ..	216	46,467	25,244
1891 ... ..	118	23,513	13,836
1892 ... ..	75	12,998	8,548
1893 ... ..	63	12,652	8,853

1176. Until agricultural lands are selected they are leased as grazing areas, out of which the lessee has the right to make a selection.\* Lease of grazing areas, 1893. The number of applications for leases of such areas in 1893 was 1,810, but the number approved during that year was only 584, the extent for which approval was granted being 211,401 acres, at an annual rental of £1,926. The applications approved were fewer by about 365, and the area granted was less by about 135,800 acres than in the preceding year.

1177. 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 the area of the Crown lands under the *Land Act* 1890 held under Pastoral occupation, 1893.

\* See last edition of this work, Vol. II., paragraphs 241 and 242.

lease or licence for pastoral or grazing purposes, including Mallee pastoral leases, at the end of 1893, also the number of leases and licences, and the annual rental payable. The rental shows an increase of about £3,400 as compared with the previous year :—

PASTORAL OCCUPATION OF CROWN LANDS 1893.\*  
(Under *Land Act* 1890.)

Description of Tenure.	Number of Licences or Leases.	Extent of Crown Lands.	Annual Rental.
		Acres.	£
Pastoral leases (sec. 21) ... ..	87	1,394,989	4,859
Grazing area leases (sec. 32) ... ..	10,416	4,241,384	40,611
Grazing licences (secs. 3, 119, and 123)	3,433	4,825,630	18,774
"    "    (auriferous lands, secs. 65 and 67)†	4,515	505,197	9,047
Mallee pastoral leases (Part II.) ...	2,822	9,434,601	13,000
Total ... ..	21,273	20,401,801	86,291

Average area of runs and grazing lands.

1178. By these figures it may be ascertained that the average extent of land embraced in a pastoral lease was 16,034 acres, in a grazing area lease 407 acres, in a grazing licence (secs. 3, 119, and 123) 1,406 acres, and in a Mallee pastoral lease 3,343 acres. The areas are exclusive of any purchased land attached thereto.

Rent of runs and grazing lands.

1179. According to the table the average rent per acre of land held under pastoral leases was about  $3\frac{1}{2}$  farthings (.836d.); of land held under grazing area lease  $2\frac{1}{4}$  pence (2.30d.); of land held under grazing licence over a penny farthing (1.253d.); and of Mallee pastoral lands under a third of a penny (.33d.). The rental of pastoral and grazing lands as a whole showed a net increase as compared with the previous year of about £3,400.

Assessment of pastoral lands.

1180. 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.

Mallee pastoral leases.

1181. The Mallee country (exclusive of the irrigation colony of Mildura—250,000 acres) contains an estimated area of about 11,322,000, of which about 155,200 acres is occupied by roads. The country is

\* 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 1893 the number of these was 3,287, but the area was only 64,293 acres.

divided into blocks and allotments, of which the number of lessees and leases, the approximate area held, and the annual rental, are shown in the following table:—

MALLEE PASTORAL LEASES ON 31ST DECEMBER, 1893.

Description of Leaseholds.	Number of Lessees.	Number of Leases.	Area.	Annual Rental.*
			Acres.	£
Mallee blocks ...	25	68	5,975,168	3,220
„ allotments ...	2,670	2,754	3,459,433	9,780
Total ...	2,695	2,822	9,434,601	13,000

Approx.  
Acres  
239/200  
1000

2500 limit

1182. 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.

Surrender and releasing of Mallee blocks.

1183. At the end of 1893 the following areas were still available for occupation in the Mallee country:—Mallee blocks, 1,011,254 acres; Mallee allotments, 330,592 acres. Three blocks, containing 390,346 acres, also are reserved for public purposes.

Mallee areas still unoccupied, 1893.

1184. 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 forty-six times, the extent occupied by nearly one-fourth, and the annual rental by over one-half. It should, moreover, be pointed out that the present lessees have to comply with certain conditions† to which the licensees under the former Act were not subject.‡

Past and present occupation of Mallee country.

\* Approximate only.

† See issue of this work for 1893, Vol. II., paragraph 249.

‡ Mallee lands, which have proved to be excellent for wheat-growing, may now be selected. See last issue of this work, Vol. II., paragraph 250. An interesting account of the position and prospects of irrigation and water supply in the Mallee country was given in an Appendix to the *Year-Book* for 1892.

1185. According to the figures in the table, the average rental per 100 acres payable for the Mallee country is 2s. 9d., or 1s. 1d. for the Mallee blocks, and 5s. 7 $\frac{3}{4}$ 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.

1186. The revenue from the sale and occupation of Crown lands may be divided into (1) receipts from the alienation in fee simple, including the price realized from sales and from rents which count towards the purchase money; (2) receipts on account of temporary occupation, which include payment for pastoral leases and grazing licences, rents for business, factory, and hotel sites, &c., and rents which do not count towards the purchase money; (3) penalties, interest and fees for grants, leases, licences, &c. The gross receipts show a decrease of about £17,550 as compared with those in the previous year, chiefly under the head of alienation. The receipts for temporary occupation fell off by nearly £8,000, but this item is largely affected by arrears, and, as a matter of fact, there was an increase in the pastoral rents, &c., receivable of about £3,400. The following are the actual receipts for the two years:—

LAND REVENUE, 1892 AND 1893.

Heads of Land Revenue.	Amounts Received.		Decrease.
	1892.	1893.	
	£	£	£
Alienation in fee simple and progressive ...	373,903	364,909	8,994
Temporary occupation ...	93,021	85,359	7,662
Penalties, fees, &c. ...	27,827	26,935	892
Total ...	494,751	477,203	17,548

1187. The laws and regulations under which land for agricultural purposes passes from the Crown into the hands of private individuals differ in the various Australasian colonies.\* In almost all, however, provision is made for any person of eighteen years of age or over,† and not a married woman,‡ desirous of settling on the land, to select a certain

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

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

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

Average rental of Mallee country.

Land revenue.

Systems of land selections in Australasian colonies.

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 1894, are detailed under nine heads in the following table:—

CONDITIONS OF LAND SELECTION IN AUSTRALASIAN COLONIES, 1893-4.

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 of purchase
4. Minimum time in which fee-simple may be acquired—Years	6	5	5	5	6	5	any-time	..	10	..
5. Annual payment per acre	1s.	1s.	6d.		§	6d.	2s.	..	2s. & 6d.	1s. 7d. and 5d.
6. Value of necessary improvements per acre	20s.	10s.	10s.	Fencing	Fencing	10s. and Fencing	..	20s. & 10s.	23s. and 6s. 6d.	23s. and 6s. 6d.
7. Time allowed for making improvements—Years	6	5	5	5	5	10	..	7	6	6
8. Acres in every 100 to be cultivated	10	..	..	..	..	..	..	..	..	..
9. Period of residence necessary*—Years	5	5	5		..	5	14	..	6 to 7	10

NOTE.—See also further information in following paragraphs.

1188. 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. ¶ Land system of Victoria.

1189. 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, Village settlements.

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

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

‡ But the minimum price is 5s. per acre.

§ See account of South Australian land system, following paragraph 1202 post.

¶ See paragraph 1198 post.

¶¶ See paragraphs 242 and 243 of *Victorian Year-Book*, 1893, Vol. II.

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

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. An applicant must not be under the age of eighteen, nor the owner in fee simple of 2 acres or upwards, nor the lessee of a pastoral allotment or grazing area, nor a licensee under sections 42 or 49 of the *Land Act* 1890, nor a lessee of a Homestead Association allotment. During the period over which the permit extends, the occupant pays a rental of 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 the 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.

Homestead  
associations.

1190. The Homestead Associations are combinations of not less than six persons who desire to settle near each other. Any person over the age of eighteen, not being a married woman, not holding 10 acres of land or upwards in fee simple, and with the other restrictions specified in regard to Village Communities, may become a settler in a Homestead Association. For their accommodation, blocks of Crown land, each containing not more than 2,000 acres, are divided into sections not exceeding 50 acres in extent, excepting a portion, not exceeding 100 acres, which is set apart for a township, of which a division, not exceeding 40 acres, is permanently reserved for the recreation, convenience, or amusement of the members of the association. The remainder of the township portion is divided into as many allotments of 1 acre or less as may be necessary to provide one allotment for each occupant of a section. The conditions as to residence, cultivation, improvement, rent, and repayment of cost of survey and advances, are much the same as those already described in connexion with the Village Communities. After all these have been complied with, a grant in fee of his section and township allotment is given to each occupant.

1191. 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. Advances to rural settlers.

1192. The number of applications from persons desirous of settling in Village Communities and Homestead Associations up to 30th June 1894 was 4,080, of which 2,122 have been approved and 993 refused and withdrawn, whilst 965 have not been finally dealt with. Of the total applicants, 2,726 desired to settle in Village Communities, and 1,354 in Homestead Associations. The latter were embraced in two societies with 71 members, and 152 associations with 1,283 members. It is reported that the principle of each settler holding his own allotment affords the greatest satisfaction, and that in most settlements they help one another although not working in associations. Up to 30th June, 1894, the area made available for Village Communities and Homestead Associations and Societies was 156,020 acres in 85 different localities; of which 48,367 acres were allotted to the 2,122 approved applicants above referred to, or an average of 23 acres each. At the time of inspection (May or June, 1894) there were 1,648 settlers actually residing on the settlements, viz., 928 in Village Communities, 720 in Homestead Associations (including 69 in societies); of whom 1,172 were married and 476 were single; and, including wives and families, the total souls numbered 6,925. The number of settlers likely to remain permanently was 1,405; and the total value of improvements effected was £20,938. The settlers who have availed themselves of monetary assistance number 985, and the amount advanced to them is £8,873, equivalent to less than half the amount voted, or to over 42 per cent of the total value of improvements.† Progress in village settlements.

1193. Labour Colonies are established for the purpose of affording assistance to the able-bodied unemployed who are absolutely without means, and are of the nature of relief works. They are placed on blocks of Crown land, and were intended to be supported partly by the Government and partly by voluntary contributions, the Government granting £2 to every £1 contributed privately, the management being under the joint control of a committee appointed partly by the Government and partly by the contributors. Soon after the Act came into Labour colonies.

\* This has been found inadequate, and it is proposed to obtain legal sanction to increase the amount to £40.

† See Report under the *Settlement on Lands Act 1893*, for the year 1893-4.—Parliamentary Paper No. 61, Session 1894.

force private contributions fell off, and the Government were constrained to take over the sole control. The management was then placed in the hands of a gentleman who had been instrumental in introducing the system into Victoria, and who continues the management in a purely honorary capacity. The Act provides for the admission of persons of good character and repute into the Labour Colony, and for the establishment of any trade or industry in connexion therewith in order to make the institution self-supporting, all profits being set apart for a fund to continue the system.

Leongatha  
labour  
colony.

1194. The only Labour Colony in active operation is that of Leongatha, situated in the Gippsland district, about 80 miles from Melbourne, consisting of 800 acres of excellent but heavily-timbered land. On joining this colony, each man has to work a week on probation, and then on a small wage, fixed by the manager according to his ideas of the man's worth. The men are comfortably housed in bush huts, and fed as far as possible on the produce of the Labour Colony. After deducting the cost of clothes and other necessaries supplied him from the store, the balance of the man's wages is placed to his credit and paid him in cash when he leaves the colony, or the money is paid, as earned, to his family in town. A labour bureau has been established, and employers are at once supplied, without fee, with pick and shovel men, splitters, bush hands, farm labourers, ploughmen, rough carpenters, cooks, bakers, or skilled tradesmen. It must be borne in mind that the Labour Colonies are not intended to afford permanent homes to the men, but to supply their immediate wants and to fit them for a rural life. The industries pursued at Leongatha are clearing, draining, fencing, and cultivating the land, sawing timber, splitting posts and rails, dairying, fattening stock, growing fruit, vegetables, &c., together with experimental crops to ascertain what are most suitable for the climate peculiar to South Gippsland.

Progress in  
labour  
colonies.

1195. From the inception of the system on the 24th June, 1893, to the 20th April, 1895, 1,273 men have been sent to the colony. For 462 of these remunerative employment has been found, 523 left to seek for employment, being better fitted for such by their stay on the colony, averaging about four months; 93 left on account of sickness, being sent to the Melbourne Hospital free by rail; 5 were found to be physically unfit for work, 3 died from natural causes, 78 were dismissed for misconduct, whilst 109 men remained in the colony.

Land system  
of New  
South  
Wales.

1196. 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 4 per cent. per annum is charged and collected out of the annual instalments paid. The first payment is 2s. per acre in advance, with an interval of three years before the next instalment of 1s. is payable. On non-residential land purchases the deposit is 4s. per acre, and the instalments 2s. per acre. 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 sixteen years of age, and married women judicially separated and living apart from their husbands, may select.

1197. Under Acts passed in New South Wales in June, 1893, and June, 1894, to establish and regulate Labour Settlements on Crown lands, 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 eight or more than sixteen 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; and the board may receive from the Government, in trust for the purposes of the settlement, a sum not exceeding £50 for each member who is head of a family dependent on him, £40 for each married person without family, or £30 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 and willing to improve the land at their own expense before receiving in the shape of a loan from the Government an amount not exceeding the appraised value of such improvements. It is desired that, where practicable, persons of the two classes should not be members of the same settlement. Up to August, 1894, only three Labour Settlements had been established.

Labour settlements in New South Wales.

Land system  
of Queens-  
land.

1198. 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 50 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 five 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 ten years, but liable to be increased every subsequent five years. 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 twenty 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 exceeding 5,120 acres each, at a minimum price of 10s. per acre; and provision is made, if thought desirable, for 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.

Uncondi-  
tional selec-  
tions.

Special sales  
of country  
lands at  
auction.

Village  
settlements  
in Queens-  
land.

1199. 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 2 square miles as an agricultural township, which may be subdivided into portions not exceeding 1 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.

1200. The Co-operative Communities Land Settlement Act of 1893, which came into operation on the 13th October, 1893, provides that groups of male persons, not less than 30 in number, all of whom must be natural born or naturalized British subjects over the age of eighteen years, and who have resided in Queensland for at least twelve months prior to the date of application, may apply to the Minister for Lands for recognition as a group, and for an area to be set apart for the purposes of the group, such area not to exceed a gross area calculated at the rate of 160 acres for each member, exclusive of land required for roads, reserves, &c. The group, when applying for recognition, must deposit with the Minister a copy of the rules for its internal management. Each group may, according as the original rules provide, either secure the freehold of the land at the end of the period of not less than six or more than twelve years, or they can obtain the land as a perpetual lease ; but in either case subject to the fulfilment of all the conditions set forth in the proclamation, &c., setting apart the area. The conditions to be fulfilled during the period are expenditure of 10s. per acre in substantial and permanent improvements, *bonâ fide* residence of at least one-half of the members of the group, and payment of the rental, if any ; and if freehold to be acquired, the payment of the purchase money (if any) at the end of the period. The Government

Co-operative  
communi-  
ties in  
Queensland.

may make advances in the form of money, tools, food, agricultural implements, &c., amounting to £20 per member, such advances to be expended under the direction of the Government. Further advances may also be made to the wife of any member for the maintenance at any place within the area of herself and children under sixteen years of age. Such advances not to exceed 15s. per week, nor to be for a longer period than 26 consecutive weeks, and to be an individual debt separate from the group's advance. All such advances shall be repayable in the manner prescribed by the Act and regulations. At the end of the first period (six to twelve years) the group may, provided all the conditions have been complied with, and if the original rules do not prohibit the acquisition of freehold, and on payment of the price (if any), subdivide the area, each member acquiring the freehold of such area as he may be entitled to in accordance with terms of proclamation. The group will arrange the distribution of the various lots or they may apply for a certificate setting apart the area for a further period not exceeding ten years, the rental for such period to be calculated at the rate of 5 per centum of the unimproved value of the land at the end of the first period.

Labour colonies in Queensland.

1201. Land not exceeding 10,000 acres in area may be set apart as a Labour Colony and vested in five trustees appointed by the Government, such trustees to have the power of admitting any man unable to support himself otherwise into such colony, and such man shall be entitled to participate in all the benefits of the colony as the rules may provide. Each colony may be subsidized by the Government either by a grant of not more than £1,000 unconditionally, or to the extent of £2 for every £1 received by the trustees thereof from the public or by private subscription for the like purpose. The rules of each colony shall provide for—(1) The collection, spending, and application of all moneys received; (2) The rate of allowance for work to be paid to persons employed and to the families dependent upon them for support; (3) The cleanliness, good order, and health of the colony; (4) The maintenance of order, the punishment of breaches of the rules, &c., &c.

Land system of South Australia.

1202. In South Australia credit selection was abolished by the *Crown Lands Act* 1888, and in lieu thereof "leases with right to purchase" are now issued for periods of 21 years at certain gazetted rentals, with right of renewal for a further period of 21 years at freshly assessed rentals. The right to purchase may be exercised at any time after the first six years, at a price fixed by the Land Board of not less than 5s.

per acre. The following account of the system is by Mr. G. S. Wright, Secretary for Crown Lands, 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 six years of the term, at the price fixed by the Land Board, the minimum price being 5s. per acre. The annual rent for the first term of 21 years is as gazetted, and the annual rent for the renewed term will be fixed by the Land Board at least twelve months before the expiration of the first term. Perpetual leases will be re-valued every fourteen years. The rent for the first fourteen years is as gazetted, and for subsequent terms of fourteen years will be fixed by the Land Board at least twelve months before the expiration of every period of fourteen 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 five years from the date of the lease. In making the allotments preference is given to applicants who will undertake to reside on the land.

1203. In the *Crown Lands Amendment Act 1893*, provision was made for the establishment of village settlements in South Australia. The following are the main features of the measure\* :—

Village settlements in South Australia.

Not less than twenty persons over eighteen years of age may form an association. Maximum area to be granted to each villager, 160 acres. Rent of land fixed by Land Board for the district, but no rent charged for the first year. At least one-half of the villagers to reside within six months from date of lease, which is in perpetuity; 2s. 6d. per acre per annum to be spent on land for first ten years. No lease to villagers capable of being assigned, mortgaged, or encumbered in any manner howsoever. Government make advances to villagers up to £50 each to the extent of one-half of the improvements made consisting of buildings, fences, dams, tanks, wells, or reservoirs, clearing, drainage, or irrigation works. All advances to be repaid by ten equal annual instalments with interest at the rate of 5 per cent. per annum on the moneys for the time being remaining unpaid. The first instalment being payable three years from date of advance. Each village association makes its own rules for internal management, subject to approval of Commissioner of Crown Lands. Up to August, 1894, twelve villages had been established containing 540 villagers, and £6,000 had been advanced on improvements.

1204. Special efforts have been made in South Australia to extend what is known as the Homestead Blocks System. Land has been purchased by the Government near centres of population at a cost of

Homestead blocks in South Australia.

\* Information kindly furnished by Mr. G. S. Wright.

£11,440, and let to working men in blocks not exceeding 20 acres. Loans amounting to £10,000 (but not exceeding £50 in any one case) have been granted to the "blockers" to assist them to build houses and out-houses, and many thousands of vines and fruit trees have been distributed gratis. Any "blocker" may have his lease indorsed "the land herein comprised is held as a homestead block," and the effect of such indorsement is that the land cannot thereafter be "seized or taken in execution for debt under process of any court (except for the payment of rates and taxes) or vest in the trustee of his estate in case of insolvency." At the present time there are 3,059 lessees throughout the colony, holding 43,455 acres. Personal residence is necessary in all cases.

Land system  
of Western  
Australia.

1205. In Western Australia, the particulars given in the table relate to the South-Western (or Home) Division 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 ten 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 performing double the amount of improvements, 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 three years, and an expenditure of 5s. per acre on improvements within seven years, from date of survey.

Land system  
of Tasmania.

1206. 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 fourteen years. The purchaser is compelled to make improvements to the value of 2s. 6d. per acre per year for a term of eight years, and grant deed cannot issue until such improvements are made. A purchaser on credit may pay off balance at any time, provided he has made improvements to the extent of 20s. for each acre selected. In agricultural areas within mining districts in Tasmania selection is allowed in lots ranging from 10 to 100 acres, the price being £1 per acre, with one-third in addition added for credit for a term of fourteen years. Residence and improvement are compulsory, and fee-simple cannot be obtained until the expiration of five years. These lots are sold reserving to the Crown.

the right of mining on certain conditions and payment of compensation for damage sustained after being assessed. In 1890 a Land Act was passed consolidating the twelve Acts previously in operation.

1207. There are no village settlements in Tasmania, although provision is made in the Land Act Amendment of 1893 for the selection by a "Purchasing Body" of an area not exceeding 1,000 acres in one lot for the purpose of controlling settlement thereon. In 1893 a short amendment of the Land Act was passed, and further amended in 1894, permitting selection of an area not exceeding 50 acres nor less than 15 acres, the first payment to be made in the fourth year after selection and continued during the following fourteen years. Residence for the whole term of eighteen years is compulsory or substantial improvements other than buildings to the value of £1 per acre to be effected before title can pass from the Crown. The sale price of the land is £1 per acre, with one-third added for credit.

Village settlements in Tasmania.

1208. 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 licence 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 licence, 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, of 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 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.

Land system of New Zealand.

1209. Village homestead settlements in New Zealand embrace lands which are disposed of for lease in perpetuity. The sizes of sections do not exceed 100 acres. This system has been in operation over a period of nine years; and on the 31st March, 1894, there were 120 settlements, accommodating 1,157 settlers with their families, on 27,314

Village settlements in New Zealand.

acres, and having improvements on the land valued at £70,000. If the sum lent by Government is deducted from this valuation there remains the sum of £44,688, which represents the value of improvements made by the settlers over and above those done with the amounts advanced by the Government. 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. Under the *Land for Settlements Act* 1894 the Government has power to acquire and obtain private land for the purposes of closer settlement. Such acquired lands can only be dealt with as follow:—If town, suburban, or rural land, by leases in perpetuity; if pastoral land, as small grazing runs for terms of 21 years, with right of renewal.

Agricultural  
statistics.

1210. The agricultural statistics of Victoria are collected by the municipal bodies, which, under the *Local Government Act* 1890 (54 Vict. No. 1112), are required each year to furnish to the Government Statist, on or before the 1st March, such agricultural and other statistics relating to their districts on such forms and in such manner as the Governor in Council may direct. All persons are required to give correct information to the best of their knowledge and belief; and, should they fail to do so, they render themselves liable to a penalty not exceeding £10. Collectors divulging or making extracts from the information they receive, except under the special direction or authority of the Government Statist, also render themselves liable to a penalty of £10.

Agricultural  
statistics,  
1893-4.

1211. The agricultural statistics to which reference will now be made are those for the year ended 1st March, 1894.\* Tables embodying the final results of those statistics will be found in the *Government Gazette* of the 30th July last,† and, these, with additional tables, form portion of the *Statistical Register of Victoria*. Notwithstanding the reduction in the municipal subsidy and the abolition of bonuses, the work devolving on the municipalities is well performed, and the returns in most instances are furnished in fairly good time, although owing to delay on the part of a few shires in important agricultural districts the publication of the whole is somewhat delayed.

\* 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)

† In 1894 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 11th April, and in 1895 on 6th April.



1212. The total number of farm holdings visited in the year under notice was 34,549, of which 33,631 were in shires, and 918 in cities, towns, or boroughs. In the previous year the number of farms visited was 35,233, there being thus a decrease of 674; whilst as compared with 1891-2, there was a decrease of 1,396. Number of cultivators.

1213. The extent of land returned as under cultivation amounted to 3,019,009 acres in 1893-4, as against 2,970,115 acres in 1892-3. The increase shown by the figures was therefore 48,894 acres. The following statement shows the rapid growth of agriculture in the colony in decades commencing with 1840. The areas are given exclusive, as well as inclusive, of permanent artificial grass, as a uniform method of collecting the information under that head did not prevail in all the years :— Land under tillage.

AREAS UNDER TILLAGE, 1840 TO 1894.

Year.	Inclusive of Permanent Artificial Grass.	Exclusive of Permanent Artificial Grass.
	acres.	acres.
1840	3,210	3,210
1850-1	52,340	52,179
1860-1	419,380	407,740
1870-1	909,015	762,026
1880-1	1,997,943	1,742,949
1890-1	2,652,768	2,417,527
1893-4	3,019,009	2,794,703

1214. The average area returned as in cultivation to each person in the colony was rather over  $2\frac{1}{3}$  acres in the year under review, as against a shade over  $2\frac{1}{7}$  acres five years previously and  $2\frac{1}{10}$  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.\*  
(Exclusive of permanent artificial grass.)

	Acres.
1883-4	2·10
1888-9	2·15
1893-4	2·38

1215. In the thirteen years ended with 1893-4 the land under cultivation in Victoria increased by about one million acres, or by 50 per cent., 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 fifteen of the southern counties, embracing generally the oldest and longest settled agricultural districts. Increase of cultivation in different counties in thirteen years.

\* Inclusive of permanent artificial grass, the proportions were as follow :—2·41, 2·38, and 2·57.

The following are the counties in which cultivation increased or decreased respectively, arranged in order according to the increase or decrease shown in each :—

INCREASE OR DECREASE OF CULTIVATION IN VARIOUS COUNTIES,  
1880-81 TO 1893-4.

Counties.	Number of Acres in Cultivation.		
	1880-81.	1893-4.	Difference in 13 Years.
<i>Showing an Increase.</i>			
Borong* ... ..	272,955	595,198	322,243
Lowan* ... ..	53,872	294,777	240,905
Moira ... ..	194,780	369,216	174,436
Karkaroc* ... ..	252	154,028	153,776
Tatchera* ... ..	38,857	113,596	74,739
Buln Buln ... ..	56,444	123,125	66,681
Kara Kara ... ..	141,921	188,049	46,128
Gladstone ... ..	104,321	134,122	29,801
Bogong ... ..	48,758	65,398	16,640
Ripon ... ..	38,481	46,737	8,256
Polwarth ... ..	10,447	17,198	6,751
Rodney ... ..	144,382	150,767	6,385
Evelyn ... ..	13,700	19,163	5,463
Benambra ... ..	4,316	7,617	3,301
Bendigo ... ..	153,046	155,750	2,704
Heytesbury ... ..	9,016	10,541	1,525
Talbot ... ..	111,554	112,515	961
Others (4) ... ..	5,309	9,355	4,046
Total ... ..	1,402,411	2,567,152	1,164,741
<i>Showing a Decrease.</i>			
Grant ... ..	71,128	67,740	3,388
Hampden ... ..	9,792	5,981	3,811
Anglesey ... ..	11,330	7,223	4,107
Dundas ... ..	15,579	11,052	4,527
Follett ... ..	10,555	3,709	6,846
Villiers ... ..	49,242	40,160	9,082
Delatite ... ..	40,156	30,161	9,995
Tanjil ... ..	26,938	16,549	10,389
Normanby ... ..	19,918	8,897	11,021
Mornington ... ..	35,900	24,283	11,617
Gunbower ... ..	105,344	93,027	12,317
Dalhousie ... ..	52,677	38,317	14,360
Grenville ... ..	47,127	29,364	17,763
Bourke ... ..	96,110	72,369	23,741
Others (2) ... ..	3,736	3,025	711
Total ... ..	595,532	451,857	143,675
Grand Total ... ..	1,997,943	3,019,009	1,021,066†

\* Mallee counties.

† Net increase.

1216. In Australasia the area under cultivation has increased from 3,100,000 acres in 1870 to 9,670,000 acres in 1893, there having been an increase of 3,770,000 during the decade 1871–80, 2,450,000 during the decade 1881–90, and of 354,000 during the triennium ended with 1893. In most of the individual colonies a large increase is observable from period to period, more especially in the case of Victoria, but since 1890 there has been only a comparatively slight increase in the case of New South Wales, Queensland, and Western Australia, and an actual decrease of 180,000 acres in the case of New Zealand. Notwithstanding its small area, Victoria has now a larger extent under cultivation than any other colony. Formerly South Australia was foremost in this respect, but its progress has been comparatively slow since 1880. Victoria has brought under cultivation over  $5\frac{1}{4}$  per cent. of its total area, or a far larger proportion than any of the other colonies, which, with the exception of Tasmania and New Zealand, cultivate considerably less than 1 per cent.; thus, Victoria has 53 acres cultivated out of every 1,000; Tasmania, 32; New Zealand, 22; New South Wales, 8; South Australia, 5; Queensland only three-fifths and Western Australia only one-fifth of an acre; whilst Australia as a whole has only 4 and Australasia 5 acres. Some idea of the future of these colonies in regard to agriculture may be formed when it is considered that the proportion in Great Britain is 57 per cent., and in the United States  $8\frac{1}{2}$  per cent. The following are the areas under cultivation in each colony for 1893 and every tenth year, commencing with 1870:—

Area under cultivation in Australasian Colonies.

AREA UNDER CULTIVATION IN AUSTRALASIAN COLONIES AT VARIOUS PERIODS.

Colony.	Acres under Cultivation. (000's omitted.)			
	1870.	1880.	1890.	1893.
Victoria ... ..	909,	1,998,	2,653,	3,019,
New South Wales ... ..	427,	706,	1,499,	1,509,
Queensland ... ..	52,	121,	240,	252,
South Australia ... ..	959,	2,574,	2,649,	2,758,
Western Australia ... ..	55,	64,	122,	125,
Total ... ..	2,402,	5,463,	7,163,	7,663,
Tasmania ... ..	330,	373,	517,	551,
New Zealand ... ..	364,	1,030,	1,636,	1,456,
Grand Total ... ..	3,096,	6,866,	9,316,	9,670,

1217. The following table shows the area per head cultivated in each Australasian Colony during the nine seasons ended with that of 1892-3, 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 1893.\*

Colony.	Acres under Tillage per Head of Population.									
	1884-5.	1885-6.	1886-7.	1887-8.	1888-9.	1889-90.	1890-91.	1891-2.	1892-3.	Mean.
1. S. Australia†...	8·91	...	...	...	...	9·07	8·30	7·90	7·92	8·42
2. Tasmania ...	3·35	3·23	3·39	3·36	3·48	3·43	3·56	3·39	3·50	3·41
3. W. Australia...	2·42	2·19	2·18	2·49	2·51	2·70	2·48	2·48	2·75	2·47
4. New Zealand...	2·42	2·20	2·33	2·39	2·41	2·53	2·62	2·47	2·37	2·42
5. Victoria ...	2·46	2·48	2·42	2·49	2·38	2·38	2·34	2·32	2·54	2·42
6. N. S. Wales ...	·94	·91	·99	1·03	·95	1·08	1·34	1·01	1·14	1·04
7. Queensland ...	·64	·66	·66	·58	·58	·65	·61	·63	·62	·63

1218. 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 there is but little difference in the proportions per head in Western Australia, New Zealand, and Victoria, which stand below Tasmania as well as South Australia.

1219. The principal crops grown in Victoria are wheat, oats, barley, potatoes, hay, and green forage. In 1893-4 the area under wheat was larger by 126,855 acres than in 1892-3, by 136,676 acres than in 1891-2, and by 236,416 acres than in 1887-8, when the extent of wheat under cultivation was larger than in any year prior to 1891-2. A large increase as compared with the previous year is also noticeable under oats and barley, and a slight increase under potatoes; but decreases occurred under hay and green forage, especially the former. The area under oats has not varied much in the last 11 years, although it was larger in 1893-4 than in any previous years except 1889-90 and 1890-91; that under barley has fallen off nearly one-half in the last three years as compared with the three preceding ones, and in

\* For the population and number of acres under tillage in each Australasian Colony during the twenty years ended with 1893-4, 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.

Area cultivated per head in Australasian Colonies.

Results in different colonies compared.

Land under principal crops.

1893-4 the area under that crop was exceeded in 1880-81, 1884-5, and 1885-6, as well as in the three years ended with 1890-91; the area under potatoes in 1893-4 was exceeded in all but one, and that under hay in all but two, of the eight preceding years; that under green forage was lower than in 1890 and 1892, and, although larger than in any other year since 1886, 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 seven 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, 1893 AND 1894.\*

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Green Forage.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1893 ...	1,342,504	177,645	37,533	40,594	512,648	249,719
1894 ...	1,469,359	218,904	49,105	40,909	412,223	240,835
Increase ...	126,855	41,259	11,572	315	...	...
Decrease ...	...	...	...	...	100,425	8,884

1220. The wheat crop in 1893-4 showed an increase of 441,000 bushels as compared with the previous year, and there was also an increase in the barley, oats, and potato crops, especially the first named; the hay crop, however, fell off considerably. The wheat crop in 1893-4—15,255,200 bushels—was the second largest ever raised in the colony; the largest being in 1883-4, when 15,570,245 bushels were raised, or 315,045 bushels more than in the season under notice. The gross yield of oats was larger than that in any previous year except 1889-90, when over 5,600,000 bushels were raised; the gross yield of barley, although much larger than in 1892-3 or 1891-2, was exceeded in eight previous years; the gross yield of potatoes was exceeded in nine, and that of hay

Produce of principal crops.

\* In 1894-5 the areas were :—Wheat, 1,373,668; oats, 266,444; barley, 97,360; potatoes, 56,084; hay, 492,122. Owing to the unfavorable season, a larger proportion than in the preceding year of the land grown for wheat had to be cut for hay.

in five previous years. The following is a statement of the gross produce of each of these crops in 1892-3 and 1893-4:—

GROSS PRODUCE OF PRINCIPAL CROPS, 1893 AND 1894.\*

Year ended March.	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1893 ...	14,814,645	4,574,816	774,207	142,623	740,049
1894 ...	15,255,200	4,951,371	1,033,861	144,708	503,355
Increase ...	440,555	376,555	259,654	2,085	...
Decrease ...	...	...	...	...	236,694

Area under, and produce of, wheat.

1221. The following table shows the area under, and gross produce of, wheat during the year ended 1st March, 1894, also the average produce of wheat per acre in each county cultivating over 3,000 acres of wheat during that and the preceding year, arranged according to the production in 1893-4:—

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

Counties.	Year 1893-4.		Average Produce per Acre.	
	Area under Wheat.	Gross Produce.	1893-4.	1892-3.
	Acres.	Bushels.	Bushels.	Bushels.
Borong ...	392,722	4,137,223	10·53	10·77
Moira ...	215,939	2,595,162	12·02	12·01
Lowan ...	226,714	1,381,536	6·09	8·58
Karkarooc ...	130,055	1,356,117	10·43	11·30
Rodney ...	71,791	1,088,921	15·17	13·39
Kara Kara ...	96,518	1,032,691	10·70	10·53
Bendigo ...	63,191	936,008	14·81	13·59
Tatchera ...	90,498	805,535	8·91	9·17
Gladstone ...	69,533	774,188	11·13	11·05
Gunbower ...	46,702	415,683	8·90	11·76
Bogong ...	29,691	260,869	8·79	13·13
Delatite ...	9,694	90,771	9·36	15·68
Talbot ...	6,076	85,737	14·11	16·62
Ripon ...	4,762	55,506	11·66	15·00
All others (22) ...	15,473	239,253	15·46	19·57
Total ...	1,469,359	15,255,200	10·38	11·04

1222. As regards the acreable yield of wheat, it will be noticed that in 1893-4, taking the colony as a whole, it was two-thirds of a bushel lower than in 1892-3. In only 5 of the 14 counties specified

Acreable yield of wheat.

\* In 1894-5 the produce was approximately as follows:—Wheat, 11,445,900; oats, 5,633,300; barley, 1,596,463; potatoes, 195,670; hay, 620,700, see foot-note (\*) on preceding page.

was the yield per acre higher in 1893-4 than in the previous year, viz.:—Moira, Rodney, Kara Kara, Bendigo, and Gladstone.

1223. Most oats in 1893-4 were cultivated in the counties of Bendigo, Talbot, Gladstone, Moira, and Kara Kara; most barley in Moira; most potatoes in Villiers, Grant, Bourke, Talbot, Buln Buln, Dalhousie, and Polwarth; and most hay in Borung, Talbot, Grant, Bourke, Bendigo, Lowan, and Moira. The following table gives a statement of the number of acres under these crops in each county cultivating over 3,000 acres of any of the crops named:—

Area under other principal crops in principal counties.

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

Counties.	Area under Crop, 1893-4.			
	Oats.	Barley.	Potatoes.	Hay.
	Acres.	Acres.	Acres.	Acres.
Bendigo ... ..	20,769	1,522	11	26,274
Bogong ... ..	5,281	173	400	10,573
Borong ... ..	10,834	581	21	47,420
Bourke ... ..	5,755	2,059	5,146	29,384
Buln Buln ... ..	3,286	92	3,494	6,269
Dalhousie ... ..	14,294	678	3,142	9,195
Delatite ... ..	8,407	133	841	6,297
Dundas ... ..	2,345	339	48	3,859
Evelyn ... ..	439	30	667	4,706
Gladstone ... ..	19,849	644	11	16,618
Grant ... ..	7,715	1,846	5,719	33,455
Grenville ... ..	3,717	467	498	10,360
Gunbower ... ..	6,461	1,124	11	13,972
Kara Kara ... ..	18,539	282	109	20,771
Karkaroc ... ..	847	32	10	9,379
Lowan ... ..	8,816	245	2	26,078
Moira ... ..	19,813	25,768	31	26,007
Mornington ... ..	306	34	1,245	6,038
Normanby ... ..	2,273	114	470	4,486
Polwarth ... ..	742	836	3,156	4,072
Ripon ... ..	7,087	203	517	14,550
Rodney ... ..	13,967	5,967	10	15,402
Talbot ... ..	20,599	622	5,119	36,986
Tanjil ... ..	2,885	1,258	1,060	3,996
Tatchera ... ..	3,313	543	2	8,862
Villiers ... ..	3,980	2,734	6,378	5,889
All others (10)...	6,585	779	2,791	11,325
Total ... ..	218,904	49,105	40,909	412,223

1224. By the next table, which shows the gross produce of oats, barley, potatoes, and hay in the same counties, it will be seen that in 1893-4 most oats were grown in Talbot, Bendigo, Moira, Gladstone,

Gross produce of other principal crops in principal counties.

Kara Kara, Rodney, and Dalhousie, in the order named; 47 per cent. of the barley in Moira; most potatoes in Villiers, Bourke, Buln Buln, Grant, Polwarth, and Talbot; and most hay in Grant, Talbot, Borung, Bourke, and Bendigo:—

GROSS PRODUCE OF OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY, 1893-4.

Counties.			Gross Produce, 1893-4.			
			Oats.	Barley.	Potatoes.	Hay.
			Bushels.	Bushels.	Tons.	Tons.
Bendigo	...	...	509,740	30,472	31	26,051
Bogong	...	...	104,936	1,966	1,435	10,356
Borong	...	...	247,967	8,370	48	47,067
Bourke	...	...	138,435	54,919	17,290	41,760
Buln Buln	...	...	91,600	2,612	16,831	11,456
Dalhousie	...	...	338,054	13,954	7,828	14,138
Delatite	...	...	193,630	1,816	2,562	6,800
Dundas	...	...	47,378	6,270	96	4,661
Evelyn	...	...	10,120	540	2,449	7,555
Gladstone	...	...	422,209	9,781	10	15,351
Grant	...	...	226,545	56,765	16,662	60,433
Grenville	...	...	83,031	14,964	1,120	13,527
Gunbower	...	...	122,292	13,725	26	10,397
Kara Kara	...	...	351,111	3,884	280	20,352
Karkarooc	...	...	10,941	555	21	8,691
Lowan	...	...	117,226	2,226	2	17,778
Moira	...	...	498,346	483,008	88	25,738
Mornington	...	...	7,089	743	6,760	8,099
Normanby	...	...	50,871	2,566	1,510	5,717
Polwarth	...	...	16,591	24,958	14,474	8,457
Ripon	...	...	132,217	3,798	1,040	20,007
Rodney	...	...	345,475	126,380	23	17,759
Talbot	...	...	514,478	13,322	11,655	59,038
Tanjil	...	...	62,845	33,057	4,235	6,367
Tatchera	...	...	56,716	7,277	1	7,730
Villiers	...	...	90,553	97,430	27,109	10,379
All others (10)*	...	...	160,975	18,503	11,122	17,691
Total	...	...	4,951,371	1,033,861	144,708	503,355

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



1225. The average produce per acre of oats, barley, potatoes, and hay in the same counties during the last two seasons is given in the following table :—

Average yield of other principal crops in each county.

AVERAGE PRODUCE PER ACRE OF OATS, BARLEY, POTATOES, AND HAY IN EACH COUNTY, 1892-3 AND 1893-4.

Counties.	Oats (Bushels).		Barley (Bushels).		Potatoes (Tons).		Hay (Tons).	
	1892-3.	1893-4.	1892-3.	1893-4.	1892-3.	1893-4.	1892-3.	1893-4.
Bendigo ...	25·81	24·54	21·12	20·02	2·00	2·82	1·31	·99
Bogong ...	26·11	19·87	17·58	11·31	2·99	3·59	1·40	·98
Borong ...	21·67	22·89	14·27	14·41	2·26	2·29	1·09	·99
Bourke ...	32·48	24·05	33·68	26·72	2·93	3·36	1·93	1·42
Buln Buln ...	32·85	27·88	24·86	28·39	4·45	4·82	1·94	1·83
Dalhousie ...	29·23	23·65	32·37	20·58	2·36	2·49	1·94	1·54
Delatite ...	29·02	23·03	21·57	13·65	2·58	3·05	1·59	1·08
Dundas ...	24·68	20·20	25·74	18·50	2·60	2·00	1·42	1·21
Evelyn ...	21·45	23·05	15·00	18·00	3·42	3·67	1·72	1·61
Gladstone ...	23·91	21·27	17·01	15·19	2·00	·91	1·20	·92
Grant ...	30·52	29·36	28·83	30·75	2·89	2·91	2·07	1·81
Grenville ...	28·28	22·39	29·67	32·04	2·88	2·25	1·54	1·31
Gunbower ...	23·41	18·93	18·75	12·21	4·00	2·36	·92	·74
Kara Kara ...	18·47	18·94	18·25	13·77	2·12	2·57	1·16	·98
Karkaroc ...	10·48	12·92	11·20	17·34	2·75	2·10	1·10	·93
Lowan ...	18·51	13·30	11·76	9·09	3·00	1·00	·97	·68
Moira ...	25·17	25·15	15·33	18·74	3·42	2·84	1·08	·99
Mornington ...	28·59	23·17	14·46	21·85	5·01	5·43	1·56	1·34
Normanby ...	23·05	22·38	20·99	22·51	3·21	3·21	1·37	1·27
Polwarth ...	23·97	22·36	27·70	29·85	5·76	4·59	2·12	2·08
Ripon ...	23·87	18·66	23·05	18·75	2·67	2·01	1·73	1·38
Rodney ...	24·53	24·74	18·56	21·18	...	2·30	1·20	1·15
Talbot ...	30·02	24·98	28·94	21·42	2·55	2·28	1·98	1·60
Tanjil ...	28·86	21·78	30·11	26·20	4·63	4·00	1·93	1·59
Tatchera ...	21·55	17·12	17·09	13·40	·56	·50	1·02	·87
Villiers ...	24·98	22·75	33·56	35·64	4·29	4·25	1·79	1·76
Others (10)*	31·45	24·45	29·33	23·75	3·91	3·99	1·85	1·56
Total ...	25·75	22·62	20·63	21·05	3·51	3·54	1·44	1·22

1226. It will be noticed that in the year ended 1st March, 1894, the highest acreable yield of oats in the counties specified was in Grant, Buln Buln, Moira, Talbot, Rodney, Bendigo, and Bourke, in the order named; that the average yield of barley was highest in Villiers, Grenville, Grant, Polwarth, and Buln Buln; that potatoes yielded the largest crop per acre in Mornington, Buln Buln, Polwarth, Villiers, and Tanjil, where the average was 4 tons or upwards; that the highest yields of hay were in Polwarth, Grant, Buln Buln, and Villiers, in which this crop exceeded  $1\frac{3}{4}$  tons to the acre.

Yield of oats, barley, potatoes, and hay, 1893-4.

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

Yield of other principal crops in past two seasons.

1227. Comparing the averages of 1893-4 with those of the previous season, an increase is observed in the acreable yield of oats in five counties, the principal increase being in Karkaroc; of barley in twelve counties, the principal being Mornington, Karkaroc, Buln Buln, Moira, and Evelyn; of potatoes, also in twelve counties; but not one county showed an increase in the case of hay.

Yield of principal crops, 1884 to 1894.

1228. In 1893-4, over the colony as a whole, the acreable yield of barley was nearly  $1\frac{1}{2}$  bushels above the average; but in other cases the yield per acre differed but little from the average, the average yield of oats being slightly above, but that of wheat, potatoes, and hay slightly below the average. The following are the averages for the last eleven years :—

AVERAGE PRODUCE OF PRINCIPAL CROPS, 1884 TO 1894.\*

Year ended March.	Average Produce per Acre of—				
	Wheat.	Oats.	Barley.	Potatoes.	Hay.
	Bushels.	Bushels.	Bushels.	Tons.	Tons.
1884 ... ..	14·10	25·07	22·84	4·01	1·43
1885 ... ..	9·52	23·40	17·38	4·16	1·09
1886 ... ..	8·99	21·72	17·58	3·83	1·05
1887 ... ..	11·49	22·91	22·36	3·41	1·09
1888 ... ..	10·81	22·92	23·34	4·11	1·41
1889 ... ..	7·10	14·20	13·55	3·04	·75
1890 ... ..	9·75	23·87	20·18	3·33	1·48
1891 ... ..	11·13	22·25	17·91	3·79	1·37
1892 ... ..	10·26	23·43	18·75	3·50	1·39
1893 ... ..	11·04	25·75	20·63	3·51	1·44
1894 ... ..	10·38	22·62	21·05	3·54	1·22
Mean ... ..	10·42	22·56	19·60	3·65	1·25

Malting and other barley.

1229. In the last nine 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, 1893-4.

Description of Barley.	Area under Crop.	Gross Produce.	Average per Acre.
	Acres.	Bushels.	Bushels.
Malting ... ..	39,068	784,500	20·08
Other ... ..	10,037	249,361	24·84
Total ... ..	49,105	1,033,861	21·05

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, Vol. II., paragraph 452.

\* According to preliminary returns, the average yields for 1894-5 were as follow :—Wheat, 8·33; oats, 21·14; barley, 16·40; potatoes, 3·49; hay, 1·26.

1230. Nearly 80 per cent. of the area was under, and 76 per cent. of the produce was of, malting barley. In the previous year these proportions were respectively 70 per cent. and 61 per cent. It will be noticed that this description of barley is by far the less prolific of the two kinds, the average in 1893-4 being only a little over 20 bushels to the acre, as against  $24\frac{3}{4}$  bushels of the other barley.

Yield of malting smaller than of other barley.

1231. The area placed under wheat in the Australasian Colonies has increased by nearly 3 million acres since 1870, by nearly 800,000 acres since 1880, and by about 630,000 acres since 1890. Taking the same periods the area has shown a marked decline in New Zealand; and a slight decline on the whole in South Australia since 1880, and also a decline in Tasmania since 1870; but in Victoria and New South Wales there has been a marked increase from period to period, more especially in the former, where, however, the area is still less than in South Australia. The wheat product of the colonies likewise has largely increased, viz., by about  $28\frac{1}{4}$  million bushels since 1870, and by about  $10\frac{1}{2}$  and 9 million bushels since 1880 and 1890 respectively. Notwithstanding its smaller area, Victoria produced far more wheat in 1880, 1890, and 1893 than South Australia; next to which New South Wales—which has largely increased her supply since 1890—produced more than any other colony, having outstripped New Zealand, which in 1880 and 1890 was the third most important wheat-growing colony. The following table shows the area under, and produce of wheat in the various colonies in 1894, and in every tenth year commencing with 1871 :—

Increased growth of wheat in Australasia, 1870 to 1893.

CULTIVATION OF WHEAT IN AUSTRALASIAN COLONIES AT VARIOUS PERIODS.\*

(000's omitted.)

Colony.	Acreage.				Produce in Bushels.			
	1871.	1881.	1891.	1894.	1871.	1881.	1891.	1894.
Victoria ...	284,	977,	1,145,	1,469,	2,870,	9,727,	12,751,	15,255,
New South Wales	150,	253,	333,	594,	1,000,	3,709,	3,649,	6,502,
Queensland ...	3,	11,	10,	29,	40,	223,	208,	413,
South Australia ...	605,	1,734,	1,674,	1,733,	6,961,	8,607,	9,400,	13,618,
Western Australia	27,	28,	34,	43,	182,	414,	465,	520,
Total ...	1,069,	3,003,	3,196,	3,868,	11,053,	22,680,	26,473,	36,308,
Tasmania ...	57,	50,	39,	55,	897,	750,	643,	834,
New Zealand ...	78,	325,	301,	243,	1,834,	8,148,	5,724,	4,892,
Grand Total...	1,204,	3,378,	3,536,	4,166,	13,784,	31,578,	32,840,	42,034,

\* Years ended with March in each of those named.

Average  
produce in  
Austral-  
asian  
Colonies.

1232. 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 1893:—

AVERAGE PRODUCE PER ACRE OF THE PRINCIPAL CROPS IN AUSTRALASIAN COLONIES, 1889 TO 1893.

Year ended March.	Victoria.	New South Wales.	Queensland.	South Australia.*	Western Australia.	Tasmania.	New Zealand.
<b>WHEAT.</b>	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
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
1893 ...	11·04	15·05	14·57	6·08	12·25	17·29	21·98
Mean ...	9·86	11·50	14·34	5·52	12·30	17·78	23·17
<b>OATS.</b>	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
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
1893 ...	25·75	22·34	21·94	10·57	17·50	27·50	30·24
Mean ...	21·90	19·99	18·43	9·76	18·88	28·00	31·00
<b>BARLEY.</b>	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
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
1893 ...	20·63	19·86	18·10	13·21	15·50	20·41	26·27
Mean ...	18·20	17·83	22·56	11·81	15·34	23·52	28·13
<b>POTATOES.</b>	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
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
1893 ...	3·51	2·82	2·41	3·33	3·00	3·64	5·68
Mean ...	3·44	2·70	2·96	3·68	3·27	4·05	5·47
<b>HAY.</b>	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
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
1893 ...	1·44	1·41	2·10	·90	1·25	1·16	1·51
Mean ...	1·29	1·26	1·82	·91	1·08	1·27	1·44

NOTE.—For average yields for each year from 1873, see issue of this work for 1890-91, Vol. II., page 268 *et seq.* For the land under, and total produce of, each crop in the respective colonies during the twenty years ended with 1893-4, see summary of Australasian Statistics (third folding sheet) *post*; and for average yields per acre in 1893-4, see Table XVI. of Appendix B. *post*.

\* No agricultural statistics were collected in South Australia in 1889; but an estimate of the produce of wheat was made for the year.

1233. It will be observed that, according to the mean of the five years ended with 1893, 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.

Colonies with highest and lowest average yields.

1234. It will be further noticed that in Victoria and New South Wales in 1892-3 the average produce of each of the principal crops, in Queensland of each except barley and potatoes, and in South Australia of each except potatoes and hay, was above; whilst in Tasmania that of every crop, in Western Australia that of each except barley and hay, and in New Zealand that of each except hay and potatoes was below, the mean of same crop during the five years to which reference is made.

Average produce 1892-3 and previous years compared.

1235. The next table shows the acreage under various crops in the United Kingdom, Australasia, British North America, the Cape of Good Hope, the principal countries on the continent of Europe, and the United States, the Argentine Republic, and Uruguay, in America. All the information has been taken from official documents:—

Land under crop in British and Foreign countries.

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*	1892-3	1,953,	4,420,	2,244,	70,	1,251,
Australasia ... ..	1892-3	3,823,	566,	88,	...	109,
Canada—						
Ontario ... ..	1892	1,618,	1,861,	499,	...	146,
Quebec, Nova Scotia, and New Brunswick	1881	305,	...	...	...	235,
Manitoba ... ..	1892	876,	333,	98,	...	10,
Prince Edward Island, British Columbia, and the Territories	1885	67,	35,	12,	...	4,
Cape of Good Hope ...	1875	188,	115,	29,	...	9,

\* Exclusive of the Channel Islands and the Isle of Man.

LAND UNDER CERTAIN CROPS IN SOME BRITISH AND FOREIGN COUNTRIES—*continued.*

(000's omitted.)

Country.	Year.	Number of Acres under—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
Argentine Republic ...	1893-4	4,400,	...	...	...	...
Austria ...	1892	2,779,	4,627,	2,746,	4,783,*	2,716,
Belgium ...	1883	811,	616,	99,	686,	492,
Denmark ...	1888	120,	1,050,	735,	693,	129,
France ...	1892	17,257,*	9,417,	2,263,	3,808,	3,735,
Germany ...	1892	4,880,	9,850,	4,175,	14,026,	7,237,
Holland ...	1891	145,	377,	112,	453,	369,
Hungary ...	1892	7,568,	2,481,	2,579,	2,734,	1,130,
Italy ...	1892	11,188,	1,113,	773,	355,	447,
Japan ...	1892	1,064,	...	1,601,	1,592,	650,
Norway ...	1890	10,	235,	122,	33,	89,
Russia in Europe ...	1887	28,882,	34,887,	12,443,	64,612,	3,713,
Sweden ...	1891	175,	1,991,	546,	978,	387,
United States ...	1892	38,554,	27,064,	...	...	...
Uruguay ...	1893	512,	...	10,	...	9,

Gross yield of crops in British and Foreign countries.

1236. The official returns of the various countries contain statements of produce, and these are given in the following table. The produce of potatoes is not returned in tons, as in the Australasian Colonies, but in bushels :—

GROSS PRODUCE OF CERTAIN CROPS IN SOME BRITISH AND FOREIGN COUNTRIES.

(000's omitted.)

Country.	Year.	Number of Bushels † of—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
The United Kingdom	1892-3	50,913,	168,588,	65,746,	...	261,624,
Australasia ...	1892-3	41,161,	15,756,	1,840,	...	16,051,
Canada—						
Ontario ...	1892	28,783,	64,758,	12,274,	...	12,290,
Quebec, Nova Scotia, and New Brunswick	1881	3,070,	25,161,	2,064,	...	29,213,
Manitoba ...	1892	14,454,	11,654,	2,832,	...	2,001,
Prince Edward Island, British Columbia, and the Territories	1885	1,147,	1,046,	257,	...	480,
Cape of Good Hope	1892-3	3,891,	1,637,	1,023,	...	1,182,

\* Including spelt (*Triticum spelta*).

† See footnote (\*) next page.

GROSS PRODUCE OF CERTAIN CROPS IN SOME BRITISH AND FOREIGN COUNTRIES—*continued.*

(000's omitted.)

Country.	Year.	Number of Bushels * of—				
		Wheat.	Oats.	Barley.	Rye.	Potatoes.
Argentine Republic	1893-4	80,000,†	...	...	...	...
Austria ... ..	1892	48,623,	109,128,	59,961,	81,447,‡	375,136,
Belgium ... ..	1892	18,788,	26,236,	3,844,	21,562,	182,854,
Denmark ... ..	1892	4,778,	38,677,	24,669,	19,434,	18,056,
France ... ..	1892	301,229,‡	230,976,	44,683,	64,785,	532,709,
Germany ... ..	1892	116,183,	261,341,	106,706,	300,965,	1,101,550,
Holland ... ..	1891	3,394,	17,958,	4,331,	8,025,	44,003,
Hungary ... ..	1892	138,158,	60,521,	50,372,	45,140,	110,279,
Italy ... ..	1892	112,109,	16,706,	7,692,	4,120,	29,093,
Japan ... ..	1892	15,261,	...	33,794,	30,062,	89,860,
Mexico ... ..	1892	14,034,	...	5,198,	...	408,
Norway ... ..	1890	278,	10,322,	4,576,	959,	25,831,
Russia in Europe ...	1892	234,035,	422,407,	163,279,	567,771,	445,937,
Sweden ... ..	1892	4,419,	67,299,	13,792,	22,842,	57,563,
United States ... ..	1892	499,851,	640,411,	...	...	...
Uruguay ... ..	1893	5,701,	...	135,	...	214,

1237. The following is an official statement of the average produce of wheat in the United Kingdom during each of the ten years ended with 1893 :—

Average yield of wheat in United Kingdom.

## AVERAGE PRODUCE PER ACRE OF WHEAT IN THE UNITED KINGDOM, 1884 TO 1893.§

	Bushels per Acre.		Bushels per Acre.
1884 ... ..	30	1889 ... ..	30
1885 ... ..	31	1890 ... ..	31
1886 ... ..	27	1891 ... ..	31·3
1887 ... ..	32	1892 ... ..	26·5
1888 ... ..	28	1893 ... ..	26·1

1238. The average produce in the ten years was about 29·3 bushels per acre, which is much above the yield in any of the Australasian Colonies. The yield in 1893 (26·1 bushels to the acre) was, it will be observed, the lowest in the ten 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.

† Exceptionally large crop; in 1892-3, the produce was only 56½ million bushels.

‡ Including also spelt (*Triticum spelta*).

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

Average  
yield of  
crops in  
British and  
Foreign  
countries.

1239. 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 ... ..	26·1	38·1	29·3	...	209·1
Australasia ... ..	10·8	27·8	20·8	...	147·3
Canada—					
Ontario ... ..	17·8	34·8	24·6	...	84·2
Quebec, Nova Scotia, and New Brunswick	9·9	...	...	...	124·3
Manitoba ... ..	16·5	35·0	28·9	...	200·0
Prince Edward Island, British Columbia, and the Territories	17·1	29·9	21·4	...	120·0
Cape of Good Hope ... ..	20·7	14·2	35·3	...	131·3
Argentine Republic ... ..	18·0†	...	...	...	...
Austria ... ..	17·5	23·6	21·8	16·7	138·1
Belgium ... ..	23·2	42·6	38·8	31·4	371·7
Denmark ... ..	39·8	36·8	33·6	28·0	140·0
France ... ..	17·5	24·5	19·7	17·0	142·6
Germany ... ..	23·8	26·5	25·6	21·5	152·2
Holland ... ..	23·4	47·6	38·7	17·7	119·2
Hungary ... ..	18·3	24·4	19·5	16·5	97·6
Italy ... ..	10·0	15·0	10·0	11·6	65·0
Japan ... ..	14·3	...	21·1	18·9	138·3
Norway ... ..	27·8	43·9	37·5	29·1	290·2
Russia in Europe ... ..	8·1	12·1	13·1	8·8	120·1
Sweden ... ..	25·2	33·8	25·3	23·4	148·7
United States ... ..	13·0	23·7	...	...	...
Uruguay ... ..	11·1	...	13·5	...	23·8

Yield of  
crops in  
Foreign  
countries  
and Aus-  
tralasia.

1240. It will be observed that in all the other countries named, except Russia and Italy, 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, 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, Germany, Norway, and Sweden.

\* See first footnote on preceding page.

† Exceptionally high; in 1892-3, the yield was only 13 bushels per acre.



1241. The following table contains a statement of the area under, and produce of, wheat in various countries in 1890-91, together with the deficiency or surplus of wheat in each country as indicated by the net quantity it imported or exported in that year; also the produce of wheat in each country in 1893, and the average during the decade 1881-1890. The European countries are placed separately from the others, and the countries are arranged according to their importance as wheat-importing, or inversely as wheat-exporting, countries:—

WHEAT PRODUCTION OF THE WORLD.  
(000's omitted.)

Countries.	1890-91.			1881-90.	1893.
	Area under Crop.	Produce.	Deficiency imported (-). Surplus exported (+).	Average Annual Produce.	Produce.
<b>EUROPEAN COUNTRIES.</b>					
	Acres.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom ...	2,388,	77,016,	- 163,200,	77,677,	52,466,
France ...	17,450,	331,749,	- 39,886,	309,433,	277,485,
Belgium ...	682,	19,410,	- 24,809,	17,930,	17,500,
Italy ...	11,125,	141,455,	- 23,684,	122,283,	135,218,
Germany ...	4,844,	104,021,	- 19,717,	92,862,	110,040,
Switzerland ...	110,	2,622,	- 12,887,	2,041,	3,300,
Holland ...	211,	6,890,	- 11,365,	5,748,	5,500,
Greece ...	...	6,969,	- 9,000,	6,969,	6,500,
Spain ...	7,059,	73,245,	- 5,598,	91,557,	93,484,
Sweden and Norway ...	177,	4,029,	- 4,722,	3,695,	4,193,
Portugal ...	642,	8,512,	- 3,543,	7,778,	5,000,
Cyprus ...	170,	800,	- 132,	1,240,	2,000,
Malta ...	6,	166,	...	162,	...
Turkey ...	3,890,	38,107,	...	40,915,	24,000,
Denmark ...	120,	4,978,	+ 332,	4,838,	4,659,
Servia ...	380,	8,065,	+ 2,216,	6,033,	8,500,
Bulgaria ...	4,450,	40,022,	+ 9,957,	40,022,	35,987,
Austria-Hungary ...	10,195,	192,078,	+ 15,232,	160,529,	204,269,
Bosnia and Herzegovina ...	...	...	...	...	2,000,
Croatia and Slavonia ...	...	...	...	...	7,315,
Roumania ...	3,812,	45,672,	+ 34,272,	49,640,	60,110,
Russia and Poland ...	28,879,	225,662,	+ 101,581,	242,266,	348,000,
<b>Total, Europe ...</b>	<b>96,590,*</b>	<b>1,331,468,</b>	<b>- 154,953,*</b>	<b>1,283,618,</b>	<b>1,407,526,</b>
<b>EXTRA-EUROPEAN COUNTRIES.</b>					
Natal ...	1,	12,	- 678,	10,	...
Japan ...	1,122,	12,568,	- 95,	13,858,	16,477,
Cape Colony ...	...	3,865,	...	3,865,	3,891,
Tunis ...	...	4,256,	...	4,256,	3,000,
Syria ...	...	12,969,	...	12,969,	...

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* and other works, by the Statistician to the Department of Agriculture, U.S.A.

\* Information incomplete.

WHEAT PRODUCTION OF THE WORLD—*continued.*

(000's omitted.)

Countries.	1890-91.			1881-90.	1893.
	Area under Crop.	Produce.	Deficiency imported (-). Surplus exported (+).	Average Annual Produce.	Produce.
EXTRA-EUROPEAN COUNTRIES— <i>continued.</i>	Acres.	Bushels.	Bushels.	Bushels.	Bushels.
Algeria ... ..	...	21,584,	...	21,584,	15,000,
Persia ... ..	...	22,131,	...	22,131,	20,000,
Asia Minor ... ..	...	37,339,	...	37,339,	48,000,
Caucasus ... ..	...	74,269,	...	74,269,	64,000,
Chile ... ..	...	15,175,	+1,964,	15,175,	19,000,
Canada ... ..	1,361,	33,611,	+3,107,	39,899,	43,524,
Egypt ... ..	1,200,	10,381,	+3,128,	10,381,	10,000,
Australasia ... ..	3,738,	35,963,	+12,149,	35,120,	42,034,
Argentine Republic ... ..	...	28,708,	+12,588,	28,708,	56,750,*
Uruguay ... ..	...	...	...	...	5,703,
India ... ..	26,424,	255,435,	+26,606,	254,927,	268,539,
United States ... ..	39,917,	611,780,	+103,960,	439,767,	396,132,
Mexico ... ..	...	...	...	...	6,731,
Total out of Europe	...	1,180,046,	+162,729,	1,014,258,	1,018,781,
Grand Total ... ..	...	2,511,514,	+7,776,†	2,297,876,	2,426,307,‡

Value of world's wheat crop.

1242. Supposing these figures to be correct, and the wheat to be worth two shillings and sixpence per bushel, the total value of the world's wheat crop in 1893 would be more than three hundred millions sterling (£303,290,000). It appears moreover that a fall of 6d. in the price of wheat represents a depreciation in the value of the world's annual supply of nearly sixty-one millions sterling.

Principal wheat exporting and importing countries.

1243. 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

\* In 1894, the produce was 80 million bushels.

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

‡ In 1894, the total is set down at 2,590 million bushels.

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
				318
Total	...	...	...	$318\frac{1}{2}$

1244. 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:—

Experimental farm,  
Dookie.

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 1893 were £817 and the expenditure £1,186. Of the amount expended £104 was paid for live stock, £455 for labour, and £173 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.

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

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 rainfall recorded was 25·01 inches.

There are 25 acres under vines, consisting of 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. The vintage of 1893-4 gave 1,410 gallons of wine from 9¼ acres—made up of Gordo Blanco, 400 gallons; white wine, 270 gallons; Hermitage, 390 gallons; Hermitage and Cabernet, 170 gallons; Cabernet, 150 gallons; Port, 30 gallons. There were also 33 proof gallons of spirit made from marc or skins.

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 160 gallons oil have been made during 1893-4, and an additional 15 gallons were obtained from olives grown elsewhere.

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

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

Agricultural colleges.

1245. 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, 140,777 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 Act No. 825, as sites for Colleges and Experimental Farms, amount to 13,393 acres. At the Dookie Agricultural College the course of instruction has been supplemented with lectures on agriculture, arboriculture, and viticulture, and practical dairying, wine-making, blacksmith's, and carpenter's work.

\* Vol. II., paragraph 467.

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, &c., has been increased to 35 acres; and a third tank has been excavated.

1246. 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 1893.\*

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	13,679,268	5,651,358	8,027,910
1893 ... ..	1,170,330	14,814,645	6,227,593	8,587,052

NOTE.—See also table following paragraph 1241 *ante*. For particulars relating to previous years, commencing with 1840, see *Victorian Year-Book*, 1892, Vol. II., tables following paragraphs 470 and 471.

1247. For the last seventeen 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 1893 was larger than in any previous year except 1884, when the maximum was recorded. The following table shows, for each of the last thirteen 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, &c., from the wheat flour, and

\* See footnote (\*) on next page.

† See footnote (†) on next page.

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 1893.\*

Year.	Wheat, Flour, and Biscuit.†			
	Quantity Available for Consumption.	Probable manner of Consumption.		
		For Seed, &c.	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 ... ..	8,027,910	2,685,008	5,342,902	4·60
1893 ... ..	8,587,052	2,938,718	5,648,334	4·83

NOTE.—See note to last table.

Consumption of breadstuffs per head.

1248. 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 1893 the proportion was  $4\frac{4}{5}$  bushels per head, which was higher than in 1891 or 1892, but lower than in 1890. The great fluctuations in these averages of apparent consumption have no doubt been largely caused by variations in the quantities held back by farmers and exporters in the hope of a rise in the low and unremunerative prices of wheat ruling abroad.

Average consumption of breadstuffs.

1249. The quantity of breadstuffs available for annual food-consumption per head has averaged  $5\frac{3}{10}$  bushels during the last thirteen years, and about  $4\frac{2}{3}$  bushels during the last five years. In the present state of the Victorian population, it may be fair to assume that about  $4\frac{3}{4}$  bushels per head, irrespective of the quantity required for seed, is amply sufficient to supply the wants of any given year.

\* For 1894, the wheat grown amounted to 15,255,200 acres, which, after deducting a net export of 7,178,193 bushels, left a balance of 8,076,007 bushels available for consumption, which would be further reduced after allowing for seed, &c., to 5,381,700 bushels. For 1895, the quantity produced was only 11,446,000 bushels, which, after setting aside 2,700,000 for seed, &c., and 5,610,000 bushels, or at the rate of  $4\frac{1}{2}$  bushels per head for food, would allow of the export of only 3,146,000 bushels in 1895. In 1895, up to 31st May, the net exports (of this and last season's crops) amounted to 3,179,288 bushels.

† 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 (visible supply), or retained by the farmers.

1250. According to the Government Statistician of New South Wales,\* the consumption of wheat per head is considerably larger in 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; in 1892, 5·5 bushels, and in 1893, 6·3 bushels; the average quantity in the six years ended with 1893 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 1893, after deducting the exports, being about 1,708,523 bushels, whilst 6,817,457 bushels were grown in the colony. The latter quantity was higher than usual; in the previous five years the average quantity grown was about 4 million bushels.

Consumption of wheat in New South Wales.

1251. 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:—

Consumption of wheat in various countries.

#### 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

\* See *Statistical Register of New South Wales* for 1893, Part V.—Agriculture, Settlement, and Mineral Production: Potter, Sydney, 1894.

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

‡ 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 1893.

1252. The quantity and declared value of the Victorian imports and exports of breadstuffs during the 57 years, 1837 to 1893, are set down in the following table:—

IMPORTS AND EXPORTS OF BREADSTUFFS,\* 1837 TO 1893.

Wheat, Flour, and Biscuit.	Quantity.		Value.	
	Bushels.		£	
Imported, 1837 to 1893 ... ..	34,792,533		14,261,117	
Exported, ,, ,, ... ..	68,197,789		15,615,354	
Exports in excess of imports ...	33,405,256		1,354,237	

Excess of quantity and value exported.

1253. It will be observed that the quantity of breadstuffs exported from the colony from the period of its first settlement to the end of 1893 exceeded that imported during the same period by over  $33\frac{2}{5}$  million bushels; but in consequence of the prices of wheat and flour during the earlier years, in which the imports invariably exceeded the exports, being much higher than in the later years, in which the exports exceeded the imports, the declared value of the breadstuffs sent away has only exceeded that of those received by  $1\frac{1}{3}$  million sterling.

Breadstuffs imported into and exported from Australasian Colonies, 1893.

1254. The net exports of breadstuffs from the Australasian Colonies, in 1893, amounted to  $11\frac{1}{3}$  million bushels as compared with  $6\frac{1}{2}$  million bushels in 1892, and over 12 million bushels in 1891, the principal wheat exporting colonies in 1893 being South Australia and Victoria—of equal importance, the only other one being New Zealand. The following were the imports and exports of breadstuffs by each colony during the year:—

BREADSTUFFS IMPORTED AND EXPORTED IN AUSTRALASIAN COLONIES, 1893.

Colony.	Wheat, Flour, and Biscuit.†		Excess of—	
	Imported.	Exported.	Imports over Exports.	Exports over Imports.
	Bushels.	Bushels.	Bushels.	Bushels.
Victoria ... ..	293,938	6,521,531	...	6,227,593
New South Wales ... ..	1,807,655	112,028	1,695,627	...
Queensland ... ..	1,894,997	4,505	1,890,492	...
South Australia ... ..	188,842	6,463,873	...	6,275,031
Western Australia ... ..	219,635	...	219,635	...
Total ... ..	4,405,067	13,101,937	...	8,696,870
Tasmania ... ..	54,677	...	54,677	...
New Zealand ... ..	2,637	2,719,876	...	2,717,239
Grand Total ... ..	4,462,381	15,821,813	...	11,359,432‡

\* 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. In 1894, the net export was just about 12,000,000 bushels.



1255. In 1892 the net exports of breadstuffs from Victoria exceeded those from South Australia by 2,114,000 bushels, but in 1893 those from South Australia exceeded those from Victoria by 47,438 bushels. In both colonies such net exports were greater in the year under review than in the previous one, but the increase was only about 12 per cent. in the case of Victoria, whereas it was 77 per cent. in that of South Australia.

Large increase in exports of breadstuffs in South Australia.

1256. The following are the particulars of the countries to which wheat and flour has been exported from the colony during the last three years. It is to be regretted that the destination is not given for over one-third of the wheat in 1893, but of the balance more than half was sent to the United Kingdom, and the bulk of the remainder to the neighbouring colonies, more especially New South Wales, South Australia (probably across the border for re-export), and Queensland; whilst the bulk of the flour was shipped to New South Wales and Queensland, large quantities also being despatched to the United Kingdom, Western Australia, and Fiji:—

Export of breadstuffs to various countries.

WHEAT AND FLOUR EXPORTED FROM VICTORIA TO VARIOUS COUNTRIES, 1891 TO 1893.

Exported to—	Wheat.			Flour.		
	1891.	1892.	1893.	1891.	1892.	1893.
	Centals.	Centals.	Centals.	Centals.	Centals.	Centals.
United Kingdom ...	1,488,985	911,571	1,101,867	134,524	15,193	28,622
Australasian Colonies—						
New South Wales ...	316,075	640,910	346,808	671,240	779,247	463,929
Queensland ...	26,178	32,620	83,346	97,728	114,198	266,876
South Australia ...	49,578	325,600	209,933	205	283	626
Tasmania ...	30,556	22,899	9,973	4,129	17,555	769
Western Australia ...	95	27,202	2,700	6,044	20,969	37,322
New Zealand ...	...	...	5	40	...	...
Fiji ...	4	...	3	9,810	9,409	11,125
Cape Colony ...	...	17,389	36,519	...	5,601	...
France ...	23,900	1,000	2,700	748	330	...
Java ...	...	...	...	2,730	6,920	1,344
Mauritius and Réunion	13,440	1,646	...	12,401	11,216	5,126
Other countries ...	4,947	...	2,660	3,081	470	22,917
Unspecified ...	893,186	238,518	981,465	18,117	6,050	242
<b>Total ...</b>	<b>2,846,944</b>	<b>2,219,355</b>	<b>2,777,979</b>	<b>960,797</b>	<b>987,441</b>	<b>838,898</b>

1257. 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

Net imports of agricultural products.

with 1893. 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, 1888 TO 1893.

Articles.	Balance of Imports over Exports in—					
	1888.	1889.	1890.	1891.	1892.	1893.
	£	£	£	£	£	£
Oats ... ..	147,989	296,207	54,862	21,948	1,694	...
Barley and pearl barley	29,148	95,357	...	...	...	...
Malt ... ..	7,565	...	1,927	...	...	...
Maize ... ..	10,118	38,961	815	1,050	...	...
Maizena and corn flour	8,801	7,908	22,260	3,789	12,945	3,996
Beans, peas, and split peas	415	2,987	...	...	...	...
Arrowroot ...	1,872	1,455	1,587	1,414	1,444	590
Macaroni and vermicelli	2,271	2,295	1,428	1,518	1,170	1,047
Starch ... ..	6,070	9,372	1,439	5,586	3,003	2,953
Fruit—fresh, bottled, dried, currants, raisins, and peel	219,065	240,222	300,707	262,623	313,472	88,012
Jams, jellies, preserves, and pulp	...	4,393	3,912	1,994	2,014	...
Nuts, almonds, walnuts	8,973	10,071	4,381	7,997	8,147	4,129
Peanuts ... ..	1,615	1,439	1,816	2,074	2,119	732
Ginger ... ..	3,064	1,552	1,009	852	1,642	1,258
Opium ... ..	33,493	38,886	33,998	30,871	15,293	21,347
Hops ... ..	18,557	38,856	14	496	4,316	...
Chicory ... ..	...	...	186	432	...	...
Pickles ... ..	7,005	7,853	10,285	2,149	3,380	2,399
Mustard ... ..	16,160	19,261	14,539	11,590	16,047	10,678
Oil, olive and salad...	18,642	13,557	12,074	14,456	8,119	6,109
„ linseed ...	38,040	47,581	23,825	39,897	28,507	16,031
„ castor ...	24,445	35,766	46,178	51,297	23,038	8,943
Linseed and meal ...	602	...	...	1,848	2,342	2,389
Tobacco, cigars, and snuff	233,221	258,191	227,451	200,715	190,068	114,907
Flax (Phormium) ...	8,752	7,314	11,233	8,495	6,129	9,564
Hemp ... ..	43,636	49,793	53,198	44,635	29,477	27,756
Jute ... ..	2,636	1,165	1,640	1,008	42	1,075
Broom corn and millet	4,932	7,469	4,376	7,333	4,330	3,633
Cork, cut and uncut	24,860	28,936	41,988	14,174	17,036	7,755
Vegetables, preserved	1,063	269	1,609	1,330	1,905	400
Canary seed ...	2,181	1,817	1,924	1,384	2,030	2,666
Grass and clover seed	10,901	16,538	16,993	12,952	11,835	11,557
Seeds, undescribed...	8,831	10,928	6,010	9,876	9,491	5,340
Tares ... ..	267	185	372	5	77	118
Total ... ..	945,190	1,296,584	904,036	765,788	721,112	355,384

\* The total imports and total exports of these articles during 1893 will be found in the table following paragraph 766 ante, under Orders 14, 22, 23, 25, and 26.

1258. It will be observed that oats, jams, jellies, and preserves, and hops are absent from the list for the last year; maize and chicory for the last two years; malt for the last three years; and barley and beans and peas in the last four years. Moreover, a large decrease took place in 1893 in the importations of several articles, as compared with previous years, but more especially in the case of fruit, tobacco, and oils. Decreased imports of agricultural products.

1259. Besides the articles named in the above table, eggs, of which it might reasonably be supposed that Victoria would produce sufficient for her own consumption, were imported in 1893 to the number of 380,736, and to the value of £1,118, although subject to an import duty of 2s. per gross; and exported to the number of only 147,420, and the value of only £417, the difference in favour of the former being 233,316 in number and £701 in value. The value of the imports of eggs in 1892 exceeded that of the exports by £3,545, in 1891 by £22,302, in 1890 by £34,168, in 1889 by £39,907, in 1888 by £34,745, and in 1887 by £30,498. It is satisfactory to notice a rapid improvement under this head. Net import of eggs.

1260. Of every 1,000 acres cultivated during the past season, 487 acres were placed under wheat, 73 under oats, 16 under barley, 14 under potatoes, 136 under hay, and 274 (including 151 in fallow) under other tillage. The following table shows the proportion that the land under different crops has borne to the total area under tillage in 1894, and for every tenth year commencing with 1871:— Proportion of land under each crop.

**PROPORTION OF LAND UNDER EACH CROP TO TOTAL UNDER CULTIVATION, 1871 TO 1894.**

Year ended March.	Proportion to the Total Land under Tillage of that under--					
	Wheat.	Oats.	Barley.	Potatoes.	Hay.	Other Tillage.*
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
1871 ... ..	31·26	16·43	2·16	4·29	17·95	27·91
1881 ... ..	48·97	6·72	3·43	2·25	12·51	26·12
1891 ... ..	43·17	8·33	3·31	2·03	15·57	27·59
1894 ... ..	48·67	7·25	1·63	1·36	13·65	27·44

1261. 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, Minor crops.

\* Including land in fallow, the proportion in 1894 being 15·14.

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 three years:—

MINOR CROPS,\* 1892 TO 1894.

Nature of Crop.				1891-2.	1892-3.	1893-4.
Artichokes	...	acres	...	5	...	...
		tons	...	35	...	...
Beet, carrots,	...	acres	...	328	452	346
		parsnips	...	3,370	4,910	3,571
Beans (broad)	...	acres	...	2	...	...
		tons	...	4	...	...
,, (French)	...	acres	...	...	...	13
		tons	...	...	...	11
,, (haricot)	...	acres	...	...	2	2
		tons	...	...	1	2
Broom-millet	...	acres	...	301	49	2
		fibre, cwt.	...	177	17	103
		seed, bush.	...	860	76	15
Buckwheat	...	acres	...	14	9	9
		bushels	...	490	263	145
Canary seed	...	acres	...	...	...	1
		bushels	...	...	...	10
Cauliflowers and cabbages	...	acres	...	69	57	113
		dozens	...	32,712	33,270	49,760
Chicory	...	acres	...	215	43	54
		tons	...	1,509	223	224
Drake	...	acres	...	...	30	...
		bushels	...	...	144	...
Durra	...	acres	...	...	3	...
		acres	...	13	13	152
Flax	...	fibre, cwt.	...	15	40	637
		linseed, bush.	...	267	148	1,868
		acres	...	...	...	24
Hemp	...	fibre, cwt.	...	...	...	85
		seed, bush.	...	...	...	115
		acres	...	2,861	2,264	1,927
Grass and clover seeds	...	bushels	...	43,985	30,430	26,252
		acres	...	183	217	55
Green peas	...	tons	...	197	289	63
		acres	...	771	806	693
Hops	...	lbs.	...	729,456	848,176	636,608
		acres	...	8,230	6,667	6,485
Maize	...	bushels	...	461,957	373,183	180,442
		acres	...	922	1,138	1,162
Mangel-wurzel	...	tons	...	16,160	18,727	19,340
		acres	...	1	...	...
Mulberry trees	...	number	...	1,000	...	...
		acres	...	2	5	32
Mustard	...	cwt.	...	12	20	56
		cwt.	...	...	67	...
Onions	...	acres	...	2,661	1,973	2,045
		tons	...	14,682	11,793	10,199
Opium poppies	...	acres	...	26	50	6
		lbs. of opium	...	314	762	81
Osiers	...	acres	...	7	8	8
		tons	...	20	15	17

\* 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.

MINOR CROPS\* 1892 TO 1894—continued.

Nature of Crop.				1891-2.	1892-3.	1893-4.
Peanuts	...	acre	...	...	1	...
Peas and beans	{	acres	...	31,053	32,488	42,352
		bushels	...	769,196	981,411	1,050,082
Pumpkins	{	acres	...	257	131	232
		tons	...	1,621	1,234	2,119
Rape for seed	{	acres	...	2	1	37
		bushels	...	8	10	276
Rumax	...	acres	...	...	...	...
Rye	{	acres	...	561	483	520
		bushels	...	7,495	8,092	9,005
Seeds (agricultural and garden)	{	acres	...	68	47	53
		cwt.	...	260	133	105
Sugar beet	{	acres	...	...	...	7
		tons	...	...	...	174
Sunflowers for seed	{	acres	...	6	1	...
		bushels	...	45	30	...
Tobacco	{	acres	...	545	477	1,057
		cwt.	...	2,579	658	8,952
Turnips	{	acres	...	403	312	349
		tons	...	5,300	3,819	3,465
Vetches and tares for seed	{	acres	...	3	23	23
		bushels	...	50	400	412
Vines	{	acres	...	25,295	28,052	30,275
		wine, galls.	...	1,554,130	1,694,745	1,490,184
Walnuts	...	acres	...	10	...	...

1262. In 1893-4, as compared with the previous year, an increase will be observed in the area under crop, and in the produce, of chicory, peas and beans, mangel-wurzel, pumpkins, rye, and tobacco, but a falling-off of both area and produce of beet, carrots and parsnips, grass and clover seeds, hops, and maize. Onions, turnips, and vines showed an increase in the area under crop, but a falling-off 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. Increase or decrease of minor crops.

1263. 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, although in the year under notice the produce of the crop was exceptionally low, being over 185,000 lbs. less than the average of the three preceding years. Hops.

\* See footnote (\*) on previous page.

Tobacco.

1264. At a very early period of the colony's history, it was the custom of the pastoral occupiers of the soil to cultivate tobacco in small quantities for the purpose of making a decoction wherein to dip their sheep for the cure of the disease called "scab." That complaint has ceased to exist amongst the Victorian flocks; but of late years tobacco has been grown for the purpose of manufacture into an article suitable for the use of man. For several years past a 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. It will be observed by the last table that a fresh impetus was given to tobacco culture in 1893-4, the area being twice as great as in the two preceding years, whilst the produce increased from 2,600 cwt. in 1891-2, and 660 cwt. in 1892-3 to nearly 9,000 cwt. in 1893-4. The latter, however, was not nearly so large as in 1888-9, when 13,300 cwt. was produced.\*

Sugar cultivation in Australasia.

1265. Per head of population, the consumption of sugar is greater in Australasia than in any other country in the world\*; it is apparently least in Queensland and New South Wales,† where it is grown—viz., about 62 lbs. per head, but in the other colonies, it ranges from 90 lbs. in Victoria and Tasmania, to 119 lbs. in New Zealand—the average for all the colonies being about 90 lbs. The culture of sugar cane in Australasia is restricted to Queensland, New South Wales and Fiji, which in 1893 had 103,123 acres in cultivation—distributed over those colonies in the proportion of 4, 2 and 1. Only about two-thirds of the area, however, was productive, and the quantity produced was about 120,500 tons. At 90 lbs. per head the annual requirements would be about 162,000 tons. In 1893, Victoria consumed about 40,230 tons of sugar, the great bulk of which was from imported raw sugar refined in Victoria, the value of which on importation was £510,840; whilst New South Wales, in 1892 and 1893, consumed 49,923 tons per annum, of which 24,500 tons were the product of cane grown in that colony.

Prospects of sugar-beet industry in Victoria.

1266. Much consideration has been given to the subject of the cultivation of sugar beet on a large scale in Victoria for which its soil

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

† In 1892-3, however, the consumption of sugar was greater in New South Wales than in Victoria. See latter portion of this paragraph.

and climate are well adapted, and numerous experiments have been and are still being conducted by the Agricultural Department, under the supervision of the agricultural chemist (Mr. A. N. Pearson).\* The advantages of this industry are, in addition to the economical production of sugar, the provision of succulent fodder for cattle at a time of year when it is most required, the production of manure for the land, and the placing at the disposal of the farmers of an additional crop for rotation—beet being grown once every three or four years. Mr. Pearson considers, as the result of numerous experiments summarized later on, that there is every prospect of obtaining in Victoria, with proper treatment and after a little practice, an average yield of 21 tons of roots (dressed) per acre, containing at least 14 per cent. of sugar, and weighing on an average  $1\frac{1}{2}$  lbs. each. The experiments at Port Fairy and Bacchus Marsh gave an average of 14.97 per cent. of sugar. As to economical considerations, it is first to be noted that sugar, like butter, carries with it but little of the plant-foods out of the soil, and consequently most of the richness taken out of it by beets may be replaced by the pulp and refuse from the sugar factories; and, secondly, that beet, as a source of sugar, is nearly four times as productive as cane, for, whereas sugar cane produces only about  $1\frac{1}{4}$  tons of sugar per acre after twelve months' growth, as many as 3 tons per acre is obtainable from beet of seven and a half months' growth. As to the profits of the industry, assuming an average yield of 21 tons per acre, and the low price of 13s. per ton (in Stralsund, Germany, it averaged 21s. 9d. in the last two years, and in Southern California it is 14s. 7d. with 12 per cent. sugar, and 1s. 9d. for each per cent. additional), the return per acre would be £13 13s.; and if from this be deducted the cost of production, estimated by Mr. Pearson at £8 11s.† (including £1 16s. for manuring after first year, £3 10s. for cost of cultivation, £2 for harvesting and cartage, and £1 5s. for interest on capital), the net profit would be £5 2s. per acre. And, of course, this would be much increased by higher yields, and by the production of beets containing more than 14 per cent. of sugar. The following is an epitome of the results obtained from experiments made by or under the direction of Mr. Pearson:—

The first experiments were undertaken in the year 1887, by Mr. Robinson, of Berwick. The soil was wretchedly poor, but with manuring, which would cost at the present day £3 an acre annually, very fair returns were obtained, viz.,  $2\frac{1}{2}$  tons of sugar per acre, even though the roots were grown for three years successively on the same ground.

\* The information in this and the following paragraph was partly derived from a pamphlet prepared by this gentleman for the Agricultural Department, dated 14th November, 1893, and partly from information received direct from him.

† In South California it is only £5, exclusive of interest on capital; and in 1894, with an unfavorable season, and a yield of only 12 tons per acre, the net return, owing to the high percentage of sugar (16), was £3 per acre.

In 1893 experiments were recommenced, this time at Port Fairy, Riddell's Creek, and Childers. At each place there were sixteen plots differently treated in order to see how to get the best results. The seed was sown late in all cases, it being found impossible to make arrangements earlier. In ordinary years it would not have mattered, but the end of 1893 was very dry, and none of the plots had any rain worth speaking about for some months after they were sown. At all the stations there were many failures of seed owing to the dryness. This was the worst at Childers, where the soil is particularly sensitive to drought, and a broad band ran across the experimental field on which there was scarcely any crop; not only the beet but other crops also were affected. Hence it was useless to take into consideration the weight of the crops at Childers.

At Port Fairy, owing to lateness of sowing and drought, the crops were very light, but the roots were very rich, and of a remarkable freedom from saline impurity. The seed was sown on the 4th November, 1893, and the crop harvested on the 30th June, 1894, with the result that the yield of clean dressed beets varied from 11·1 to 19 tons per acre—the latter being on the best-manured plot.

The average weight of the roots was 11 ozs. Most of the seed used was ordinary seed obtained in the Melbourne market, and, of course, was not expected to be of good quality. But in each plot was a row containing seed from Vilmorin, of Paris. In all 112 analyses were made of roots from these plots. Samples of Vilmorin's Improved, gathered from the 6th May to the 22nd June, contained on an average 16 per cent.\* of sugar, the highest average for the whole experimental field being 17·2 per cent. about the month of May, and the highest average for any one plot being 18·5 per cent.

The figures not only showed a high average of sugar, but indicated also no important decline in the sugar contents seven weeks after they began to ripen. This practically important fact was further indicated by two other samples of ordinary beet-root, one of which samples pulled on the 22nd June contained 14·0 per cent. of sugar, and the other pulled on the 20th September from the same plot contained 14·2 per cent.

On the 22nd June the three varieties sown gave average results as follow :—

Variety of Beet.	Sugar.	Organic Impurity.	Ash.
Vilmorin's Improved ...	16·43	3·08	·43
Heine's Vilmorin ...	17·14	2·41	·44
Ordinary Melbourne seed ...	13·86	2·19	·61

If the sugar, organic impurity, and ash be added together, the figure obtained represents the total solid contents of the juice. If this figure be divided into a hundred times the percentage of the sugar, the result indicates the degree of purity; that is to say, it shows the percentage of sugar in the total solid contents. If the amount of ash (which is mainly saline matter) be divided into the percentage of sugar, a figure is obtained which indicates the amount of sugar that is present for every unit of saline matter; this figure is called the "saline co-efficient." It is important that the "degree of purity" and the "saline co-efficient" should be as high as possible. In Europe a degree of purity below 75 is considered not good, and the scale used in practice for indicating the saline co-efficient (*vide* "Manuel Agenda des Fabricants de Sucre et des Distillateurs," Gallois et Dupont, Paris) ranges from 10 to 25; so that 25 appears to be the highest attainable in European practice. The average purity and saline co-efficient of the above samples were as follow :—

	Average Purity.	Saline Co-efficient.
Vilmorin's Improved ...	82·4°	38·2
Heine's Vilmorin ...	85·8°	39·0
Ordinary Melbourne seed ...	84·2°	28·0

The purity therefore was good and the saline co-efficient, which is more important than the general purity, was quite unusually high.

\* All results of analysis in this report are stated in percentages of the root, except in those cases where the percentage of the juice is expressly stated. The analyses of the roots were in several cases made by the direct method, but in the majority of cases they were made by the indirect method of analysis of the juice and calculation into terms of the root, the calculation being made on the assumption, based on the investigations of Maercker and Pellet, that there would be 96 per cent. of juice in a root the juice of which contained 10 per cent. of sugar, and 86 per cent. where the juice contained 20 per cent. of sugar.



It is unnecessary to go into the details of the Riddell's Creek and Childers experiments, as the yields were irregular, owing to causes already mentioned; but the roots were both rich and pure, the averages (stated in percentages of the root) being—

	Riddell's Creek.	Childers.
Sugar ... ..	17·0	15·3
Organic impurity ... ..	1·94	2·12
Ash ... ..	·37	·44
Purity ... ..	88·0°	85·7°
Saline co-efficient ... ..	45·9	34·7

The unusually high saline co-efficient of the Riddell's Creek samples was quite remarkable. Some of these roots were exceptionally rich in sugar. There were many cases in which the juice contained more than 20, 21, and 22 per cent. of sugar. In two roots taken as samples the juice contained 23½ per cent., which is equal to 19·3 per cent. of sugar in the root.

Most of the roots were small, and it might be considered that roots could not be grown both rich and large, but many of the largest roots were amongst the richest; for instance, there were sixteen roots with an average weight of 1lb. 5½oz. and an average sugar content of 17·3 per cent., and there were six roots having an average weight of 1lb. 14½oz. and containing an average of 16 per cent. of sugar. Such cases show that, under proper conditions, heavy crops of very rich beet could be obtained in this colony.

This season experiments on a larger scale have been carried out under my directions, in order to ascertain what would be the cost of cultivation on a large scale and if results approximating to those obtained in small plots could be obtained under conditions of ordinary practice. For this purpose, 8 acres of beet are being grown at Port Fairy, 5 acres at Bacchus Marsh, 8 acres at Lilydale, and 6 acres at Maffra. Samples numbering 133 roots from Port Fairy and 120 from Bacchus Marsh have now been received and analyzed. The samples were gathered in accordance with the rules laid down by Gallois and Dupont for taking average samples of beet-root in the field. The following are the results obtained, stated in percentages of the roots:—

	Port Fairy.	Bacchus Marsh.
Sugar ... ..	14·97	14·96
Organic impurity ... ..	1·79	1·77
Ash ... ..	·53	·72
Purity ... ..	86·5°	85·7°
Saline co-efficient ... ..	28·0	21·1
Average weight of roots ... ..	1lb. 5¾oz.	1lb. 4oz.

The seed for these experiments was obtained by Government partly from Europe and partly from Melbourne seed merchants; and as there was a scarcity of seed in Europe it is probable that that which was sent was not of the very best quality. No doubt, with seed grown and carefully selected in the colony, and therefore suited to our climate, still better results could be obtained. But those even now obtained are ample for all practical purposes. As to the weight of the crops, nothing certain can be said until they are harvested, but judging from the size of the roots and general appearance of the plants in the field, the crops may be estimated at 25 tons at Port Fairy and 24 tons at Bacchus Marsh.

In addition to the above-described official experiments, several farmers in various parts of the Southern districts of the colony grew plots varying from a few perches to over an acre in extent. Samples from several of these were forwarded for analysis, and in 1894 30 of them, and in 1895 16, were completely analyzed, with the following average results stated in percentage of the roots:—

	Southern Districts. (Season 1893-4.)	South-Western Districts. (Season 1894-5.)
Sugar ... ..	11·78	12·31
Organic impurity ... ..	2·00	1·92
Ash ... ..	·85	·72
Purity ... ..	80·5°	82·3°
Saline co-efficient ... ..	13·9	17·1

The samples this season were for the most part carefully and properly gathered. In 1893-4 the results of analysis would no doubt have been better

if the farmers had sent the small roots together with the large ones, but, although they no doubt had small roots growing amongst the large, they generally considered them not fit to be sent as samples.

Judging from the size of the roots sent, the crops must have been mostly from 25 to 30 tons per acre. Considering that scarcely any of the farmers had previously grown beet-root for sugar purposes, and that the seed used was not of the best, these results must be regarded as satisfactory and encouraging. In Europe an average yield of 19 tons to the acre and an average sugar percentage of 12·5 is, it is believed, considered reasonable.

Now as to the cost per acre. Two years ago I estimated that the cost would be about £8 11s., but farm prices have gone down since then, and moreover the beets grew so rapidly that they quickly covered the ground, choking the weeds, and rendering less hoeing necessary. The expenses ascertained as near as possible will have been as follows :—

	At Port Fairy.			At Bacchus Marsh.		
	£	s.	d.	£	s.	d.
Preparing the seed bed ...	1	0	0	1	0	0
Manuring ...	2	8	0	1	19	0
Seed and sowing ...	0	9	0	0	9	0
Singling and hoeing ...	1	0	0	1	0	0
Irrigating ...				0	4	6
	<hr/>			<hr/>		
Actual expenses up to date ...	4	17	0	4	12	6
Harvesting and carting to factory...	1	15	0	1	14	0
Interest on farm and implements ...	1	5	0	2	0	0
	<hr/>			<hr/>		
	£7	17	0	£8	6	6

The returns to the farmers would be as follows, assuming the roots to be sold to a factory at the low price of 13s. per ton :—

	Port Fairy.			Bacchus Marsh.		
	£	s.	d.	£	s.	d.
Value of produce ...	16	5	0	15	12	0
Cost of growing ...	7	17	0	8	6	6
	<hr/>			<hr/>		
Profit per acre ...	£8	8	0	£7	5	6

Even such very small crops as were obtained at Port Fairy in 1893–4 would be more profitable than many farm crops at present. The roots were richer, and would therefore be worth more per ton; the cost of manuring was different, and the cost of harvesting would be less. The probable returns would have been as follow :—

	Plot 1.			Plot 4.			Plot 7.		
	£	s.	d.	£	s.	d.	£	s.	d.
Value of produce* ...	15	4	0	12	8	10	10	12	6
Expenses ...	9	9	4	8	3	0	6	1	0
	<hr/>			<hr/>			<hr/>		
Profit ...	£5	14	8	£4	5	10	£4	11	6

In addition to these profits there have to be considered the improvement of the land owing to the rotation of crops, the return of manurial refuse from the factory, which will reduce the cost of manuring, and the supply of an abundance of succulent fodder.

It will be interesting to compare the results above detailed with those obtained in Europe, and with the results obtained from sugar cane in the other colonies. From the Consular Report, No. 1492, published by the Foreign Office in 1895, it appears that the sugar factory at Stralsund in Germany worked up 40,925 tons of beet in the four months of the 1893–4 season; the analysis of the roots gave an average of 12·92 per cent. of sugar, and the price paid for them was £1 4s. 6d. per ton, being 5s. 6d. more per ton than was paid in 1892. From these roots were obtained 4,700 tons of first-class sugar, equal to 11·5 per cent. of the roots, 250 tons of second-class sugar, and 850 tons of molasses. The number of hands employed

\* Viz., 19 tons in plot 1 and 15·6 tons in plot 4 at 16s., and 12·5 tons in plot 7 at 17s.

was 300, and the fuel used was 5,350 tons English coal, 2,000 tons Silesian coal, 400 tons coke. It will be seen that their average richness in sugar was 2 per cent. less than that obtained here this season, and that the price paid for the roots was nearly double what I have allowed for.

In Queensland, according to the Australasian Statistics for 1893 published by the Government Statist, 59,251 acres were under cane, and the yield of sugar was 76,146 tons, giving an average of less than  $1\frac{3}{10}$  tons per acre. In New South Wales the average is, I believe, still less. Now, from the Port Fairy roots of this year there could be obtained in practice 13·4 per cent. of first-class sugar, which, with a crop of 25 tons, would be  $3\frac{1}{2}$  tons per acre; and similarly from the Bacchus Marsh crop  $3\frac{1}{2}$  tons per acre would be obtainable. Even from the small crops obtained at Port Fairy in 1893–4 the yields would have exceeded those obtained from cane; for instance, plot 1 would have given  $2\frac{2}{3}$  tons per acre, plot 6,  $1\frac{1}{2}$  tons, and plot 8,  $2\frac{1}{2}$  tons.

Taking into consideration all the facts here set forth, and also considering the many industrial and agricultural advantages of the beet-sugar industry, and that it is carried on wholly by white labour, I think I am justified in saying that there are few, if any, countries so well suited by natural conditions for the beet-sugar industry as Victoria is; that the industry here even at present low prices of sugar would be profitable, and that even with intercolonial free-trade Victorian beet sugar would have nothing to fear from the cane sugar of other colonies; that, on the contrary, it could well hold its own. It is not obvious that there would be any conflict between the two, for the Australian market would absorb all that they both could produce for some time; but if there were a conflict it would be the cane sugar that would find a serious competitor in Victorian beet. So far as natural suitability is concerned, there is every reason why Victoria should become an important sugar-supplying country.

1267. The soil adapted for the growth of sugar beet should be deep, crumbly, and moist—a black sandy loam being the best; whilst first-class potato, turnip, and mangold soils, if comparatively free from saline matter, are especially suitable. The roots should not exceed  $2\frac{1}{2}$  lbs. in weight, small roots being the richest in sugar, a result to be attained by planting as close as the richness of the soil will allow. The manuring, which, of course, must vary according to the quality of the land, generally recommended by Mr. Pearson is, for the first year,  $\frac{4}{5}$  cwt. of concentrated superphosphate (at 13s. 6d.) and  $1\frac{1}{2}$  cwt. of sulphate of ammonia (at 14s. 6d. per cwt.) per acre for a light dressing; or  $1\frac{3}{5}$  cwt. of the former and 3 cwt. of the latter for a heavy dressing; but after the first year much less will be required, owing to the great value as manure of the refuse of the crops. The ground should be ploughed or broken up not less than 12 inches deep, and manured to a depth of 6 inches; whilst the seed should be planted in rows 14 to 18 inches apart—according to richness of soil—in holes from 7 to 10 inches apart and  $\frac{1}{2}$  inch deep. The best time for sowing is during September and October, and the roots mature in from six to eight months.\* Beets require plenty of moisture during the first two months of growth; but in the later stages the formation of sugar is said to be especially favoured by dry weather and an unclouded sky. The favorite varieties for planting in California are the Vilmorin Améliorée and the Klein Wanzelbener.

Mode of  
cultivating  
sugar beet.

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

Proposed  
sugar-beet  
factories.

1268. Before starting a sugar factory it is first necessary to be assured of the growth of a sufficient quantity of beet of the requisite quality, and one authority\* estimated that at least 30,000 tons of beet per annum would be required for each factory, entailing the cultivation of fully 1,500 acres per annum, or allowing for rotation of over 5,000 acres under various crops. The sites suggested for the first factories in Victoria are Maffra (in Gippsland) and Port Fairy (in the western district). The capital required for each factory, with the most modern appliances, has been variously estimated at from £65,000 to £100,000; and the three principal factors to be taken into account in working a factory are cost of beet, cost of labour, and cost of fuel. At Stralsund, in Germany, in 1893-4, the price paid for beet containing less than 13 per cent. of sugar was 19s. per ton in 1892-3, and 24s. 6d. in 1893-4; whereas in Victoria it would probably pay well to produce beets containing 14 per cent. of sugar at 13s. per ton. In France, in 1893-4, the factories paid an average of 2s. 11d. per day for labourers and 18s. per ton for coal; whereas in Victoria, although labour would be dearer, plenty of wood is procurable at about 5s. per ton. From an estimate made by Mr. Pearson, based on the operations of a factory at Stralsund, in Germany, a factory in Victoria with a capital of £90,000, treating 41,000 tons of beet per season, employing 400 hands at an average of £60 each for four and a half months' work, could, without the aid of a protective duty, produce £81,977 worth of sugar, molasses, and pulp (at 5s. per ton), and make a net profit—after paying all expenses (including allowance for depreciation) estimated at £71,650—of £10,327, or at the rate of 11½ per cent.

Cane sugar.

1269. The following is a statement of the estimated production of cane sugar for 1893-4 in countries which have a surplus for exportation † :—

CANE SUGAR PRODUCED IN VARIOUS COUNTRIES, 1893-4.

	Tons.		Tons.
West Indies (Spanish) Cuba	836,500	Philippine Islands ...	261,000
„ „ Porto Rico	59,000	United States ...	261,000
„ (British) Barbadoes	64,000	Brazil ...	256,000
„ „ Jamaica	25,500	Sandwich Islands ...	133,000
„ „ Trinidad	49,000	Mauritius ...	123,000
„ „ Other		Demerara ...	108,000
„ „ Islands	24,500	Egypt ...	69,000
„ (French) Guadeloupe	39,400	Peru ...	64,000
„ „ Martinique	31,400	Réunion ...	36,400
Total West Indies	1,129,300	Total ...	2,913,200
Java ...	472,500		

\* Van de Velde. See his pamphlet on "The Sugar-beet Industry." Sydney; W. M. McLardy and Co., 1895.

† For consumption per head in various colonies, see issue of this work for 1893, Vol. II., paragraph 356.

1270. Consequent upon the indirect subsidies by which the industry is fostered, beet sugar, not only for internal consumption but also for export, is manufactured at a considerable profit in several European countries. The following statement of the estimated quantity of beet sugar made during the three years 1891-2 to 1893-4 in the different European countries in which that product is manufactured may be useful and interesting at the present time:—

Beet sugar  
in European  
countries.

BEET-ROOT SUGAR PRODUCED IN VARIOUS EUROPEAN COUNTRIES,  
1891 TO 1894.\* (TONS.)

Countries.	1891-2.	1892-3.	1893-4.
Germany ... ..	1,179,220	1,205,966	1,328,665
Austria-Hungary ... ..	774,135	789,893	831,646
France ... ..	640,099	579,532	565,913
Russia ... ..	542,286	447,809	639,728
Belgium ... ..	177,526	193,590	231,286
Holland and other countries ... ..	133,309	157,540	183,061
Total ... ..	3,446,575	3,374,330	3,780,299

1271. In the United States, a bounty of 2 cents (1d.) per lb. is granted for all kinds of sugar produced from cane, beet, &c., grown within the country testing 90° by the polariscope, and 1 $\frac{3}{4}$  cents for such sugar testing between 80° and 90°. In 1891-2, there were 4,977 licensed producers of sugar, of whom 4,240 extracted it from maple, 727 from cane, 6 from beet (of whom 3 were in California), and 4 from sorghum. The quantity of sugar manufactured in the same year was nearly 414 million lbs., of which 367 $\frac{3}{4}$  were from cane, 12 from beet, 1 $\frac{1}{8}$  from sorghum, and about 33 from maple. Bounty was payable on nearly the whole of this except maple sugar (or on 378 million lbs.), and the amount paid in 1891-2 was £1,529,600—the whole of the beet and 78 per cent. of all sugar subsidized testing at least 90°. During the same year, the total consumption of sugar in the States amounted to 4,025 $\frac{1}{2}$  million lbs., equivalent to 62·1 lbs.† per head of population, of which only 414 million lbs., or little more than 10 per cent., was derived from home products; whilst 74 $\frac{1}{2}$  million lbs. were manufactured from imported molasses, and the balance imported. The gross imports amounted to 3,556 $\frac{1}{2}$  million lbs., valued at £21,752,000, of which 3,248 million lbs. were cane, and 293 million lbs. beet sugar, both free of duty, and 15 million lbs., dutiable sugar (above No. 16, Dutch standard). Of the cane sugar imported, as much as 1,983 million lbs. came from Cuba;

Sugar pro-  
duction and  
consumption  
in the  
United  
States.

\* Taken from a table published in the Report (No. 112) of the Department of Agriculture of the United States, dated January, February, 1894, page 554. The figures are there given in metric tons of 2,204·6 lbs. These have been turned into Imperial tons of 2,240 lbs.

† During the last five years, the average was 59 lbs.

and of the beet sugar, 173 million lbs. came from Germany, 70 from Austria-Hungary, 39 from Belgium, and 10 from France. In 1892-3, there were 17,314 acres under sugar beet, and 213,841 acres under cane; whilst it was estimated that in the same year 30 million lbs. of beet sugar would be produced. The beet-sugar factories operate on an average 59 days per season.\*

Vines.

1272. In 1893-4 the area under vines (30,275 acres) exceeded that returned in 1892-3 by 2,223 acres, was 5,000 more than in 1891-2, and was also much larger than in any other previous year. Of the total area in 1893-4, however, only 20,118 acres were bearing, and 10,157 were not bearing. The number of vine-growers returned was 2,820. The grapes gathered amounted to 358,079 cwt.; whilst the quantity of raisins made (chiefly at Mildura) was 8,977 cwt., and of currants 212 cwt. The quantity of wine returned was 1,490,000 gallons, or less than that in 1892-3 by 204,561 gallons, and also less than in any year since 1888-9. The largest production was 2 millions, viz., in 1890-91. 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. *Phylloxera* has recently been discovered in several vineyards in the Bendigo district, but stringent measures are being taken for its suppression. An account of the visitation of the *phylloxera* in Victoria, and of the measures taken for its suppression, will be found in the *Victorian Year-Book*, 1888-9.†

Vines and  
wine-  
making in  
United  
States.

1273. 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. This State also converted 41,166 tons of grapes into raisins, and dried 23,352 tons. The value of the land devoted to vines, and of the plant for wine manufacture, was about 32 millions sterling, of which 18 millions was in California.

\* See Report No. 289 to the Foreign Office, dated 3rd March, 1893, from its representative in the United States. The bounty has since been removed. See also the report by Mr. J. M. Sinclair on the Beet-sugar Industry of the United States, issued by the Victorian Department of Agriculture as these pages were passing through the press.

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

1274. 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. Several of the figures are 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.

ANNUAL PRODUCTION OF WINE IN VARIOUS COUNTRIES.  
(000's omitted.)

Country.	Year.	Area under Vines.	Wine Produced.
		Acres.	Gallons.
Algeria ... ..	1893	273,	104,007,
Australasia* ... ..	1893-4	59,	3,131,
Austria-Hungary ... ..	1888	1,562,	277,379,
Azores, Canaries, Madeira ... ..	...	...	3,300,
Cape of Good Hope ... ..	1888	...	4,491,
Chile and La Plata ... ..	...	...	44,000,
France† ... ..	1892	4,405,	530,506,
Germany ... ..	1886	180,	99,000,
Greece ... ..	1888	185,	38,720,
Holland ... ..	1885	...	81,994,
Italy ... ..	1882-8	4,759,	607,838,
Portugal ... ..	1887	504,	94,160,
Roumania ... ..	1886	254,	33,000,
Russia ... ..	...	...	66,000,
Servia ... ..	...	...	44,000,
Spain ... ..	...	4,310,	350,000,
Switzerland ... ..	...	111,	24,200,
Tunis ... ..	1888	8,	308,
Turkey and Cyprus ... ..	...	222,	57,200,
United States ... ..	1890	401,	24,307,

1275. 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 16½ gallons per head. The following are the figures for these and some other countries:—

Wine consumed in various 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		

\* See Journal of that Society for 1889, page 257. The figures are there given in hectares and hectolitres. A hectare has been assumed to be equivalent to 2·47 acres, and a hectolitre to 22 gallons.

† Nine years previously there were over 5 million acres, with a product of 952 million gallons.

Tea.

1276. No attempt has yet been made to grow tea in Victoria for commercial purposes, although the tea plant flourishes in gardens around Melbourne, and the Government Botanist has given it as his opinion that many parts of the colony—especially the fern-tree gullies—are well suited for its cultivation. The consumption of tea varies from 10·7 lbs. per head in Western Australia, and 10 lbs. in Victoria, to 5½ lbs. in Tasmania; and it is much larger in the Australasian Colonies than in any other countries.\*

Cotton.

1277. Although cotton is so extensively used in articles of clothing—in the manufacture of which it is a powerful competitor against wool—only a small quantity is produced in Australasia. Thus, in 1893, the total production there was only 248,900 lbs., of which 219,500 lbs. was grown in Fiji, and the remainder in Queensland. According to the Statistician to the United States Department of Agriculture for May, 1894, the consumption of cotton in Europe and America has increased from 6 million bales (of 400 lbs. each) in 1870–71, to 9½ million bales in 1882–3, to over 10 million bales in 1887–8, and to 11½ million bales in 1892–3. The following, by the same authority, is an estimate of that portion of the World's cotton crop which enters into the commercial supply of European countries and the United States, and of the consumption of those countries, in 1892–3 :—

SUPPLY AND CONSUMPTION OF COTTON, 1892–3.  
Bales of 400 lbs. (000's omitted).

Country.	Crop.	Consumption.
United States ... ..	8,044,†	3,189,
United Kingdom ... ..	} 2,600,	3,706,
Other European Countries ... ..		4,576,
Other Countries ... ..		...
Total ... ..	10,644,	11,471,

NOTE.—In India, the consumption in the same year was 1,170,000 bales. In Mexico, about 88,400 bales were produced.

Gardens and orchards.

1278. The following is the extent of land returned as under gardens and orchards in the last two years. Market gardens are included as well as gardens attached to farms, but not gardens or orchards kept merely for pleasure or private use :—

LAND UNDER GARDENS AND ORCHARDS, 1893 AND 1894.

1892–3	...	...	...	...	Acres. 39,926
1893–4	...	...	...	...	42,463
Increase	...	...	...	...	<u>2,537</u>

\* For annual exports of tea from, and its consumption per head, in various countries, see issue of this work for 1893, paragraphs 362 to 364.

† Below average of two preceding years, viz., 10,500,000.



1279. An attempt was for the second time made in the year under notice to obtain a statement of the quantity of fruit grown throughout the colony. The following totals have been made up from the figures furnished to the collectors of statistics:—

FRUIT GATHERED, 1893-4.

		Cases.			Cwt.
Apples	...	462,834	Raspberries	...	10,713
Pears	...	103,269	Strawberries	...	3,632
Quinces	...	53,440	Gooseberries	...	7,977
Medlars	...	112	Mulberries	...	1,228
Plums	...	148,249	Blackberries	...	7
Cherries	...	69,601	Currants (black, red, white)	...	2,196
Peaches	...	50,577	Melons	...	11,228
Apricots	...	35,672	Rhubarb	...	17,250
Nectarines	...	867	Tomatoes	...	35,676
Oranges	...	8,352			lbs.
Lemons	...	4,339	Almonds	...	23,957
Loquats	...	938	Walnuts	...	19,795
Figs	...	5,518	Filberts	...	2,169
Persimmons	...	44	Chestnuts	...	2,232
Passion Fruit	...	22	Olives	...	21,056

1280. As the Australian Colonies are only just beginning to ship fruit to the United Kingdom, the following statement, showing the different kinds of fruit imported into the United Kingdom, and the principal countries of supply, will no doubt prove of interest:—

FRUIT IMPORTED INTO THE UNITED KINGDOM IN 1893.

Kind of Fruit.	Quantity Imported.	Principal Countries of Supply.
Raw—		
Almonds ... cwt.	131,393	Spain, Italy, Morocco, and France.
Apples ... bushels	3,459,984	Belgium, Holland, France, Canada, United States, and Tasmania.
Cherries ... "	346,148	France and Holland.
Grapes ... "	978,505	Spain.
Oranges ... "	4,593,127	Spain and Italy.
Lemons ... "	1,081,620	
Pears ... "	915,212	France and Belgium.
Plums ... "	777,142	France.
Unenumerated ... "	1,079,794	Spain and Canary Islands.
Dried—		
Currants ... cwt.	1,233,535	Greece.
Raisins ... "	524,746	Turkey and Spain.
Figs and Fig Cake ... "	114,167	Turkey.
Plums—		
French and Prunellæ cwt.	27,663	France.
Dried or Preserved "	8,807	Germany, France, and Austria.
Prunes ... "	21,689	France.
Unenumerated ... bushels	1,079,794	Turkey.
Preserved with sugar lbs.	37,645,004	Italy, United States, France, Spain, and East Indies.

Produce of  
beehives.

1281. 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. There has apparently been a falling-off of 226,000 lbs. of honey, and 2,200 lbs. of wax, as compared with the previous season:—

					Lbs.
Honey produced	...	...	...	...	732,130
Beeswax	,,	...	...	...	26,557

Bonus on  
export of  
honey.

1282. In order to encourage an export trade in honey, the Government are offering a bonus of one penny per pound for honey of approved quality made in Victoria, and exported to any approved port outside the Australasian Colonies; whilst the Agricultural Department is supervising the export and sale of the honey in a systematic manner.

Ensilage.

1283. Ensilage was returned as having been made on 335 farms, situated in 81 shires and 6 boroughs in 1893-4, the principal crops used being maize, oats, and grass, but returns were obtained besides of ensilage made from rye, tares, peas, beans, lucerne, amber cane, cabbage, thistles, weeds, and "orchard rubbish." The total quantity made was set down as 35,339 cubic yards, as against 34,681 cubic yards in the previous year. The largest returns of ensilage were obtained from the following shires:—Lilydale, where 5,453 cubic yards were made on 6 farms; Dunmunkle, 1,882 cubic yards on 8; Wimmera, 1,864 cubic yards on 28; Benalla, 1,472 cubic yards on 21; Gordon, 1,214 cubic yards on 11; Numurkah, 1,210 cubic yards on 9; Avon, 1,165 cubic yards on 14; Arapiles, 1,073 cubic yards on 12; Marong, 982 cubic yards on 5; Korong, 925 cubic yards on 7; Bacchus Marsh, 893 cubic yards on 4; Kyneton, 848 cubic yards on 2; Hampden, 821 cubic yards on 5 farms. The number and capacity of the silos were not given.

Land in  
fallow.

1284. Land in fallow is included in the area under tillage. The number of acres in this condition in 1894 was 457,177, or 36,567 less than in the previous year.

Waterworks  
of Victoria.

1285. The Victorian water-works are of two classes, viz., those intended chiefly for irrigation purposes, and those designed chiefly for domestic supply. A full account of the *Water Act* 1890 (54 Vict. No. 1156), which provides for the conservation, management, and distribution of water in the colony, will be found in a former issue of this work.\*

National  
Irrigation  
Works.

1286. The more important irrigation works, or those connected with the principal rivers which will form the main supply in some cases for

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

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, 1894, on three of the principal works which have been completed—the Goulburn National, Loddon, and Kow Swamp Works,\* was £795,244.

1287. On the 30th June, 1894, 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 to £1,511,517, of which the Government have agreed to advance £1,349,093, the balance to be obtained in the open market; whilst the amount actually advanced to the 30th June, 1894, was £940,740.† 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.

Irrigation  
and Water  
Supply  
Trusts.

1288. The Mildura Irrigation Colony, established by the Messrs. Chaffey under the *Waterworks Construction Encouragement Act* 1886 (50 Vict. No. 910), which is the most important private irrigation work in Victoria, has been several times referred to in previous issues of the *Victorian Year-Book*. An interesting account of the progress and prospects of this settlement, taken from a Special Report on Irrigation by the Chief Engineer of Water Supply, was published in an Appendix to the issue of this work for 1892.‡

Chaffey  
Irrigation  
colony.

1289. There were 57 Waterworks Trusts in existence on the 30th June, 1894, consisting of 12 rural and 45 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

Waterworks  
and Water-  
works  
Trusts.

\* 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.

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

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

£416,888; 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 £797,462, of which £774,621\* had been advanced up to the 30th June, 1894. The interest due, but remaining unpaid at that date, was £58,885. Of the total amount, £29,748 was due on account of only two trusts.

Waterworks  
under Go-  
vernment.

1290. 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 1893–4; also a statement of the estimated storage capacity, and the total cost of each scheme:—

WATERWORKS UNDER GOVERNMENT CONTROL.

Town or District.	Reservoir or Source of Supply.		Cost.
	Where Situated.	Storage Capacity in Gallons.	
COLIBAN SCHEME.			£
Taradale ...	{ Malmsbury ...	3,255,000,000	} 1,069,254
	{ Taradale ...	65,000	
	{ Expedition Pass ...	120,000,000	
	{ Red Hill ...	1,250,000	
Castlemaine and Chewton	{ Old Post Office Hill ...	2,000,000	
	{ Barker's Creek ...	629,135,000	
	{ Specimen Gully ...	2,618,000	
Fryerstown ...	{ Crocodile Gully ...	5,407,000	
Maldon ...	{ Green Gully ...	1,500,000	
	{ Big Hill ...	68,000,000	
	{ Big Hill Tank ...	300,000	
Bendigo ...	{ Crusoe Valley ...	320,000,000	
	{ New Chum Tank ...	23,000	
	{ Solomon's Gully ...	1,250,000	
Bendigo District	{ Spring Gully ...	150,000,000	
	{ Upper Grassy Flat ...	58,860,000	
	{ Lower Grassy Flat ...	26,800,000	
Eaglehawk ...	{ Sparrow Hawk ...	1,500,000	
Raywood ...	{ Lightning Hill ...	7,000,000	
	{ Raywood ...	2,500,000	
Sebastian ...	{ Sebastian ...	239,200	
Lockwood and Marong ...	{ Green Gully ...	3,500,000	
	{ Upper Stony Creek ...	354,000,000	
	{ Lower Stony Creek ...	143,000,000	
GEELONG AND SUBURBS	{ Anakie (pipe head) ...	900,000	} 357,832
	{ Lovely Banks ...	6,000,000	
	{ Newtown Tank ...	500,000	
Total ...		5,161,347,200	1,427,086

\* Including liabilities transferred, £51,377.

1291. 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 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 storage capacity of the main reservoir is 6,400 million gallons, and of the eight subsidiary reservoirs 107 million gallons.†

Melbourne  
Water-  
works.

1292. The total expenditure to the 30th June, 1894, on the construction of the Melbourne Waterworks was £3,638,638. The gross revenue received since the opening of the works at the end of 1857‡ has amounted to £3,713,539, whilst the expenses of maintenance and management amounted to only £533,034, and interest to £1,325,566. During 1893-4 the revenue received amounted to £177,120 as against £189,018 in the previous year; and the expenditure on maintenance and management (exclusive of repayments) to £36,814, as against £38,302 in the previous year. The net revenue in 1893-4 was thus £140,306, being equivalent to 3·88 per cent. of the mean capital cost,§

Revenue  
and expen-  
diture of  
Melbourne  
Water-  
works.

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

† For particulars, see issue of this work for 1893, Vol. II., paragraph 376.

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

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

as compared with £150,716, or 4·20 per cent., in 1892–3. A reference to a previous table\* will show that the loans raised (£2,389,934) for the construction of the works now bear an average nominal rate of only 3·93 per cent. The aggregate net profit up to the end of 1893–4, after paying all interest and expenses, has amounted to £1,854,939.†

Coliban  
scheme.

1293. 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, 1894, was £1,069,254; whilst the gross revenue during the year 1893–4 was £23,112; and the expense of maintenance and supervision, £9,247. The net revenue was thus £13,865, being equivalent to 1·296 per cent. of the capital cost, as compared with £12,013, or 1·123 per cent., in 1892–3. The deficiency in 1893–4, after allowing interest on the capital cost at the rate of  $4\frac{1}{2}$  per cent., was £34,251.

Geelong  
Water-  
works.

1294. 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, 1894, £357,832. The gross revenue for 1893–4 was £10,666, and the cost of maintenance, £2,891. The net revenue was thus £7,775, or 2·173 per cent. of the capital cost, as against £7,935, or 2·221 per cent. in 1892–3. After allowing interest on capital at  $4\frac{1}{2}$  per cent., the deficiency for 1893–4 was £8,417.

Gold-fields  
reservoirs.

1295. There are 22 gold-fields reservoirs, having an aggregate capacity of nearly 450 million gallons, the largest, at Beaufort, containing about 86 million gallons. These cost £57,172, 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.

\* See table following paragraph 321 *ante*.

† The balance in hand on 30th June, 1894, was only £77,562.

1296. 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, 1894. The works supply a population of about 77,600; the chief of these reservoirs are those at Ballarat, now under the Ballarat Water Commission, having an aggregate capacity of nearly 842 million gallons. The Gong Gong reservoir alone contains 427 million gallons; the Beehworth reservoir at Lake Kerferd, 191 million gallons; the Clunes reservoir at Newlyn, 207 million gallons; and the Talbot reservoir at Evansford, 200 million gallons.

Waterworks under Local Bodies.

1297. 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 and cost of reservoirs.

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

Waterworks under—	Storage Capacity of Reservoirs.	Cost of Schemes.
	Gallons.	£
<b>Government—</b>		
Coliban ... ..	4,656,947,200	1,069,254
Geelong ... ..	504,400,000	357,832
Gold-fields ... ..	492,000,000	59,653
Metropolitan Board of Works ... ..	6,507,000,000	3,585,590
Local Bodies ... ..	1,578,000,000	688,081
<b>Waterworks Trusts—</b>		
Urban Works* ... ..	297,000,000	} 797,462
Rural „ ... ..	†	
Total ... ..	14,035,347,200	6,557,872

1298. The total amount of loans outstanding on the 30th June, 1893, borrowed by the Government for Water Supply and Irrigation, was close on £7,200,000, of which about £4,700,000 has been re-lent

Government loans for Water-works.

\* Inclusive of works in progress. See also paragraph 1289, ante.  
† Rural works consist mainly of weirs, dams, and tanks.

to various corporations. The following are the amounts raised for various purposes, the net proceeds already advanced or expired, and the balances unexpired :—

GOVERNMENT LOANS FOR WATER WORKS TO 30TH JUNE, 1893.—  
(EXCLUSIVE OF LOANS REDEEMED.)

Purposes to which Applied.	Nominal Amount Raised.	Net Proceeds.		
		Total.	Advanced or Expended.	Balance Unexpended.
Loans to—	£	£	£	£
Board of Works, Metropolitan Municipalities ... ..	2,389,934	2,352,342	2,352,292	50
Water Works Trusts ... ..	689,868	678,062	677,752	310
Irrigation and Water Supply Trusts ... ..	2,446,710	2,393,640	754,514	-5,117*
National Irrigation Works ... ..			870,636	
Grants to Waterworks Trusts ... ..	103,101	100,000	773,607	
Other Works under Government control ... ..	1,544,706	1,562,793	97,558	34,090
Total ... ..	7,174,319	7,086,837	7,055,062	31,775

NOTE.—This statement is only approximate.

1299. According to information furnished by the Department of Water Supply, the average rainfall over the whole surface of Victoria during the year 1893 was 30·39 inches, representing a volume of water of about 42 cubic miles, that for 1892 and 1891 being about 36, and that for 1890 about 40 cubic miles respectively. The lowest and highest monthly averages for the year were :—February, ·20 inch ; May, 5·16 inches.

1300. 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 last year, 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 1893 the mean daily consumption per head for the whole year was 56·41 gallons, varying from 40·04 gallons in July to 79·41 gallons in December.

\* Net Debit Balance.

Rainfall in Victoria, 1893.

Water consumption in Melbourne, 1892-3.



DAILY AVERAGE CONSUMPTION OF WATER IN MELBOURNE AND SUBURBS, 1892 AND 1893.

Month.	1892.	1893.
	Gallons.	Gallons.
January ... ..	30,973,228	29,022,545
February ... ..	30,073,148	30,824,964
March ... ..	26,255,232	30,604,003
April ... ..	21,486,663	23,385,284
May ... ..	20,323,734	20,321,065
June ... ..	18,099,934	20,923,796
July ... ..	18,957,184	17,273,423
August ... ..	19,961,269	18,110,390
September ... ..	19,492,298	19,881,398
October ... ..	22,360,872	21,938,770
November ... ..	25,294,888	25,454,528
December ... ..	28,450,395	34,254,075
Mean for year ...	23,477,404	24,332,853

NOTE.—The maximum consumption for one day in 1893 was 43,214,000 gallons, and the minimum 11,500,000 gallons.

1301. 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
Marseilles ... ..	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‡

1302. In the original scheme for the disposal of the sewage of the metropolis, drawn up by Mr. Mansergh, it was recommended that the sewage should be conveyed to two pumping stations, wherefrom it was to be forced to high levels and to be allowed to flow by gravitation to two sewage farms situated on the opposite coasts of Port Phillip Bay. The capital cost of the scheme was calculated to be £5,030,800 within the first eight years, and the ultimate

Mansergh's sewerage scheme for Melbourne.

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

† In 1884 it was as high as 91 gallons, the 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.

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 for the main works only; but this rate does not cover the cost of sewers in yards, passages, and public right-of-ways, which would represent an additional rate of 1·13d. in the £1 on the rateable value of 1898. For all purposes Mr. Mansergh considered that the maximum rate would be 7·52d. in 1898.

1303. 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 £30,600 in 1893-4, and will probably fall still lower; and, although the number of tenements has risen from 85,167 to 109,050, the value of rateable property had fallen from £5,800,000 in 1888 to £5,187,515 in 1894, whilst the annual rate of increase of such property assumed by Mr. Mansergh— $2\frac{3}{4}$  per cent.—can now no longer be relied on. Considerations such as these induced the Melbourne and Metropolitan Board of Works†—under whose direction the works are being carried out—to considerably modify the original scheme, although adopting generally the principal recommendations. Accordingly it has been decided to provide eventually for a population of 1,000,000 in 30 years instead of 1,700,000 in 50 years, and to curtail the provision for rain water to a minimum consistent with sanitary efficiency, thus enabling the carrying capacity of the sewers to be reduced from 50 to 30 cubic feet of sewage matter per head per

\* 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.

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 sewerred ; 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

1304. The district over which the Board exercises control consists of 18 cities, towns, and boroughs, and 6 shires, embracing a total area of 83,860† acres, and containing an estimated population on the 31st December, 1893, of 431,357 inhabitants. The annual value of rateable property in the district in 1894 was £5,187,515 (of which about £843,459 represents vacant land formerly not taxed for water supply purposes), which, at 1s. in the £1, the maximum rate the Board is empowered to levy in any one year, would yield a revenue of £259,370. Although the Board has effected a saving of £3,160,000 in the capital cost to 1900, there will, owing to the altered circumstances already referred to, be a saving of only about £27,000 in the annual charge, if

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 £5,816,509.

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

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 £163,250, equivalent to about 7½d. in the £1, whereas the cost of dealing with night-soil 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. It is considered that when all the work is completed that a general rate of 8d. in the £1 on the valuation of 1894 will be required to meet the cost of interest, maintenance, and management. The following is a comparison of the two estimates:—

ESTIMATED ANNUAL COST OF SEWERAGE AT END OF CENTURY.

	1. Mansergh's Scheme. (1898.)	2. Board's Scheme. (1900.)
<i>Capital Cost.</i>		
Principal works ... ..	£5,030,800	£3,530,961
Sewering existing yards, passages, and public rights-of-way ... ..	841,485	
Purchase of all lands and ease- ments required ... ..	819,145	
Total ... ..	£6,691,430	£3,530,961
<i>Annual Cost.</i>		
Interest ... ..	£234,200 (3½%)	£158,850 (4½%)
Redemption of principal ... ..	51,080	...
Working expenses ... ..	34,822	32,000
	£320,102	£190,850
Less—Water revenue ... ..	81,140	30,000
	£238,962	£160,850*
Charge per £1 of annual value of rateable property in 1894 (£5,187,515)† ... ..	11d.‡	7½d.

1305. To enable it to commence the works, the Board has raised loans amounting to £2,584,000,§ at 4, 4½, and 5 per cent. The total amount it is authorized to borrow is £5,000,000, exclusive of Government loans amounting to £2,389,934, which were originally contracted by the Government but taken over by the Board. The expenditure on the construction of sewerage works to the 30th June, 1894, was £793,491, of which £52,700 was for surveys, £209,700 farm purchase and preparation, £272,000 outfall sewer, £74,100 rising mains, £24,700 pumping stations, £69,600 main sewers, and £3,500 reticulation sewers.

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

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

‡ Or about 8½d. if no provision were made for redemption of loans. Mr. Mansergh's original calculation was only 7½d., being based on a rateable value of £7,618,080, which is what the value would be assuming an increase at the rate of 2½ per cent. per annum between 1888 (when it stood at £5,806,521) and 1898. As a matter of fact, however, the value in 1894 (£5,187,515) was even less than in 1888.

§ See also paragraphs 386 and 387 *ante*.

1306. Throughout Victoria, the duration of leases of farms from private persons was returned in 1893-4 as averaging from 2 to 6 years, the extreme figures being 1 year and 10 years. The average rental of agricultural land per acre was stated to be from 6s. 3d. to 18s. 6d., the extreme figures being 2s. and 50s. The average rental of pastoral land per acre was stated to be from 2s. 2d. to 7s. 6d., the extreme figures being 1s. and 18s. It may be mentioned that 3s. 6d. per annum for as much land as will carry one sheep to the acre is considered a fair rental; thus land capable of carrying two sheep to the acre ought to be let for 7s. per acre per annum.\*

Leases and rental of farms.

1307. 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 25 years:—

Prices of agricultural products.

PRICES OF AGRICULTURAL PRODUCE, 1870 TO 1894.

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 11¼	1 10½	2 9¾	3 5	46	65 5	35 8	27 9
1894	1 11¼	1 5¼	3 1¼	2 6½	33	55 5	34 9	23 1

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

1308. The prices of all crops were much lower in 1894 than even the exceptionally low prices that prevailed in 1893. Thus the prices of wheat, oats, maize, hay, and mangolds were the lowest during the whole period; the price of potatoes was lower than in any previous year except 1881; and the price of turnips was lower on only two previous occasions since 1883. The price of barley, however, was higher than in any year since 1890.

1309. 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, maize, hay, and mangolds was lowest in 1894, that of barley in 1891 and 1892, that of potatoes in 1881, and that of turnips in 1888.

1310. The wholesale price of wheat per Imperial quarter\* in London during 1893 varied from about 24s. 10d. in March to 27s. 7d. in October—the average for the year being 26s. 4d. The fall in price in 1893 and 1894 was phenomenal, for whereas the average exceeded 30s. in 1890, and was as high as 37s. in 1891, it fell to below 27s. in 1893, and to as low as 18s. 6d. in October, 1894. 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, and in 1894 lower still. The following statement of the average *Gazette* prices (wholesale) during the four years ended with 1893 has been taken from an official source,‡ and that of the average price in the first ten months of 1894 has been taken from the *London Statist*:—

AVERAGE PRICE PER QUARTER OF WHEAT IN LONDON.

Month.	1890.	1891.	1892.	1893.	1894.
	s. d.	s. d.	s. d.	s. d.	s. d.
January ...	30 1	32 8	35 4	26 3	26 4
February ...	29 9	32 3	32 6	25 9	25 8
March ...	29 9	33 10	32 11	24 10	24 3
April ...	29 10	38 3	31 2	25 1	24 7
May ...	32 2	40 4	31 5	26 8	24 8
June ...	32 8	39 9	30 1	27 1	23 11
July ...	33 8	38 6	29 2	26 7	24 4
August ...	36 1	39 9	29 7	26 2	24 5
September ...	32 11	38 5	28 11	26 3	21 6
October ...	30 11	35 0	28 2	27 7	18 6
November ...	32 3	37 10	28 1	27 3	...
December ...	32 3	37 6	26 3	26 8	...
The Year ...	31 11	37 0	30 3	26 4	...

\* 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 1893.

Prices of agricultural produce, 1893-4 and previous years.

Years of highest and lowest prices.

Price of wheat in London.

1311. 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 twelve years ended with 1892:—

Price of wheat, barley, and oats in England

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

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

1312. The value of the principal agricultural products raised in Victoria during the year ended 1st March, 1894, may be estimated at 5¼ millions sterling. The following table shows the means whereby such an estimate is arrived at:—

Value of agricultural produce.

VALUE OF AGRICULTURAL PRODUCE,† 1893-4.

Name of Crop.	Gross Produce and Price.						Estimated Value.
					£	s.	
Wheat ... ..	15,255,200	bushels	@	0	1	11¼	1,477,847
Oats ... ..	4,951,371	"	@	0	1	5¼	355,880
Barley ... ..	1,033,861	"	@	0	3	1¼	160,464
Other cereals ... ..	1,239,529	"	@	0	1	10	113,623
Grass and clover seed ... ..	26,252	"	@	0	4	0	5,250
Potatoes ... ..	144,708	tons	@	2	15	5	400,962
Onions ... ..	10,199	"	@	3	5	0	33,147
Chicory ... ..	224	"	@	10	0	0	2,240
Other root crops ... ..	26,376	"	@	1	5	0	32,970
Hay ... ..	503,355	"	@	1	13	1	832,633

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

† 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,\* 1893-4—continued.

Name of Crop.	Gross Produce and Price.			Estimated Value.
			£ s. d.	£
Green forage ... ..	240,835 acres	@	1 10 0	361,252
Tobacco ... ..	8,952 cwt.	@	2 16 0	25,066
Grapes, not made into wine...	128,820 "	@	0 10 0	64,410
Raisins ... ..	1,005,460 lbs.	@	0 0 9	37,705
Currants ... ..	23,778 "	@	0 0 4½	446
Wine ... ..	1,490,184 gallons	@	0 3 0	223,528
Hops ... ..	5,684 cwt.	@	4 15 0	26,999
Other crops ... ..	769 acres	@	9 0 0	6,921
Garden and orchard produce	42,463 "	@	25 0 0	1,061,575
	<b>Total</b>	...	...	<b>£5,222,918</b>

Agricultural  
products of  
United  
States.

1313. Some idea of the sources of the agricultural wealth of the United States may be formed from the following statement of the Foreign exports of agricultural products for 1891-2. The figures have been derived from the Report for August, 1892, of the Statistician to the United States Department of Agriculture :—

AGRICULTURAL EXPORTS OF UNITED STATES, 1891-2.  
(000's omitted).

Articles.	Value.†	Articles.	Value.†
	£		£
<b>Animal—</b>		<b>Vegetable—continued.</b>	
Living ... ..	7,299,	Fruit and Nuts ... ..	1,325,
Beef and Mutton ... ..	6,008,	Hops ... ..	484,
Pork Products... ..	17,023,	Oil Cake ... ..	1,943,
Animal Matters ... ..	1,829,	Seeds (chiefly linseed)... ..	1,250,
Milk, Cheese, Butter ... ..	2,072,	Tobacco ... ..	4,134,
Oleomargarine... ..	1,841,	Vegetables ... ..	380,
Wool ... ..	6,	Wine ... ..	88,
<b>Vegetable—</b>		<b>Others</b> ... ..	<b>1,193,</b>
Wheat, Flour, and Biscuit	47,507,	<b>Total Agricultural Exports</b>	<b>158,744,</b>
Corn and Meal ... ..	8,502,		
Oats and Meal ... ..	880,	<b>All Exports</b> ... ..	<b>203,146,</b>
Rye and Flour ... ..	2,291,		
Cotton and Cotton Seed Oil	52,689,		

Principal  
agricultural  
exports  
from  
United  
States.

1314. It will be observed that cotton and wheat form nearly two-thirds of the agricultural exports of the United States, and living animals and meat (especially pork products) nearly one-fifth; whilst of other articles, corn and tobacco are the most important; but that wool and wine are exported to an insignificant extent. Exports of agricultural products formed over 78 per cent. of the total exports.

\* See footnote (†) on previous page.

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



1315. 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\* :—

Value of agricultural produce in various countries.

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	...	...	...	...	19½

1316. 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 1893-4, ranged from 56 lbs. to 66 lbs.; oats, from 38 lbs. to 50 lbs.; barley, from 48 lbs. to 56 lbs.; and maize, from 40 lbs. to 70 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, 51 lbs.; and of maize, 57 lbs.

Specific weight of crops.

1317. 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.

RATES OF AGRICULTURAL LABOUR,† 1893 AND 1894.

Description of Labour.	1892-3.		1893-4.	
	s.	d.	s.	d.
Ploughmen, per week	19	3	17	0
Farm labourers, "	16	7	15	0
Married couples, "	24	5	22	0
Females—Dairymaids, "	11	2	9	11
" Others, "	10	6	8	10
Mowers, "	26	9	23	9
" per acre	5	2	5	0
Reapers, per week	29	8	24	6
" per acre	9	3	8	5
Threshers, per bushel (without rations)	0	6	0	6
Hop-pickers, "	0	3	0	¾
Maize-pickers, per bag	0	5	0	4

\* Page 168.

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

Plant and  
improvements on  
farms.

1318. The values of farming plant and improvements were returned as follow for the year under review and the previous one :—

STEAM ENGINES, IMPLEMENTS, AND IMPROVEMENTS ON FARMS,  
1893 AND 1894.

	1892-3.	1893-4.
	£	£
Value of farming implements and machines ...	2,780,242	2,600,628
„ improvements on farms ...	15,174,962	14,478,558

Machine  
labour.

1319. 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 three years :—

MACHINE LABOUR, 1892 TO 1894.

Average Rates paid for—	1891-2.	1892-3.	1893-4.
	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>	<i>s.</i> <i>d.</i>
Machine reaping, per acre { With binding ...	7 8	6 11	6 6
„ „ { Without binding ...	4 7	4 6	4 2
„ mowing, „ ...	4 3	4 1	3 9
„ threshing, per 100 bushels—			
With winnowing ...	17 9	17 8	14 8
Without winnowing ...	12 7	14 4	12 5

Live stock,  
1891 and  
1894.

1320. 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, 1894, brought on since the census by means of estimates furnished by the municipal authorities ; a considerable increase appears to have taken place in the numbers of milch cows, sheep, and pigs :—

LIVE STOCK, 1891 AND 1894.

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, 1894 (estimated)	436,903	431,962	1,385,329	1,817,291	13,098,725	328,162
Increase ...	434	36,770	-2,360	34,410	405,882	45,705

Goats, asses,  
and mules.

1321. 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.

1322. There are now in Victoria 5 horses, 21 head of cattle, 149 sheep, and 4 pigs, or, taking the different kinds together, 179 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.\*

1323. The following is a statement of the number of horses, cattle, sheep, and pigs in the various Australasian Colonies, according to the returns of 1893-4 :—

LIVE STOCK IN AUSTRALASIAN COLONIES, 1893-4.†

Colony.	Horses.	Cattle.	Sheep.	Pigs.
Victoria ... ..	436,903	1,817,291	13,098,725	328,162
New South Wales ... ..	481,399	2,155,500	56,980,688	240,860
Queensland ... ..	429,734	6,693,200	18,697,015	68,086
South Australia‡ ... ..	200,481	660,831	7,335,194	88,220
Western Australia ... ..	45,747	173,747	2,220,642	26,233
<b>Total ... ..</b>	<b>1,594,264</b>	<b>11,500,569</b>	<b>98,332,264</b>	<b>751,561</b>
Tasmania ... ..	31,587	169,141	1,535,047	51,592
New Zealand ... ..	211,040	885,305	19,380,360	308,812
<b>Grand Total ... ..</b>	<b>1,836,891</b>	<b>12,555,015</b>	<b>119,247,671</b>	<b>1,111,965</b>

1324. 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 following numbers are obtained for the different colonies:—

	Live Stock reduced to their equivalent in Sheep.
1. Queensland ... ..	89,926,355
2. New South Wales ... ..	83,349,678
3. Victoria ... ..	35,640,665
4. New Zealand ... ..	30,343,810
5. South Australia ... ..	15,948,314
6. Western Australia ... ..	4,415,582
7. Tasmania ... ..	3,542,327

1325. 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 406 sheep.
2. New Zealand           "           "           "           290   "
3. New South Wales   "           "           "           270   "
4. Queensland           "           "           "           135   "
5. Tasmania           "           "           "           134   "
6. South Australia   "           "           "           18   "
7. Western Australia   "           "           "           5   "

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

† The figures for horses and pigs in New Zealand are those returned at the census of 1891.

‡ Including the Northern Territory, which contained 12,815 horses, 237,229 head of cattle, 67,552 sheep, and 1,752 pigs.

1326. 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.

1327. 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	208	sheep.
2.	{ Western Australia	”	”	” 68
	{ New South Wales	”	”	” 68
3.	South Australia	”	”	” 46
4.	New Zealand	”	”	” 45
5.	Victoria	”	”	” 30
6.	Tasmania	”	”	” 23

1328. 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, 1893-4.

	Live Stock reduced to their equivalent in Sheep.		
	Total Number.	Number to the Square Mile.	Number to each Person living.
Australian Continent ... ..	229,280,594	78	71
Australia, Tasmania, and New Zealand	263,166,731	86	65

1329. 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	1893	2,079,587*	11,207,554	31,774,824	3,278,030
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 ... ..	1892	4,090	1,004,477	87,028	...
Mauritius ... ..	1884	12,000	15,000	30,000	30,000
Cape of Good Hope	1892	360,458	1,969,411	16,793,855	225,407
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 ... ..	1892	69,057	108,140	15,661	...
Falkland Islands ...	1891	3,824	6,321	667,344	54
Australasia‡ ...	1893-4	1,836,891	12,555,015	119,247,671	1,111,965
Fiji ... ..	1893	1,381	10,134	5,082	2,116

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

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

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

Victoria  
the most  
heavily  
stocked  
colony.

Live stock  
per head in  
each colony.

Live stock in  
Australia  
and  
Australasia.

Live stock  
in British  
Possessions.

1330. The following table contains a statement of the number of horses, cattle, sheep, and pigs in the principal Foreign countries. The information has been derived entirely from official documents :—

## LIVE STOCK IN FOREIGN COUNTRIES.

(000's omitted.)

Country.	Year.	Number of—			
		Horses.	Cattle.	Sheep.	Pigs.
<b>EUROPE.</b>					
Austria ... ..	1890	1,548,	8,644,	3,187,	3,550,
Belgium ... ..	1880	272,	1,383,	365,	646,
Bulgaria ... ..	1892	...	...	7,060,	441,
Denmark ... ..	1888	376,	1,460,	1,225,	771,
France ... ..	1892	2,853,	13,364,	21,504,	6,337,
Germany ... ..	1892	3,818,	17,497,	13,775,	12,057,
Greece ... ..	...	95,	337,	6,000,	45,
Holland ... ..	1891	272,	1,532,	811,	988,
Hungary ... ..	1884	1,749,	4,879,	10,595,	4,804,
Italy ... ..	1890	720,	5,000,	6,900,	1,800,
Norway ... ..	1891	151,	1,005,	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 ... ..	1891	489,	2,420,	1,345,	655,
Switzerland ... ..	1886	98,	1,211,	342,	394,
<b>ASIA.</b>					
Japan ... ..	1891	1,548,	1,057,	...	...
Java and Madura ... ..	1890	535,	2,353,	...	...
Russia in Asia ... ..	1874-83	1,070,	3,716,	10,612,	...
<b>AFRICA.</b>					
Algeria ... ..	1892	358,	1,233,	8,870,	78,
Egypt ... ..	1887	21,	462,	958,	...
Orange Free State ... ..	1890	249,	895,	6,620,	...
<b>AMERICA.</b>					
Argentine Republic ... ..	1893	5,200,	22,000,	80,000,	300,
Brazil ... ..	...	...	30,000,	...	...
Costa Rica ... ..	1892	77,	346,	3,	...
Guadaloupe ... ..	1887	7,	20,	10,	18,
Guatemala ... ..	1885	118,	494,	460,	195,
Nicaragua ... ..	1884	...	400,	...	...
Paraguay ... ..	1891	100,	862,	63,	11,
United States ... ..	1894	16,081,	53,096,	45,048,	45,206,
Uruguay ... ..	1893	599,	8,690,	23,000,	...
Venezuela ... ..	1888	388,	8,476,	5,727,	1,930,

1331. In proportion to population, Australasia has a somewhat larger number of sheep than the Argentine Republic, and a much larger number than any other country except Uruguay ; and a much

Live stock per head in various countries.

larger number of cattle and horses than in any countries except the two just named. The following are the proportions in some of the chief grazing countries of the world :—

LIVE STOCK IN PROPORTION TO POPULATION IN VARIOUS COUNTRIES.

Country.	Per 100 Inhabitants.		
	Sheep.	Cattle.	Horses.
Uruguay (1893) ...	3,249	1,130	85
Australasia (1893-4) ...	2,931	309	45
Argentine Republic ...	2,796	546	187
Spain ...	140	19	4
Great Britain ...	95	29	9
United States (1893) ...	67	79	24
France ...	65	31	8
Germany ...	60	38	8
Italy ...	32	13	4

NOTE.—The figures, except for Australasia, have been taken from the report for May, 1894, of the Statistician to the U.S. Department of Agriculture.

Live stock of the world.

1332. 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 (1892-3)*	1,834,	12,447,	121,891,	1,114,	...	116,
Oceania ...	4,	132,	13,	33,	...	13,
Total ...	67,042,	299,448,	532,094,	102,130,	8,683,	36,025,

Live stock slaughtered.

1333. The numbers of live stock slaughtered in Victoria are furnished by the local bodies, but it is probable the returns do not in every case include the animals slaughtered by private persons, and on farms and stations, and, therefore, that more were really slaughtered than the figures show. The following were the numbers returned for

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

1892 and 1893, those for the latter year being larger than those for the former in the case of sheep, but smaller in the case of cattle and pigs:—

LIVE STOCK SLAUGHTERED, 1892 AND 1893.

Year.	Cattle and Calves.	Sheep and Lambs.	Pigs.
1892 ... ..	245,919	2,439,026	178,118
1893 ... ..	227,043	2,491,867	175,934
Increase ... ..	...	52,841	...
Decrease ... ..	18,876	...	2,184

1334. The purposes to which the carcasses of the slaughtered animals were appropriated in 1893 were returned as follow:—

Purposes for which stock was slaughtered.

PURPOSES FOR WHICH LIVE STOCK WAS SLAUGHTERED, 1893.

Description of Live Stock.	Numbers Slaughtered for—			
	The Butcher and Private use.	Preserving or Salting.	Bolling down for Tallow or Lard.	Total.
Cattle and Calves ... ..	226,353	480	210	227,043
Sheep and Lambs ... ..	2,213,492	91,170	187,205	2,491,867
Pigs ... ..	89,974	85,880	80	175,934
Total ... ..	2,529,819	177,530	187,495	2,894,844

1335. 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 cattle are above, but as regards sheep and pigs are much below, the numbers slaughtered for the same purposes in 1893.

Stock slaughtered for preserving.

1336. It is satisfactory to record that in 1893 the value of net exports (*i.e.*, excess of exports over imports) of beef and mutton amounted to £86,100, and that of ham, bacon, and pork to over £8,500, or £34,300 and £6,400 respectively more than in 1892; whereas, prior to 1892, there was but a small export of beef and mutton, and a net import of pig products. This was chiefly owing to a large export trade in frozen meat having sprung up since 1890, and a stimulus having been given to the bacon and pork trade in 1893. Moreover, although fresh meats and hams were largely imported in the four years ended with 1892, there was a small balance of the former exported, and the latter

Net exports of meats, 1888 to 1893.

was imported only to a slight extent in 1893. On the other hand, the export of preserved and salted meats fell off in 1893. A further marked development of the trade may be looked for—more especially in frozen and preserved meats, ham, bacon, and pork, and poultry and game—the last of which as yet finds no place in the returns. The following are the net exports of each of the last six years :—

NET EXPORT OF MEATS FROM VICTORIA, 1888 TO 1893.\*

Year.	Beef and Mutton.				Value of Net Exports of Beef and Mutton.
	Fresh.†	Frozen.	Preserved.	Salted.	
	lbs.	lbs.	lbs.	lbs.	£
1888 ...	222,208	...	382,594	151,872	6,537
1889 ...	- 199,360	...	465,168	121,968	1,133
1890 ...	- 202,832	...	663,368	73,248	4,993
1891 ...	- 973,616	...	796,204	39,200	- 2,030
1892 ...	- 211,660	1,179,530	1,814,459	76,364	51,768
1893 ...	1,004	5,403,104	676,719	63,728	86,085

Year.	Ham.	Bacon.	Pork, Salted.	Value of Net Exports of Pig Products.
1888 ...	- 187,119	148,698	46,368	- 617
1889 ...	- 192,146	97,720	- 109,088	- 6,928
1890 ...	- 332,057	66,052	29,680	- 9,779
1891 ...	- 127,175	56,729	- 56,448	- 4,516
1892 ...	- 45,556	96,754	16,652	2,112
1893 ...	- 3,164	242,722	92,928	8,509

Poultry.

1337. 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	...	...	...	...	...

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

† Including fresh pork, which was not separated from other fresh meat in the exports. In 1892, the quantity of fresh pork imported was 5,300 lbs., and in 1893, 2,300 lbs. It is possible, however, that these quantities may have been counterbalanced by corresponding exports.



1338. It may be mentioned that the surplus of exports over imports of poultry in 1893 amounted to 486 heads, but the value of those imported exceeded those exported by £261. There appears to be an opening for the development of a large export trade in poultry to the United Kingdom, and trial shipments have been already made. Exports of poultry.

1339. 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 Australasian Colonies.

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

1340. 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. Poultry at the Cape of Good Hope.

1341. 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 about the end of February. From March to September inclusive, small sales of oddments are held intermittently.† Wool season in Victoria.

1342. The quantity of wool produced in Victoria during the year 1893 may be set down as 64,722,420 lbs.,‡ valued at £2,593,107. 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 Wool produced, 1892 and 1893.

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

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

‡ The quantity of Victorian wool exported in 1893, according to the Customs returns, was 118,058,274 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 438 and 439 ante.)

woollen mills. In the previous year the quantity produced, similarly estimated, was 80,445,334 lbs., valued at £3,521,704.

1343. The following is a statement of the quantity and value of wool produced in the various Australasian Colonies in 1892 and the three preceding years. The estimate for each of the other colonies has been made upon the same principle as that for Victoria, viz., by substituting the difference between the imports and the exports for the entry as to the origin of the wool made at the Customs, to which has been added an estimate for the quantity used for manufacturing purposes during each of the years :—

WOOL PRODUCED IN THE AUSTRALASIAN COLONIES, 1889 TO 1892.\*

Colony.	1889.	1890.	1891.	1892.
	lbs.	lbs.	lbs.	lbs.
<b>QUANTITY.</b>				
Victoria ...	56,954,721	55,559,286	76,503,635	80,445,334
New South Wales ...	258,233,636	236,685,713	329,027,828	307,723,393
Queensland ...	59,228,753	55,714,370	81,122,900	105,163,063
South Australia ...	39,352,984	35,869,797	47,087,181	47,506,332
Western Australia ...	9,501,695	6,969,380	8,783,073	8,712,080
Tasmania ...	6,383,921	9,152,281	9,542,953	8,562,931
New Zealand ...	105,779,923	105,762,060	109,096,326	121,561,824
<b>Total ...</b>	<b>535,435,633</b>	<b>505,712,887</b>	<b>661,163,896</b>	<b>679,674,957</b>
	£	£	£	£
<b>DECLARED VALUE.</b>				
Victoria ...	2,449,368	2,862,088	3,957,901	3,521,704
New South Wales ...	10,501,664	9,002,229	10,960,820	10,057,378
Queensland ...	2,680,134	2,533,409	3,462,215	4,260,814
South Australia ...	1,354,377	1,297,454	1,545,430	1,443,241
Western Australia ...	395,903	261,325	329,365	326,703
Tasmania ...	292,770	430,373	429,450	337,918
New Zealand ...	4,213,358	4,348,009	4,323,985	4,539,038
<b>Total ...</b>	<b>21,887,574</b>	<b>20,734,887</b>	<b>25,009,166</b>	<b>24,486,796</b>

1344. It appears by the figures that Victoria, in 1892, produced little more than a fourth as much wool as New South Wales, two-thirds as much as New Zealand, and about four-fifths that of Queensland. She, however, produced almost as much again as South Australia. Western Australia, notwithstanding the immense extent of her territory, produced only the same quantity as the small island of Tasmania. The wool clip in 1892—judging from the net exports in the same year—was larger than in 1891 in Victoria, South Australia, Queensland, and New Zealand—especially in the two last named; but smaller in the other colonies, especially in Tasmania.

\* For later figures see Table XVIII. in Appendix B, *post*.

Wool produced in Australasian Colonies, 1889 to 1892.

Wool produced in each colony.

1345. The figures also show that the wool produced in the Australasian Colonies in 1892 was more by 18½ million lbs. than in 1891, by 174 million lbs. than in 1890, and by over 144 million lbs. than in 1889; and, further, that the value returned for such wool was lower in 1892 than in 1891 by £522,370, but higher than in 1890 by £3,751,909, and than in 1889 by £2,599,222.

Wool produced in four years compared.

1346. According to the Customs returns of the various colonies nearly 643½ million lbs. of wool were exported from the Australasian Colonies direct to other countries during the year 1893, and of this more than four-fifths were sent from the Australian continent. The following are the quantities from each colony given in lbs.:—

Exports of Australasian wool, 1893.

EXPORTS OF WOOL FROM AUSTRALASIAN COLONIES, 1893.

(000's omitted.)

Colony.	Lbs.	Colony.	Lbs.
Victoria ...	149,505,	Tasmania ...	6,084,
New South Wales ...	251,681,	New Zealand ...	109,577,
Queensland ...	54,619,		
South Australia ...	61,528,	Grand Total ...	643,467,
Western Australia ...	10,473,		

1347. According to the same returns 75 per cent. of Australasian wool in 1893 was sent to London, 24½ per cent. to the continent of Europe, and small quantities to America, Singapore, Hong Kong, Japan, India, and Mahé. The following are the figures:—

Destination of Australasian wool, 1893.

DESTINATION OF AUSTRALASIAN WOOL, 1893.

(000's omitted.)

Country.	Quantity sent thereto.	
	Lbs.	Proportion per cent.
Europe—		
United Kingdom ...	483,912,	75·20
France ...	64,609,	10·04
Belgium ...	51,058,	7·94
Germany ...	41,840,	6·50
United States ...	868,	·14
Singapore ...	853,	·13
Other Countries ...	327,	·05
<b>Total</b> ...	<b>643,467,</b>	<b>100·00</b>

1348. The average price per lb. of Victorian wool in 1893, based upon its declared value before leaving this colony, as obtained from the Customs returns of exports, was 7½d. for greasy wool, 12½d. for scoured, and 14d. for washed—whilst the average for the whole was

Fall in price of wool.

$8\frac{1}{4}$ d., as against  $9\frac{3}{4}$ d. in 1892,  $10\frac{3}{8}$ d. in 1891, not quite  $10\frac{3}{4}$ d. in 1890, nearly  $10\frac{1}{2}$ d. in 1889, not quite  $10\frac{1}{8}$ d. in 1888, nearly  $10\frac{5}{8}$ d. in 1887,  $11\frac{3}{8}$ d. in 1886 and 1885, and  $12\frac{7}{8}$ d. in 1884. There was thus a fall in the price as compared with all the previous years named—of  $4\frac{5}{8}$ d. per lb. as compared with 1884, of  $3\frac{1}{8}$ d. per lb. as compared with 1885 and 1886, and from  $1\frac{1}{2}$ d. to  $2\frac{1}{2}$ d. as compared with other years. This would depreciate the wool produced in Victoria during 1893 between £405,000 and £674,000 as compared with the average price in the years immediately preceding, by about £843,000 as compared with the average price in 1886 or 1885, and by nearly £1,250,000 as compared with the price in 1884.\*

Price of  
wool in  
Melbourne.

1349. 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 :—

AVERAGE PRICE PER LB. OF WOOL (FLEECE) IN MELBOURNE,  
1885 TO 1895.

Year.	Greasy.		Clean.†	
	Merino.	Crossbred.	Fleece Washed.	Scoured.
	d.	d.	d.	d.
1884-5 ... ..	$10\frac{1}{2}$	9	20	19
1885-6 ... ..	$8\frac{1}{2}$	8	16	15
1886-7 ... ..	$10\frac{1}{2}$	9	17	18
1887-8 ... ..	$9\frac{1}{2}$	8	$15\frac{1}{2}$	16
1888-9 ... ..	$10\frac{1}{2}$	10	18	$17\frac{1}{2}$
1889-90 ... ..	$11\frac{1}{2}$	11	$18\frac{1}{2}$	$19\frac{1}{2}$
1890-91 ... ..	10	9	15	$16\frac{1}{2}$
1891-2 ... ..	9	$8\frac{3}{4}$	$13\frac{1}{2}$	15
1892-3 ... ..	$8\frac{3}{4}$	$8\frac{1}{2}$	13	$14\frac{1}{2}$
1893-4 ... ..	$8\frac{1}{2}$	$8\frac{3}{4}$	13	$14\frac{1}{2}$
1894-5 ... ..	$7\frac{3}{4}$	7	10	$12\frac{1}{2}$

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 lb. of clean wool—was in the season 1893-4 slightly higher.

\* See also table following paragraph 829 in Part “Interchange” ante, where the price level of wool is dealt with.

† Comprising both merino and crossbred.

1350. 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.

WOOL PRODUCTION AND DISTRIBUTION OF THE WORLD.  
(000's omitted.)

Countries.	Wool Produced, 1891.	Net Surplus Exported (+), or Net Deficiency Imported (-) 1890-91.
	lbs.	lbs.
<b>EUROPE.</b>		
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,
<b>Total Europe ... ..</b>	<b>787,392,</b>	<b>- 965,243,</b>
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, Afghan- istan, 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,
<b>Total out of Europe ... ..</b>	<b>1,780,546,</b>	<b>+ 972,374,†</b>
<b>Grand Total ... ..</b>	<b>2,567,938,</b>	<b>+ 7,131,†</b>

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.

1351. According to this table the annual wool production of the world amounted to nearly 2,600 million lbs., of which about 30 per cent. was grown in Europe, more especially in Russia, the United Kingdom, and France; 70 per cent. was grown in other countries, but chiefly Australasia (26 per cent.), Argentine (15 per cent.), the United States (12 per

Chief wool-producing and wool-consuming countries.

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

† Information not available or incomplete.

cent.), and Cape Colony (5 per cent.). Moreover, the annual requirements of Europe, in addition to its own natural supply, amounted to nearly 1,000 million pounds weight, the three greatest consumers being the United Kingdom, France, and Germany, and next—but much below these—Belgium and Austria-Hungary. Fully two-thirds of the total requirements were supplied by Australasia, a little over a fourth by the Argentine Republic, and less than a tenth by Cape Colony and Natal. The United States had to import  $126\frac{2}{3}$  million lbs.

Price of  
Australian  
wool in  
London.

1352. The average price in 1892 of Australian wool in London, as officially computed from the returns of imports by the Agricultural Department\* of the privy Council was  $\frac{3}{4}$ d. lower than in 1891, and also lower than in any previous year. The following are the results obtained for the 24 years ended with 1892 :—

AVERAGE PRICE OF AUSTRALIAN WOOL IN LONDON, 1869 TO 1892.

per lb.		per lb.		per lb.		per lb.	
s.	d.	s.	d.	s.	d.	s.	d.
1869 ...	1 3	1875 ...	1 4 $\frac{1}{2}$	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 $\frac{1}{4}$	1892 ...	0 9

Weight of  
greasy  
fleeces.

1353. The estimated average weight of a fleece of greasy wool grown in Victoria is  $5\frac{1}{4}$  lbs. for merino, and 6 lbs. for crossbred and longwool; the former varying from a maximum of  $9\frac{1}{2}$  lbs. (which was averaged by a flock of 11,000) to a minimum of  $3\frac{1}{2}$  lbs.; and the latter from a maximum of 9 lbs. to a minimum of  $4\frac{1}{2}$  lbs.†

Loss of  
weight in  
scouring.

1354. The estimated loss in weight of Victorian grown wool in scouring clean, fit for the manufacturer, is about 60 per cent. (yield 40 per cent.) on merino, about 45 per cent. (yield 55 per cent.) on crossbred, and about 30 per cent. (yield 70 per cent.) on Lincolns and other longwools; whilst the estimated loss in weight in scouring hot-water washed merino is about 16 per cent. (yield 84 per cent.), and in scouring cold washed about 31 per cent. (yield 69 per cent.).

Dairy  
produce.

1355. 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 gallons, or about four-fifths of a gallon per diem. In Victoria the yield of cream

\* Report dated December, 1893, page 90.

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 lb. of butter;\* whilst 3·5 per cent., or 2·7 gallons to the lb. 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 lb. In the butter factories about 12 per cent. of cream, and  $2\frac{1}{2}$  gallons of milk to every lb. 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 1 lb. 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 1893–4, based on returns furnished and on the assumed yield of milk:—

QUANTITY AND VALUE OF DAIRY PRODUCE OF VICTORIA, 1893–4.

Yield of Milk.				Gallons.
Consumed in its natural state	...	...	...	40,215,680
Made into butter ( $2\frac{3}{4}$ gallons to the lb.)	...	...	...	80,776,300
Made into cheese (1 gallon to the lb.)	...	...	...	4,277,000
Total	...	...	...	125,268,980

Value of Milk, Cheese, and Butter.				Value.
				£
Consumed in its natural state, @ 8d. per gallon	...	...	...	1,340,520
Butter made (29,373,200 lbs.), † @ 9d. per lb.	...	...	...	1,101,500
Cheese made (4,277,000 lbs.), † @ 6d. per lb.	...	...	...	106,925
Total	...	...	...	2,548,945

NOTE.—The total milk yield is estimated by allowing 290 gallons per annum to each of the 431,962 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 1 lb. of factory butter may be obtained from the percentage of butter-fat ( $f$ ) by means of the following formula:  $-\frac{8\cdot06}{f-5} = x$  gallons.

† An allowance has been added to the returns furnished by farmers of 12 per cent. for butter, and 20 per cent. for cheese made on small farms, &c., which were not visited by the collectors of statistics. For returns of butter and cheese made, see table following paragraph 1389 *post*.

1356. During the year 1894-5, a sum of £10,000 was appropriated by Parliament for the granting of bonuses for dairy produce, fruits, and honey of the best quality, and in best order, exported to approved foreign markets, and for the development of the wine industry, also in connexion with the shipment of poultry and meats, and expenses incurred in connexion with any of the items named. The aid to the butter industry was, by regulation, confined to the expenses incurred in receiving and storing butter for export, and in working the machinery for refrigerating. For Victorian cheddar cheese exported in quantities not less than a ton, between the 1st July, 1894 and the 31st May, 1895, provided it should sell abroad at not less than £2 10s. per cwt., a bonus of £3 per ton was payable.\*

1357. 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—chiefly with the United Kingdom, and the exports in a short period of five years have advanced by leaps and bounds from 827,000 lbs., valued at £51,300, in 1889-90 to close on 26 million lbs., valued at over a million sterling, in 1894-5, as will be seen by the following figures derived from the Report by the Dairy Expert on the Dairying Industry in Victoria for 1894-5 :—

EXPORTS OF VICTORIAN BUTTER, 1889-90 TO 1894-5.

Season.			Weight in lbs. (000's omitted.)	Value.
				£
1889-90	...	...	827,	51,300
1890-91	...	...	1,701,	91,200
1891-2	...	...	4,792,	225,000
1892-3	...	...	8,094,	404,432
1893-4	...	...	17,141,	761,273
1894-5	...	...	25,950,	1,081,243

1358. Besides butter, several other dairy and farming products were shipped in 1894-5 to the value of £38,433, making, with butter, a total of £1,119,700. The most important of the minor articles were cheese and rabbits, &c.; next game, poultry, and fresh meat, and to a small extent honey, eggs, vegetables, and milk. The freight amounted to £102,600, or to over 9 per cent. of the net value; the freight on butter alone being £94,844, or at the rate of 7d. per lb. as against 1d. in 1893-4.

\* See Regulations approved by the Governor in Council, dated 20th December, 1894. For further particulars of Agricultural Bonuses, see the end of this Part.

Bonus on  
export of  
dairy  
products.

Exports of  
Victorian  
butter.

Exports of  
farm and  
dairy  
products.



The rate is still considered much too high, and efforts are being made to have it reduced to  $\frac{1}{2}$ d. per lb. The following are the figures taken from the same report :—

SHIPMENTS THROUGH THE REFRIGERATING DEPOT IN MELBOURNE, 1894-5.

Produce.	Quantity.	Freight.	Net Value (Estimated).
		£	£
Butter ... ..	25,949,840 lbs. ...	94,844	1,081,243
Cheese ... ..	829,920 „ ...	3,021	16,421
Eggs ... ..	11,796 dozen ...	113	420
Concentrated Milk ... ..	5,040 lbs. ...	19	20
Poultry, Mixed ... ..	10,388 pairs ...	} 1,057	{ 3,588
Game ... ..	15,661 „ ...		
Honey ... ..	33,600 lbs. ...	64	450
Vegetables ... ..	47 cwt. ...	18	40
Bacon ... ..	12,096 lbs. ...	47	216
Pork ... ..	12,200 „ ...	56	150
Lamb ... ..	{ 146,647 „ ...	} 612	1,560
Beef ... ..	1,173 lbs. ...	4	12
Veal ... ..	1,323 „ ...	5 $\frac{1}{2}$	660
Rabbits and Hares ... ..	89,417 pairs ...	2,744	10,896
Total ... ..	...	£102,604 $\frac{1}{2}$	£1,119,676

1359. Victoria, New South Wales, and New Zealand are the only Australasian Colonies which export butter, the export trade of the two former being of quite recent growth, whilst New Zealand is the only one which exports cheese. In 1892, the net export of butter in Victoria was 6,541,728 lbs.; in New South Wales, 1,027,089 lbs.; and in New Zealand, 6,039,824 lbs.; and the net export of cheese from New Zealand was 4,644,416 lbs. 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 Western Australia of 697,444 lbs., in Queensland of 127,521 lbs., in Tasmania (lard included) of 190,347 lbs., and in South Australia of 14,685 lbs.; also a net import of cheese in Victoria of 246,286 lbs., in Queensland of 675,049 lbs., in Western Australia of 242,185 lbs., in New South Wales of 53,700 lbs., in Tasmania of 17,562 lbs., and in South Australia of 47,821 lbs. Thus the net export of Australasia beyond the colonies in 1892—chiefly to the United Kingdom—was 12,578,644 lbs. of butter and 3,361,813 lbs. of cheese. During the five years 1885-90, New Zealand exported on an average 3,125,360 lbs. of

Export of dairy produce in Australasian Colonies.

butter and 2,957,181 lbs. of cheese. The manufacture of condensed milk has not yet been developed on a large scale in any of the colonies.\*

Value of  
cattle  
production,  
1893-4.

1360. It is believed that the value of the annual production of cattle in later years has, in previous issues of this work, been somewhat over-stated, and therefore on the present occasion there is substituted, after careful deliberation, a new method—based on the best information available—which it is believed will give a more correct idea of the actual result.† Formerly it was assumed that the gross natural increase of cattle in Victoria was equivalent to one to every milch cow; but, although this is still considered a reasonable basis of calculation under ordinary circumstances (allowing for other breeding cows besides milch cows),‡ it now appears from a careful examination of the statistics available that, in connexion with the rapidly-growing dairying industry, a very large proportion of calves born are killed at birth; and these, together with a proportion which die from natural causes before attaining the age of twelve months, as well as a certain proportion of grown-up cattle—estimated at about one-half the gross increase—add nothing to the national income. Cattle rearing for beef production,§ moreover, has for a time been checked by a sudden fall in the consumption from an average per annum of 265,000 head slaughtered in the years 1890 and 1891 to 227,000 head in 1893, and to the resulting decline in prices. This decline in prices has taken place notwithstanding greatly restricted importations from the neighbouring colonies, for which no doubt the high protective duty of 30s. per head imposed in 1892 is mainly responsible; thus, the excess of imports fell off from 74,600 per annum in the years 1886 to 1889, and 113,670 in 1890 and 1891, to only 26,400 in 1893. Hence cattle-breeding, except for dairying purposes, is not at present carried on to any great extent in the colony. Between the censuses of 1881 and 1891 (the only years for which reliable information is available) the net increase in the herds of the colony was at the rate of  $3\frac{3}{4}$  per cent. per annum; but since then there is reason to believe that little, if any increase, apart from milch cows, has taken place. Every head of cattle is supposed to become more valuable as its age increases up to the time of slaughtering, and it is this increased value during a period of twelve months that it is

\* For later information see Table XXI. in Appendix B, *post*; and for the net imports or exports of butter and cheese in the principal countries of the world see table following paragraph 447 in the second volume of the issue of this work for 1893.

† The editor is indebted to Mr. Richard Lane, of North Mirboo, for drawing attention to this matter, and for valuable suggestions, which have been of much assistance in dealing with the subject.

‡ About 75 per cent. for all breeding cows is considered a fair average increase. In New Zealand, it has been ascertained that  $35\frac{1}{2}$  per cent. of all the cattle are breeding cows, of which 74 per cent. are milch cows.

§ Some authorities assert that in Victoria the practice of cattle rearing has been largely curtailed by reason of the lands formerly held for grazing purposes being now occupied by selectors, who, finding it unremunerative to breed on small areas, have recourse to dairying. For instance, granting that under existing circumstances it would not pay to breed on land capable of carrying more than one head to 6 acres, it would require at least 600 acres of such land to carry 100 head, yielding on an average only sixteen four-year old cattle per annum.

desired to arrive at ; but, owing to the dearth of statistical information, it is impossible to estimate it by any direct process, and some artifice must be resorted to. Hence it is assumed that the increase may be fairly ascertained by a calculation made up of three elements, viz.:—(1) the value of Victorian cattle slaughtered during the year ; (2) the value of the net increase in the herds (distinguishing milch cows from other cattle) ; (3) the increased value given to imported cattle by being fattened on Victorian pastures. The value of Victorian cattle slaughtered, together with an estimate for the net increase in herds, is supposed to fairly represent the increased value in the year of all the growing cattle of both sexes and at different ages—the Victorian cattle slaughtered being reckoned as the difference between the total numbers slaughtered as recorded, with an addition of 7 per cent. for deficient returns, and the net imports (*i.e.*, excess of imports over exports) from the neighbouring colonies. The following assumptions have been made as to the kinds of cattle slaughtered :—Total slaughtered—67½ per cent. bullocks, 22½ per cent. cows, and 10 per cent. calves ; imports—90 per cent. bullocks, 10 per cent. cows ; resulting—for Victorian cattle only—in the proportions of 65, 24, and 11 per cent. respectively. The number of imported cattle fattened on Victorian pastures have been taken as equivalent to two-thirds of the gross number imported. The returns for 1893–4 show a net increase over those in the preceding year of 14,785 in the number of milch cows, but a decrease of 22,200 in other cattle ; but it must be admitted that the returns, being made up of rough approximations, are not altogether to be relied on. The average values adopted for 1893–4, which have been based on returns of market prices furnished by experts, are :—Fat bullocks, £6 per head ; fat cows, £4 (the two together, in the proportion of 8 to 3, averaging £5 9s.) ; calves fit for butcher, 25s. ; milch cows, £5. The following is the computation for 1893–4, which results in a total value of close on £1,157,000 :—

## GROSS VALUE OF CATTLE PRODUCED, 1893–4.

						£
Victorian Cattle slaughtered—						
Fat	...	...	...	192,242 at £5 9s.	...	1,047,719
Calves	...	...	...	24,294 at £1 5s.	...	30,367
Increase—Milch Cows	...	...	...	14,785 at £5	73,925	
Decrease—Store Cattle	...	...	...	22,200 at £2 15s.	61,050	
						12,875
Imported Cattle fattened in Victoria	(two-thirds of imports)			29,200 at (say) £2 5s.*	...	65,700
Total				...	...	1,156,661

\* This includes charges for interest, transport, losses, grazing, &amp;c.

1361. The following is an estimate of the gross value of pastoral and dairy produce raised on holdings of all descriptions in 1893-4—the average prices of live stock per head having been carefully revised since the last publication :—

VALUE OF PASTORAL AND DAIRY PRODUCE, 1893-4.

Nature of Produce.	Value.
	£
Milk, butter and cheese, as per statement page 747	2,548,945
Estimated value of stock produced in 1893 :—	
Cattle, as per statement on last page	1,156,661
Sheep (without wool), 3,274,681 @ 6s. 6d.	1,064,271
Pigs, 98,449 at £1	98,449
Horses, 23,195 @ £7	162,365
Excess of exports over imports of wool (including wool on skins exported), customs value	2,603,305
Estimated value of wool used in the colony for manufacturing purposes, 1,123,542 lbs. at 9d.	42,133
Total	£7,676,129

NOTE.—The principle on which the numbers of sheep, pigs, and horses produced have been estimated is as follows :—The increase of sheep has been reckoned at 25 per cent. on the total number of both sexes over six months old in the colony, that being the proportionate increase ascertained by Mr. A. J. Skene, the late Surveyor-General of Victoria, 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 intended to represent the average value per head of all the stock of each kind in the colony, young and old; for although the stock born in the year would be only six months old, on the average, when the year terminated, and would, consequently, not be of so high a value as the figures indicate, yet all the growing or fattening stock may be considered to have become more valuable during the year, and the increase of bulk, and consequently of value, of such stock may fairly be set down as part of the year's produce as much as the stock actually born therein, the numbers of the latter being taken as a basis whereto such values may be applied. The quantity of wool manufactured in Victoria has been ascertained from the various woollen mills. No estimate has been made of the value of meat, tallow, lard, hides, skins, horns, hoofs, bones, &c., as this is supposed to be included in the value of stock produced.

1362. In New South Wales in 1893, one-third of the cattle were breeding cattle, whilst the calves branded averaged 71 per cent. of these; and the cattle slaughtered were equivalent in numbers to almost three-fourths of the calves branded. Of the total numbers slaughtered in 1892-3, about 69 per cent. were bullocks, 23 per cent. cows, and 8 per cent. calves. Such information is not collected in Victoria. According to the Government Statistician of New South Wales the value of dairy produce during 1893 was £2,129,300; of cattle, £1,298,530; of sheep, £12,031,970; and of horses, £736,560; making a total of £16,196,360.

1363. Australian-killed fresh meat was delivered in London for the first time in the year 1880. New Zealand fresh meat was first delivered in 1882. 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

\* Report for 1893, page 76.

in the twelve years ended with 1892, by which it will be seen that a large increase took place during the four years ended with 1891, but in 1892 there was a falling-off as compared with 1891:—

AUSTRALIAN AND NEW ZEALAND KILLED FRESH MEAT DELIVERED IN LONDON, 1881 TO 1892.

				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	1892	...	...	...	756,380

1364. The average prices of beef and mutton in London, by the carcass, are quoted as follow for the five years ended with 1892\* :— Price of meat in London.

AVERAGE WHOLESALE PRICE OF BEEF AND MUTTON IN LONDON, 1888 TO 1892.

			Beef per lb.	Mutton per lb.
1888	...	...	3 $\frac{1}{4}$ d. to 6 $\frac{1}{4}$ d.	3 $\frac{3}{4}$ d. to 7 $\frac{3}{4}$ d.
1889	...	...	3 $\frac{1}{2}$ d. „ 7 $\frac{1}{4}$ d.	5d. „ 9d.
1890	...	...	3 $\frac{1}{2}$ d. „ 7 $\frac{1}{4}$ d.	6 $\frac{3}{4}$ d. „ 9 $\frac{1}{2}$ d.
1891	...	...	4 $\frac{1}{4}$ d. „ 7 $\frac{1}{2}$ d.	5 $\frac{1}{2}$ d. „ 8 $\frac{3}{4}$ d.
1892	...	...	4 $\frac{3}{8}$ d. „ 7 $\frac{1}{8}$ d.	5 $\frac{5}{8}$ d. „ 8 $\frac{3}{8}$ d.

1365. Active operations for the destruction of rabbits on Crown lands were first undertaken by the Government in 1880, and from that date to the middle of 1894 sums amounting to £296,553 had been expended with that object.† The following are the amounts spent in each year :— State expenditure on rabbit destruction.

STATE EXPENDITURE ON RABBIT EXTERMINATION, 1880-1894.

			£				£
1879-80	...	...	1,280	1887-8	...	...	20,551
1880-81	...	...	2,600	1888-9	...	...	17,621
1881-2	...	...	12,890	1889-90	...	...	24,860
1882-3	...	...	9,883	1890-91	...	...	37,913
1883-4	...	...	10,063	1891-2	...	...	39,535
1884-5	...	...	22,177	1892-3	...	...	30,595
1885-6	...	...	24,833	1893-4	...	...	20,687
1886-7	...	...	21,065				

NOTE.—These amounts include expenditure on labour, inspectors' salaries, material, cartage, &c., and for working unoccupied Crown lands.

\* *Ibid.*, pages 86 and 87.

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

Rabbit exter-  
mination.

1366. The area more or less infested with rabbits and other vermin throughout the colony is estimated by the Chief Inspector at 37,750,000 acres, of which 1,250,000 acres were unoccupied Crown lands.\* The inspector reports that in 1893 eighty-five convictions under penal clauses of the Act were obtained, and fines and costs awarded amounting to £200; and for charges and expenses under section 17 the sum of £67 has been received. The expenditure for the year amounted to £20,687, viz., £6,549 (as against £13,374 in 1893) for salaries of inspectors; £1,506 paid as subsidy to shire councils, &c., towards cost of destruction of dogs and foxes (councils contributing a like amount); and £12,632 for wages of men working Crown lands, materials, &c. The services of the inspectors were dispensed with on the 30th June, 1893, and the mounted constables appointed in their stead.

Exports of  
rabbit  
skins.

1367. In the seventeen years ended with 1893, nearly 68 millions of rabbit skins, valued at £402,000, 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 1893.

Year.	Rabbit Skins Exported.		Year.	Rabbit Skins Exported.	
	Number.	Value.		Number.	Value.
		£			£
1877 ... ..	700,565	5,790	1887 ... ..	2,663,314	16,294
1878 ... ..	711,844	6,206	1888 ... ..	3,967,533	20,759
1879 ... ..	1,036,372	7,322	1889 ... ..	3,429,015	12,303
1880 ... ..	3,309,408	21,674	1890 ... ..	4,913,351	25,667
1881 ... ..	4,473,108	32,217	1891 ... ..	6,359,210	31,367
1882 ... ..	4,929,432	37,538	1892 ... ..	7,501,864	31,905
1883 ... ..	4,245,596	30,364	1893 ... ..	10,374,154	55,039
1884 ... ..	4,963,371	37,243			
1885 ... ..	3,424,259	23,548			
1886 ... ..	910,609	6,800			
			Total ...	67,913,005	402,036

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

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

1368. 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 eight years, were as follow :—

Rabbits sent to market in Melbourne.

RABBITS AND WILDFOWL SENT TO MELBOURNE MARKET.

Year.	Number of Couples of Rabbits.			Brace of Teal and Duck.		
	Sold.	Condemned.	Total.	Sold.	Condemned.	Total.
1886-7 ...	346,856	4,460	351,316	13,572	...	13,572
1887-8 ...	418,618	2,272	420,890	98,737	365	99,102
1888-9 ...	474,384	13,458	487,842	40,936	349	41,285
1889-90 ...	606,568	11,567	618,135	54,314	1,375	55,689
1890-91 ...	676,796	5,955	682,751	87,728	82	87,810
1891-2 ...	572,426	17,977	590,403	159,437	541	159,978
1892-3 ...	617,773	19,275	637,048	68,770	125	68,895
1893-4 ...	589,700	12,479	602,179	57,889	346	58,235
Total ...	4,303,121	87,443	4,390,564	581,383	3,183	584,566

NOTE.—In 1893-4 there were also 6,304 brace of hares, of which 29 brace were condemned, and the others sold.

1369. In 1894 as compared with 1893 a decrease of 3 occurred in Flour mills. the number of mills—wholly in those employing steam-power—of 272 in the amount of horse-power, of 12 in the number of pairs of stones, and of 24 in the number of hands employed, but there was an increase of 13 in the sets of rollers in use. The wheat operated upon was less by over 43,000 bushels ; and the flour made by 4,434 tons,\* but the other grain operated upon increased by nearly 145,600 bushels. A decrease of £34,655, moreover, took place in the estimated value of machinery, lands, and buildings :—

FLOUR MILLS, 1893 AND 1894.

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.			
1893 ...	84	80	4	3,134	123	521
1894 ...	81	77	4	2,862	111	534
Increase	...	...	...	...	...	13
Decrease	3	3	...	272	12	...

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

## FLOUR MILLS, 1893 AND 1894—continued.

Year ended March.	Number of Hands employed.	Grain operated upon.		Flour made.	Approximate total Value of—		
		Wheat.	Other.		Machinery and Plant.	Lands.	Buildings.
1893 ...	685	bushels. 8,967,198	bushels. 229,277	tons.* 187,908	£ 322,250	£ 87,079	£ 186,536
1894 ...	661	8,923,427	374,861	183,474	319,350	73,070	168,790
Increase Decrease	... 24	... 43,771	145,584 ...	... 4,434	... 2,900	... 14,009	... 17,746

1370. The following was set down as the value of grain operated upon, and of flour, meal, &c., produced in flour mills in 1891, and in the previous census year, 1881 :—

## 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.

Breweries.

1371. The number of breweries returned in 1894 was 1 less than in 1893, although the number employing steam was 1 more, and the horse-power of machinery increased by 22; and there was a general falling-off under all other heads. The number of hands employed decreased by 71, the beer brewed by 1,666,500 gallons, and the value placed upon machinery, plant, land, and buildings by over £89,500 :—

## BREWERIES, 1893 AND 1894.

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.
1893 ...	63	54	9	693	1,040	lbs. 11,680,816	bushels. 705,272	lbs. 751,714
1894 ...	62	55	7	715	969	10,003,280	625,437	660,223
Increase ... Decrease...	... 1	1 ...	... 2	22 ...	... 71	... 1,677,536	... 79,835	... 91,491

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



BREWERIES, 1893 AND 1894—*continued.*

Year ended March.	Beer made.	Approximate Total Value of—		
		Machinery and Plant.	Lands.	Buildings.
	gallons.	£	£	£
1893 ... ..	15,875,073	216,061	624,837	365,858
1894 ... ..	14,208,547	186,690	579,890	350,660
Decrease ...	1,666,526	29,371	44,947	15,198

1372. The values of the sugar, malt, and hops used, and of the beer made, were returned for the last two census years. The following are the figures given :—

Value of materials used and produced.

## BREWERIES, 1881 AND 1891.

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

1373. The beer made in Victoria during 1893-4 amounted to 14,208,547 gallons; and the quantity imported in 1893, after deducting exports, was 314,340 gallons. These numbers give a total consumption of 14,522,887 gallons, or an average of nearly  $12\frac{1}{2}$  gallons per head. The consumption of beer per head was  $14\frac{1}{2}$  gallons in 1892-3,  $16\frac{1}{3}$  gallons in 1891-2,  $17\frac{2}{3}$  gallons in 1890-91,  $19\frac{2}{5}$  gallons in 1889-90, and 20 gallons in 1888-9. It will be noticed that there has been a falling-off in the consumption of over 2 gallons per head since 1892-3, and of  $7\frac{1}{2}$  gallons since 1888-9.

Consumption of beer per head.

1374. 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 :—

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,

\* 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.

Consumption  
of beer in  
various  
countries.

1375. 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:—

ANNUAL CONSUMPTION OF BEER PER HEAD IN VARIOUS COUNTRIES.

	gallons.		gallons.
United Kingdom ... ..	28·74	Tasmania ... ..	10·02
South Australia ... ..	20·04	New Zealand ... ..	9·59
Germany ... ..	19·38	Switzerland ... ..	8·15
Holland ... ..	19·05	Austria-Hungary ... ..	6·83
Victoria (1889-93) ... ..	16·06	France ... ..	4·53
New South Wales ... ..	11·94	Canada ... ..	3·05
United States ... ..	10·74	Sweden ... ..	2·52
Queensland ... ..	10·23		

Distilleries.

1376. Seven distilleries were returned in 1894, or one more than in the previous year. Although an increase also took place in the power of machinery, of 23 in the hands employed, and of £20,170 in the value of plant, the quantity of spirits distilled was less by 71,900 gallons, whilst the value of lands, buildings, and improvements, depreciated by £2,275. The following are the figures for the two years:—

DISTILLERIES, 1893 AND 1894.

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 Improve- ments.
				gallons.	£	£	£
1893 ... ..	6	211	127	378,086	64,000	29,100	66,250
1894 ... ..	7	225	150	306,193	84,170	27,575	65,500
Increase ... ..	1	14	23	...	20,170	...	...
Decrease... ..	...	...	...	71,893	...	1,525	750

NOTE.—There were also in the colony, 42 distillers of brandy from grapes for fortifying wine; and 69 licences to use a still for medical, chemical assay, photographic, or scientific purposes, or for the manufacture of pyroligneous acid, naphtha, and products other than spirits. The quantity of brandy used in 1893 in fortifying wine was 28,778 gallons.

Consumption  
of spirits  
in various  
countries.

1377. 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, 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				

1378. The same number of tobacco manufactories was returned in 1894 as in 1893, although the power employed was changed in one case from manual labour to water-power, and there was a slight increase in the power of machinery. In 1894, as compared with the previous year, a considerable displacement of male in favour of female labour took place in those factories, there being, moreover, a net decrease of 23 hands; and although there was also a falling-off in the number of cigars made by nearly two millions, or by one-third, this was compensated by an increase of 7 per cent. in the output of tobacco, and, owing to the extensive local operations of a large American company, of the extraordinary increase of 23 millions in the number of cigarettes. The machinery and lands depreciated by over £19,000, but the value of buildings was £6,000 higher.

TOBACCO MANUFACTORIES, 1893 AND 1894.

Year ended March.	Number of Establishments.	Amount of Horse-power of Machinery.	Number of Hands employed.		Quantity Manufactured of—				Approximate Total Value of—		
			Males.	Females.	Tobacco.	Snuff.	Cigars.	Cigarettes.	Machinery and Plant.	Lands.	Buildings.
					lbs.	lbs.	No.	No.	£	£	£
1893 ..	13	71	431	157	1,033,643	964	7,771,950	5,340,000	46,976	40,113	43,269
1894 ..	13	75	354	211	1,101,038	512	5,834,500	28,500,000	33,940	46,320	49,300
Increase ..	..	4	..	54	67,395	..	..	23,160,000	..	..	6,031
Decrease ..	..	..	77	..	..	452	1,937,450	..	13,036	6,207	..

NOTE.—In 1893-4, three of the establishments employed steam, one gas, one water-power, and eight manual labour.

\* 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.

Value of  
raw and  
manufac-  
tured  
materials.

1379. According to the returns of the last two censuses the value of the materials used and articles produced in tobacco manufactories was as follows in 1881 and 1891:—

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

Brickyards  
and  
potteries.

1380. 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 1894, as compared with 1893, by 35—or by one-fifth. All the main items under this industry, moreover, show decreases varying from 10 to 40 per cent. The hands employed fell off by 449, or 33 per cent.; the number of bricks made by nearly 32 millions, or by 40 per cent.; the value of pottery by 19 per cent.; and the value of the plant, lands, and buildings by £102,952, or by 21 per cent. These are in addition to still higher decreases in the previous twelve months. The following are the comparative figures for the two years:—

#### BRICKYARDS AND POTTERIES, 1893 AND 1894.

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.			
1893 ...	173	175	111	48	76	49	1,878	1,346
1894 ...	138	158	85	29	55	54	1,384	897
Increase Decrease	... 35	... 17	... 26	... 19	... 21	5 ...	... 494	... 449

Year ended March.	Number of Bricks made.	Approximate Total Value of—			
		Pottery made.	Machinery and Plant.	Lands.*	Buildings.
1893 ...	80,172,000	£ 48,535	£ 153,298	£ 177,126	£ 154,268
1894 ...	48,467,490	39,349	125,900	131,130	124,710
Decrease ...	31,704,510	9,186	27,398	45,996	29,558

\* The figures in this column apply to purchased lands only. Twenty-three of the brickyards in each year were on Crown lands.

1381. The establishments for tanning and wool-washing were less numerous by 10, the number of tan-pits by 193, whilst the horse-power of the machinery was lower by 16 in 1894 than in 1893; but an increase of 72 took place in the hands employed, of 5 per cent. in the number of hides, and of 14 per cent. in the number of skins tanned; also an increase of 13 per cent. in the number of skins stripped of wool, but a decrease of 9 per cent. in the quantity of other wool washed. The returns also show a decrease of £45,877 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, 1893 AND 1894.

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.			
1893 ... ..	118	65	3	2	11	37	834	1,492	3,330
1894 ... ..	108	60	2	1	12	33	818	1,564	3,137
Increase ... ..	...	...	...	...	1	...	...	72	...
Decrease ... ..	10	5	1	1	...	4	16	...	193

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.
1893 ... ..	332,130	1,354,048	2,085,911	9,676,276 lbs.	£ 105,034	£ 85,288	£ 122,600
1894 ... ..	348,172	1,548,398	2,360,332	8,843,608	98,890	65,710	102,445
Increase ... ..	16,042	194,350	274,421	...	...	...	...
Decrease ... ..	...	...	...	832,668	6,144	19,578	20,155

\* The figures in this column apply to purchased land only. Three of the establishments in 1893, and two in 1894, were on Crown lands. In these cases no valuation of land is given.

Value of  
materials  
used and  
produced.

1382. An estimate of the value of the materials used and articles produced in tanneries, fellmongeries, and wool-washing establishments was obtained in the last two census years. The following are the figures :—

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

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

Wattle  
cultivation.

1383. The provisions of the Wattles Act, referred to in previous issues of this work,\* allowing of the selection of 1,000 acres under lease for 21 years for wattle cultivation have not been largely availed of, chiefly, no doubt, owing to the difficulty in finding available Crown lands suitable for wattle cultivation. During the year 1893 fourteen applications for leases over an area of 10,793 acres were received ; but only four leases for an area of 658 acres were granted during the year. It is estimated that at least 14,728 tons of Victorian bark, valued at £92,453, were produced in 1893 ; of which 10,900 tons, of an estimated value of £65,200, were used in tanneries ; and 3,828 tons, valued at £27,253, were exported.

Forest saw-  
mills.

1384. 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, 1893 AND 1894.

	1893.	1894.
Number of forest saw-mills ...	143	129†
Number using steam-power ...	140	126
Number using water-power ...	3	3
Horse-power of steam engines ...	2,253	1,791
Hands employed ...	1,626	1,329
Superficial feet of timber produced ...	52,975,500	43,295,478
Value of timber produced ...	£211,902	£175,702
„ machinery and plant ...	£143,430	£121,890
„ lands ...	£22,425‡	£9,560‡
„ buildings ...	£27,318	£25,610

Woollen  
mills.

1385. The number of woollen mills returned was the same in 1894 as in 1893, but an increase took place under all the particulars relating to that industry, except the number of shawls made and the value of lands, machinery, and plant. Whilst there was a marked increase in the number of spindles, the power of machinery, and the hands

\* See *Victorian Year-Book* for 1893, Vol. II., par. 469.

† Including one timber-seasoning works.

‡ In 1893, 69 of these mills, and in 1894, 61 were upon Crown lands. In these cases no valuation of the land is given.

employed, there was also an increase of 6 per cent. in the quantity of wool used ; and of 21 per cent. in the number of yards of tweed, cloth, and flannel made ; and of nearly £14,000 in the value of buildings:—

WOOLLEN MILLS, 1893 AND 1894.

Year ended March.	Number of Woollen Mills.	Number of Spindles.	Horse-power of Machinery.	Quantity of Wool used.	Goods manufactured : Quantity of—		
					Tweed, Cloth, Flannel, &c.	Blankets.	Shawls.
1893 ...	7	18,178	555	lbs. 1,059,458	yards. 985,177	pairs. 3,117	No. 1,070
1894 ...	7	20,418	601	1,123,542	1,196,832	3,761	752
Increase	...	2,240	46	64,084	211,655	644	...
Decrease	...	...	...	...	...	...	318

Year ended March.	Hands employed.		Approximate Total Value of—		
	Males.	Females.	Machinery and Plant.	Lands.	Buildings.
1893 ...	292	260	£ 156,472	£ 7,331	£ 40,656
1894 ...	321	318	140,277	6,680	54,320
Increase	29	58	...	...	13,664
Decrease	...	...	16,195	651	...

1386. 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.

1387. Thirty-five soap and candle works, or one less than in 1893, were returned in 1894, although the hands employed increased by 39, and the horse-power of machinery by 41. The weight of soap made in the year under review was more by 5,263 cwt. than that in the previous year, but the weight of candles made less by 5,226 cwt., and

Value of articles used and produced.

Soap and candle works.

of soda crystals less by 2,100 cwt.; whilst the higher valuation placed upon the lands and buildings exceeded by over £8,400 the lower valuation of the plant :—

### SOAP AND CANDLE WORKS, 1893 AND 1894.

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.
1893 ...	36	26	1	9	652	375	cwt. 141,763	cwt. 62,780	£ 100,130	£ 95,035	£ 60,220
1894 ...	35	20	1	14	693	414	147,026	57,554	95,010	96,290	72,500
Increase	...	...	...	5	41	39	5,263	...	...	1,255	12,280
Decrease	1	6	...	...	...	...	...	5,226	5,120	...	...

NOTE.—In addition to the other manufactures, 17,632 cwt. of soda crystals were made in 1893 and 15,540 cwt. in 1894.

1388. 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 material used ...	£288,340	£229,903
„ articles produced ...	450,924	348,316
Increased value ...	£162,584, or 56 per cent.	£118,413, or 52 per cent.

1389. The number of butter and cheese factories returned in 1893-4 was 133—of which 111 were exclusively for butter, 17 for cheese only, and 5 for both products—as compared with 109 in the previous year. The great majority of the factories employed steam-power; and as compared with the previous year the horse-power of engines increased by 10 per cent., and the hands employed by 156, or 43 per cent., whilst the capital invested in machinery and plant, lands, and buildings was greater by over £49,000, or by about two-sevenths. Moreover the quantity of factory-made butter increased by nearly 5,000,000 lbs., and of cheese by 160,000 lbs. In addition to the output of the factories 10,105,800 lbs. of butter and 2,642,137 lbs. of cheese were made on farms, which are not returned as factories, although they employed in

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

Value of articles used and produced.

Butter and cheese factories.



1890 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, 1893 AND 1894.

Year ended March.	Number of Factories.	Establishments employing—					Horse-power of Steam Engines.
		Gas-power.	Water-power.	Steam-power.	Horse-power.	Manual Labour.	
1893 ... ..	109	...	...	102	2	5	896
1894 ... ..	133	2	1	119	4	7	981
Increase ...	24	2	1	17	2	2	85

Year ended March.	Hands Employed.		Quantity made.		Approximate Total Value of—		
	Males.	Females.	Butter.	Cheese.	Machinery and Plant.	Lands. †	Buildings.
			lbs.	lbs.	£	£	£
1893 ... ..	332	28	13,189,766	946,531	88,519	29,230	56,349
1894 ... ..	478	38	18,054,641	1,106,418	107,610	45,600	70,000
Increase ...	146	10	4,864,875	159,887	19,091	16,370	13,651

NOTE.—In connexion with the above there were in 1894 139 creameries, or collecting establishments, employing 175 hands, with machinery and plant valued at £45,460, and lands and buildings valued at £18,440. In 1893 there were 120 creameries employing 135 males and 6 females, with plant valued at £37,910, and lands and buildings valued at £17,290.

1390. The following particulars relating to bacon and ham curing establishments were returned in the last two years. It will be noticed that in 1893–4, as compared with the previous year, there was a net increase of 3 in the number of establishments; but a decrease of 6 in the number of hands employed, of nearly a million pounds in the quantity of bacon and ham cured, and of £25,490 in the value of machinery, lands, and buildings :—

Bacon and ham curing works.

BACON AND HAM CURING ESTABLISHMENTS, 1893 AND 1894.

Year ended March.	Establishments employing—				Horse-power of Steam Engines.	Hands employed.	
	Steam Machinery.	Wind Machinery.	Manual Labour.	Water-power.		Males.	Females.
1893 ... ..	14	2	8	...	123	165	5
1894 ... ..	15	...	11	1	111	160	4
Increase ...	1	...	3	1	...	...	...
Decrease...	...	2	...	...	12	5	1

\* See also paragraphs 1355 to 1359 ante.

† Thirteen of these establishments in 1893, and ten in 1894, were on Crown lands. In these cases no valuation of the land has been given.

BACON AND HAM CURING ESTABLISHMENTS, 1893 AND 1894—  
*continued.*

Year ended March.	Bacon and Ham cured.	Approximate Total Value of—		
		Machinery and Plant.	Lands.*	Buildings.
	lbs.	£	£	£
1893 ... ..	6,767,425	11,825	29,050	23,400
1894 ... ..	5,823,031	11,575	8,300	18,910
Decrease ... ..	944,394	250	20,750	4,490

NOTE.—In addition to the bacon and hams cured in factories, 2,536,293 lbs. were returned as having been cured on farms, making a total for the colony of 3,731 tons 16 cwt. 92 lbs.

1391. 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 226 than those returned in 1893, the falling-off having occurred in those employing all kinds of power except water, but more especially manual labour but there was a slight increase in the horse-power of machinery. A large reduction (9 per cent.) took place in the number of hands employed—3,102 in the case of males and 271 in the case of females; whilst the value of machinery, lands, and buildings was lower by nearly £1,048,500 as compared with the previous year. The totals of the two years are subjoined:—

MANUFACTORIES, WORKS, ETC., 1893 AND 1894.

(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, &c.	Manufactories, &c., employing—						Horse-power of Machinery.
		Steam.	Water.	Gas.	Wind.	Horses.	Manual Labour only.	
1893 ... ..	2,452	1,029	11	392	3	35	982	20,616
1894 ... ..	2,226	986	15	386	...	25	814	21,145
Increase	...	...	4	...	...	...	...	529
Decrease	226	43	...	6	3	10	168	...

\* Two of these establishments in 1893 and 1894 were on Crown lands. In these cases no valuation of the land has been given.

Other manu-  
factories,  
works, &c.

MANUFACTORIES, WORKS, ETC., 1893 AND 1894—*continued.*

Year ended March.	Number of Hands employed.		Approximate Total Value of—		
	Males.	Females.	Machinery and Plant.	Lands.*	Buildings.
1893 ... ..	30,190	6,797	£ 5,708,466	£ 2,752,676	£ 2,945,392
1894 ... ..	27,088	6,526	5,491,561	2,024,649	2,841,845
Decrease ...	3,102	271	216,905	728,027	103,547

NOTE.—Exclusive of stone-breaking and tar-pavement works, which numbered 17 in 1893 and 15 in 1894. These works being carried on in connexion with quarries, it is found impossible to separate them therefrom. See table following paragraph 1399 *post.*

1392. 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 1893-4 the total number of establishments decreased by 275, and the hands employed were fewer by 3,719, those of them which use steam or gas decreased by 80, the amount of horse-power by 126, and the machinery, lands, and buildings were set down as lower in value by nearly 1½ million sterling. The returns of the two years are contained in the following table:—

Manufac-  
tories of  
all descrip-  
tions.

MANUFACTORIES, WORKS, ETC., 1893 AND 1894.

(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, &c.)

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.
1893 ... ..	2,952	1,712	28,644	43,192	£ 14,756,321
1894 ... ..	2,677	1,632	28,518	39,473	13,457,172
Decrease ...	275	80	126	3,719	1,299,149

1393. 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 1893-4. 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,

Names of  
manufac-  
tories.

\* 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 179 in 1893 and 182 in 1894.

† 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 207 in 1893 and 190 in 1894.

plant, lands, 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 1894.

Description of Manufactory, Work, &c.	1890-91.			1893-4.		
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands employed.	Approximate Value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
<b>BOOKS AND STATIONERY.</b>		£	£			£
Account-book manufactories, manufacturing stationers	11	152,360	248,900	12	935	276,790
Printing and lithographic printing establishments*	162	459,858	1,363,086	176	3,546	823,320
Photo-lithographic works ...	1	...	...	1	...	...
<b>MUSICAL INSTRUMENTS.</b>						
Organ-building establishments	3	6,300	10,100	3	27	6,200
Pianoforte manufactories ...	3	750	1,900	2	5	980
<b>CARVING FIGURES, ETC.</b>						
Wood carving and turnery works	15	3,595	9,710	11	41	11,290
<b>DESIGNS, MEDALS, AND DIES.</b>						
Die-sinkers, engravers, medallists, trade-mark makers	8	5,635	14,149	8	57	16,210
<b>PHILOSOPHICAL INSTRUMENTS, ETC.</b>						
Electric lighting apparatus manufactories	3	1,420	3,450	2	6	2,200
Philosophical instrument manufactories	2	540	900	3	17	2,060
<b>SURGICAL INSTRUMENTS.</b>						
Surgical instruments, truss—manufactories	4	1,056	4,806	4	20	5,420
<b>ARMS, AMMUNITION, ETC.</b>						
Blasting powder, cartridge, dynamite, &c.—manufactories	6	14,804	27,070	5	69	56,670
Fuse manufactory ...	1	...	...	1	...	...
Shot manufactories ...	2	1,600	2,184	1	...	...

\* Including paper-bag manufactories.

## MANUFACTORIES, WORKS, ETC, 1891 AND 1894—continued.

Description of Manufactory, Work, &c.	1890-91.		1893-4.			
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands employed.	Approximate Value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
<b>MACHINES, TOOLS, AND IMPLEMENTS.</b>						
Agricultural implement manufactories	71	£ 263,714	£ 692,125	77	946	£ 151,705
Boiler and pipe-covering manufactory	1	...	...	1	...	...
Cutlery, tool—manufactories ...	9	10,350	26,110	6	33	11,950
Domestic implement* manufactories	6	4,500	14,400	3	32	4,680
Iron foundries and engineering establishments †	190	1,166,516	2,480,941	165	4,175	1,304,565
Nail manufactories ...	4	15,810	22,692	4	42	13,460
Pattern-makers ...	5	1,000	5,470	2	4	1,670
Sheet-iron and tin works ...	53	119,644	240,000	41	440	85,070
<b>CARRIAGE AND HARNESS.</b>						
Carriage lamp, &c.—manufactories	2	1,500	3,800	2	8	2,350
Coach, waggon, &c.—manufactories	205	238,096	506,625	196	1,576	251,445
Perambulator manufactories ...	2	620	1,869	2	13	2,850
Saddle, harness—manufactories	73	80,423	154,076	51	422	58,875
Saddle-tree, saddlers' ironmongery, &c.—manufactories	3	1,350	4,400	2	13	2,070
Whip manufactories ...	3	2,610	7,400	2	14	1,170
<b>SHIPS AND BOATS.</b>						
Ship, boat—builders ...	10	3,999	10,957	7	28	9,350
Ships' wheels, blocks, &c.—manufactory	1	...	...	1	...	...
Graving-docks, patent slips, &c.	7	...	...	7	108	452,530
<b>HOUSES, BUILDINGS, ETC.</b>						
Architectural modelling works ‡	13	4,557	11,788	4	20	11,550
Enamelled mantelpieces manufactories	5	8,820	18,800	1	...	...
Lime and cement works ...	34	14,361	46,868	21	166	34,620
Venetian blind manufactories ...	9	16,293	21,866	6	26	8,260
<b>FURNITURE.</b>						
Bedding, flock, and upholstery—manufactories	33	89,532	118,859	17	208	50,950
Bedstead manufactory ...	1	...	...	...	...	...
Cabinet works, including billiard-table makers	71	141,589	321,892	48	589	115,010
Earth-closet manufactories ...	2	2,200	7,495	2	17	3,000
Iron-safe manufactories ...	2	1,600	4,800	3	13	4,420
Looking-glass manufactories ...	4	13,968	21,200	3	19	4,740
Picture-frame makers, &c. ...	9	13,582	17,248	8	43	9,390

\* Including bellows, churn, washing-machine, &amp;c., makers.

† Including brass-founders.

‡ Including ventilator manufactories.

## MANUFACTORIES, WORKS, ETC., 1891 AND 1894—continued.

Description of Manufactory, Work, &c.	1890-91.			1893-4.		
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands employed.	Approximate Value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
<b>CHEMICALS.</b>						
Chemical works ... ..	15	£ 57,080	£ 151,362	14	193	£ 86,500
Dye works ... ..	5	238	1,397	6	71	14,120
Essential oil manufactories ...	12	6,660	19,090	14	101	8,380
Ink, blacking, blue, washing powder, &c.—manufactories	7	43,658	79,950	5	129	15,100
Japanning works ... ..	1	...	...	1	...	...
Paint, varnish—manufactories	2	6,990	17,000	3	10	6,150
Printing ink manufactories ...	2	4,000	8,500	3	9	6,700
Salt works ... ..	4	250	1,500	7	53	22,980
<b>TEXTILE FABRICS.</b>						
Woollen mills ... ..	7	94,932	170,687	7	639	201,277
<b>DRESS.</b>						
Boot manufactories ... ..	92	476,366	844,202	81	3,307	185,170
Clothing manufactories ... ..	105	621,671	1,127,887	83	4,239	203,776
Fur manufactories ... ..	8	20,470	37,665	4	31	6,970
Hat, cap—manufactories ... ..	17	44,569	93,058	14	530	55,200
Hosiery manufactories ... ..	3	6,160	10,145	3	18	5,090
Oilskin, waterproof clothing—manufactories	5	24,620	48,800	4	143	7,150
Umbrella and parasol manufactories	10	37,542	59,620	8	117	11,430
<b>FIBROUS MATERIALS.</b>						
Rope, twine, mat, bag, sack—manufactories	13	161,356	227,122	11	259	83,210
Sail, tent, tarpaulin—manufactories	9	70,162	85,431	6	34	6,580
<b>ANIMAL FOOD.</b>						
Bacon-curing establishments ...	...	...	...	27	164	38,785
Butter factories * ... ..	32	80,549	118,486	133	516	223,660
Cheese factories * ... ..	20	23,595	43,856			
Butterine factory ... ..	...	...	...	1	...	...
Meat-preserving establishments	24	200,530	281,100	4	152	10,480
Milk-condensing works ... ..	1	...	...	...	...	...
<b>VEGETABLE FOOD.</b>						
Biscuit manufactories ... ..	7	157,816	283,716	7	627	131,850
Confectionery works ... ..	13	79,920	147,450	13	383	51,870
Flour-mills ... ..	104	1,620,125	2,043,604	81	661	561,210
Jam, pickle, vinegar, sauce—manufactories	17	77,624	137,069	21	358	54,080
Macaroni works ... ..	1	...	...	1	...	...
Maizena, oatmeal, starch—manufactories †	4	129,200	153,800	5	201	95,010

\* 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 1389 ante.

† Some these factories also make coffee, cocoa, spice, &c.

## MANUFACTORIES, WORKS, ETC., 1891 AND 1894—continued.

Description of Manufactory, Work, &c.	1890-91.		1893-4.			
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands employed.	Approximate Value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
<b>DRINKS AND STIMULANTS.*</b>						
Aërated waters, gingerbeer, liqueur, &c.—works	160	£ 195,997	£ 365,930	156	783	£ 291,565
Breweries ... ..	68	491,932	971,489	62	969	1,117,240
Coffee, chicory, cocoa, chocolate, mustard, spice—works †	13	35,587	60,322	9	119	57,130
Distilleries ... ..	6	41,469	106,937	7	150	177,245
Malthouses ... ..	16	166,515	217,596	16	98	156,230
Sugar, treacle—refineries ...	3	435,000	575,000	4	451	253,750
Tobacco, cigars, snuff—manufactories	13	118,070	239,627	13	565	129,560
<b>ANIMAL MATTERS.</b>						
Boiling-down, tallow-rendering—establishments	14	70,578	92,252	19	111	21,400
Bone-mills and bone manure manufactories	11	27,955	53,380	16	101	31,790
Brush manufactories ...	8	23,680	47,750	7	116	14,550
Curled-hair manufactories ...	4	5,000	10,400	4	34	6,470
Glue, oil, catgut—manufactories	3	3,221	5,246	2	24	12,000
Catgut manufactory ...	1	...	...			
Leather-belting (machinery) manufactories	2	11,372	14,972	3	12	4,950
Morocco, fancy leather—manufactories	5	6,925	16,700	4	28	3,480
Portmanteau, trunk—manufactories	7	3,620	7,498	3	8	2,020
Soap, candle—works ...	33	229,903	348,316	35	414	263,800
Tanneries, fellmongeries, and woolwashing establishments	132	793,679	1,226,853	108	1,564	267,045
<b>VEGETABLE MATTERS.</b>						
Bark-mills ... ..	6	26,700	37,100	6	33	5,360
Basket-making works ...	11	4,940	18,182	4	43	5,800
Broom manufactories ‡	3	16,200	20,100	2	52	7,700
Chaff-cutting, corn-crushing—works §	220	544,314	738,941	201	824	207,055
Cooperage works ... ..	30	23,667	47,405	26	172	34,440
Cork manufactories ... ..	3	4,400	9,164	3	6	2,330
Fancy-box, hat-box—manufactories	6	7,940	16,763	5	95	11,409
Paper manufactories ...	2	27,500	61,000	3	255	132,800
Straw-board manufactory ...	1	...	...			

\* Places where wine is made are not included.

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

‡ 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-cutting machines in use on farms.

## MANUFACTORIES, WORKS, ETC., 1891 AND 1894—continued.

Description of Manufactory, Works, &c.	1890-91.		1893-4.			
	Number of Establishments.	Approximate Value of—		Number of Establishments.	Hands employed.	Approximate Value of Machinery, Plant, Land, and Buildings.
		Materials used.	Articles produced.			
VEGETABLE MATTER—continued.		£	£			£
Saw-mills, moulding-mills, joinery, &c.—works	142	1,127,857	2,181,727*	56	1,075	411,030
Saw-mills—forest ... ..	179	...	418,571	129	1,329	157,060
COAL AND LIGHTING.						
Electric light works ... ..	4	4,100	18,500	6	104	144,310
Gasworks ... ..	30	288,967	628,867	41	1,020	2,735,641
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	138	897	381,740
Cement tile works ... ..	1	...	...	...	...	...
Filter manufactories ... ..	2	2,000	4,000	2	8	2,400
Glass manufactories—works ...	6	7,190	42,000	6	256	29,650
Stone and marble sawing, polishing—monumental works	54	109,558	228,187	37	321	54,185
WATER. †						
Ice manufactories ... ..	6	4,536	8,354	7	38	75,870
Hydraulic-power works ... ..	...	...	...	1	...	...
GOLD, SILVER, AND PRECIOUS STONES.						
Goldsmiths, jewellers, and electroplaters (manufacturing)	26	142,447	190,675	20	198	44,900
Royal mint ... ..	1	...	...	1	51	68,000‡
METALS OTHER THAN GOLD AND SILVER.						
Brass and copper works—gasalier manufactories	26	29,446	65,885	20	202	54,240
Lead, pewter, and zinc—works	4	24,688	47,032	3	17	36,200
Pyrites works ... ..	1	...	...	1	...	...
Smelting works ... ..	3	14,122	18,300	2	56	17,350
Wire-working establishments ...	12	9,670	24,256	9	78	11,990
Total where only one return was received §	...	11,163	22,007	...	173	125,939
Total ... ..	3104	12,006,233	22,390,251	2677	39,473	13,457,172

\* 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 1289 *et seq.*

‡ 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.



1394. In 1891, which was the year of the census, an inquiry was made respecting the value of the materials used and articles produced in all manufactories. This inquiry was responded to in most instances, and in cases where the information was not given the value has been estimated upon the same proportions as obtained in similar works respecting which information was supplied. The 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 materials used and produced.

VALUE OF RAW AND MANUFACTURED MATERIALS, 1881 AND 1891.

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

1395. By comparing the particulars respecting these manufactories, as returned in 1894 and in the first year of each of the two previous quinquennia, a considerable increase took place under all the principal heads between the first and second periods, but a falling-off between the second and third periods under all heads except the horse-power of machinery. It should be borne in mind, however, in comparing the results that the year 1889 was one of inflation, and 1894 one of general depression. The number of establishments increased by 7 per cent. between 1884 and 1889, but fell off by 10 per cent. between 1889 and 1894; the horse-power of steam-engines increased by 42 and 14 per cent. in those intervals respectively; the hands employed increased by 16 per cent. between the first and second periods, but were fewer at the last than at the first period by 16 per cent., and fewer than at the middle period by 28 per cent.; and the value of machinery, plant, lands, and buildings increased by 57 per cent. in the first, but diminished by 9 per cent. in the second, interval. It would appear that there is a growing tendency for machine power to displace manual labour, for, whereas only 45 $\frac{3}{4}$  per cent. of the establishments employed steam or gas power in 1884, nearly 61 per cent. did so in 1894; moreover the proportion of horse-power of

Summary of manufactories at three periods.

engines to every hand employed rose from .38 in 1884 to .45 in 1889, and to as high as .73 in 1894. The following is the comparison referred to :—

SUMMARY OF MANUFACTORIES, WORKS, ETC., 1884, 1889,  
AND 1894.

Year ended March.	Total Number of Establish- ments.	Number of Establish- ments using Steam or Gas Engines.	Horse-power of Engines.	Number of Hands employed.	Approximate Value of Lands, Buildings, Machinery, and Plant.
1884 ...	2,777	1,272	17,602	46,857	£ 9,414,527
1889 ...	2,975	1,639	24,938	54,488	14,792,311
1894 ...	2,677	1,632	28,518	39,473	13,457,172

1396. The persons returned at the census of 1891 as engaged in manufacturing industries, including Chinese, but exclusive of Aborigines, numbered 91,710,\* viz., 63,147 males and 28,563 females. These include not only the individuals working in factories properly so called, but those employed in work-rooms, shops, and other establishments of a less important character than those which the persons who collect statistics from year to year are called upon to visit. The census figures, which are as follow, must therefore considerably exceed those representing the hands employed in factories as given in previous tables :—

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

Working in—	Males.	Females.	Total.
Books and publications ... ..	4,228	507	4,735
Musical instruments ... ..	165	...	165
Prints, pictures, and art materials ...	316	14	330
Ornaments and minor art products ...	823	91	914
Equipment for sports and games ...	21	...	21
Types, designs, medals, and dies ...	293	57	350
Watches, clocks, and scientific instruments	768	11	779
Surgical instruments and appliances ...	16	3	19
Arms and explosives ... ..	66	21	87
Machinery, implements, and tools ...	4,845	2	4,847
Carriages and vehicles ... ..	3,693	13	3,706
Harness, saddlery, and leatherware ...	1,839	14	1,853
Ships, boats, and their equipment ...	588	...	588
House and shop fittings ‡ ... ..	396	1	397

\* This differs from the number shown last year (viz., 96,013), in consequence of the reduction of 7,475 painters, plumbers, and locksmiths, and the addition of 316 Chinese and of 2,856 manufacturers undefined.

† Exclusive of 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.

‡ Viz., venetian blind makers, but exclusive of painters, plumbers, and locksmiths—included in the corresponding table in the last issue of this work.

Persons  
engaged in  
manufac-  
tories, 1891.

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

Working in—	Males.	Females.	Total.
Furniture ... ..	2,408	224	2,632
Chemicals and by-products ... ..	203	50	253
Textile fabrics ... ..	569	362	931
Dress ... ..	10,074	26,077	36,151
Fibrous materials and fabrics ... ..	298	59	357
Animal food ... ..	499	14	513
Vegetable food ... ..	4,656	302	4,958
Drinks, stimulants, and narcotics ... ..	2,033	113	2,146
Animal matters ... ..	1,562	12	1,574
Vegetable matters ... ..	4,504	49	4,553
Fodder (chaffcutter, &c.) ... ..	197	1	198
Paper ... ..	131	227	358
Stone, clay, earthenware, and glass † ... ..	3,105	18	3,123
Gold, silver, and precious stones ... ..	628	21	649
Metals other than gold and silver ... ..	10,620	25	10,645
Fuel, lights, and electric and hydraulic energy ... ..	1,020	2	1,022
Manufacturers undefined ... ..	2,583	273	2,856
<b>Total ... ..</b>	<b>63,147</b>	<b>28,563</b>	<b>91,710‡</b>

1397. The difference between the total number shown by this table, and that of “hands employed” in the manufactories as returned by the collectors of statistics about the same period, *i.e.*, in 1890–91, is 35,341. This is to be accounted for by the circumstance that the census returns embrace every individual blacksmith, tinsmith, saddler, cabinet-maker, tailor, dressmaker, baker, and such like; whereas the latter include, as already stated, only the workers employed in the principal establishments. It should be pointed out, moreover, that the difference is really greater than shown, for there is no doubt that some of the manufacturers include, as “hands employed,” clerks and accountants, salesmen, engineers and firemen, carters, labourers, and others, attached to their establishments, who are not actually engaged in manufacturing; whereas the census figures are restricted to manufacturers pure and simple. The following are the numbers returned according to the different methods:—

Hands employed in manufactories according to census and annual returns.

PERSONS EMPLOYED IN MANUFACTURING INDUSTRIES, ACCORDING TO THE CENSUS 1891, AND THE ANNUAL RETURNS FOR 1890–91.

Enumerated in 1891 ... ..	91,710
Hands employed in principal manufactories, 1890-91	56,369
<b>Difference ... ..</b>	<b>35,341</b>

\* See footnote (†) previous page.

† Exclusive of quarries.

‡ See footnote (\*) previous page.

Manufacturers in Australasian Colonies.

1398. According to the census returns of the Australasian Colonies, the number of persons engaged in manufacturing in Victoria are more numerous, and bear a higher proportion to the population, than do the corresponding classes in any of the other colonies. Next to Victoria, the highest position is occupied by New Zealand, and the next by New South Wales, Tasmania being at the bottom of the list. The number and proportion in each colony were as follow:—

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

Colony.	Manufacturers.	
	Number.	Proportion to the Population.
		Per cent.
1. Victoria ... ..	91,710†	8·48
2. New Zealand ... ..	42,893	6·90
3. New South Wales ... ..	74,559	6·65
4. Western Australia ... ..	2,769	5·64
5. Queensland ... ..	21,795	5·56
6. Tasmania ... ..	7,460	5·10

Stone quarries.

1399. The stone quarries, stone-crushing and tar-pavement works returned in 1894 were fewer by 43 than in 1893, and the hands employed showed a falling-off of 387. The output of stone fell off by nearly 192,000 cubic yards, and a decrease also appears in the number and power of steam-engines, and in the value of stone raised, plant, lands, and buildings. The following are the figures for the two years:—

STONE QUARRIES, † ETC., 1893 AND 1894.

Year ended March.	Number of Quarries, &c.	Cubic Yards of Stone raised.				Steam-engines in use.	
		Bluestone.	Slate and Flagging.	Sandstone and Freestone.	Granite.	Number.	Horse-power.
1893 ...	103	367,738	820	5,403	1,900	23	470
1894 ...	60	181,419	450	400	1,750	16	316
Decrease ...	43	186,319	370	5,003	150	7	154

\* Exclusive of Aborigines.

† Including manufacturers undefined—formerly omitted.

‡ Including stone-crushing and tar-pavement works.

STONE QUARRIES,\* ETC., 1893 AND 1894—continued.

Year ended March.	Number of Hands employed.	Approximate Total Value of—			
		Stone raised.	Machinery and Plant.	Lands.†	Buildings.
1893 ...	729	£ 75,367	£ 80,403	£ 79,570	£ 15,048
1894 ...	342	40,302	42,865	30,060	11,014
Decrease ...	387	35,065	37,538	49,510	4,034

1400. According to the estimate of the Mining Department, the gold raised in Victoria in 1893 was 671,126 ozs., which is more than the quantity obtained in 1892 by 16,670 ozs., representing, at £4 per oz., an increased value of £66,680.‡ It is probable, however, that these estimates are under the mark, but to what extent it is difficult to ascertain. The following are the figures for the two years:—

Gold raised, 1892 and 1893.

QUANTITY AND VALUE OF GOLD RAISED IN 1892 AND 1893.

Year.	Gold raised in Victoria.	
	Estimated Quantity.	Value, at £4 per oz.
1892 ...	ozs. 654,456	£ 2,617,824
1893 ...	671,126	2,684,504
Increase ...	16,670	66,680

1401. 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, 1892 to 1894. In the last-named year the yield was the largest since 1885. The subjoined figures give an estimate of the quantity of gold raised in 1871 and each subsequent year:—

Gold raised, 1871 to 1894.

ESTIMATED QUANTITY OF GOLD RAISED, 1871 TO 1894.

1871 ...	ozs. 1,355,477	1883 ...	ozs. 810,047
1872 ...	1,282,521	1884 ...	778,618
1873 ...	1,241,205	1885 ...	735,218
1874 ...	1,155,972	1886 ...	665,196
1875 ...	1,095,787	1887 ...	617,751
1876 ...	963,760	1888 ...	625,026
1877 ...	809,653	1889 ...	614,839
1878 ...	775,272	1890 ...	588,561
1879 ...	758,947	1891 ...	576,400
1880 ...	829,121	1892 ...	654,456
1881 ...	858,850	1893 ...	671,126
1882 ...	898,536	1894 ...	673,680

\* Including stone-crushing and tar-pavement works.

† The figures in this column apply to purchased land only; 17 of the stone quarries in 1894, and 26 in 1893, were on Crown lands, and in these cases no valuation of the land has been given.

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

Gold raised,  
1851 to 1893.

1402. Carrying on to the end of 1893 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 1,366,000 ozs., which is more than twice the quantity raised in 1893 :—

ESTIMATED TOTAL QUANTITY AND VALUE OF GOLD RAISED IN VICTORIA, 1851 TO 1893.

Gold raised in Victoria.		Estimated Quantity.	Value, at £4 per oz.
Prior to 1893	...	ozs. 58,070,215	£ 232,280,860
During 1893	...	671,126	2,684,504
Total	...	58,741,341	234,965,364

Gold raised  
in Austral-  
asian  
Colonies.

1403. Since the first discovery, in 1851, of gold in Australasia, more than  $92\frac{3}{4}$  million ozs. have been raised in the various colonies, nearly two-thirds of which was got in Victoria. In 1893 Victoria still kept the lead, although it was closely followed by Queensland. 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 seven or eight years a considerable quantity of gold has been raised in that colony on the Kimberley, Murchison, and Yilgarn\* (Coolgardie) gold-fields, no reliable information regarding it has been obtained :—

GOLD RAISED IN AUSTRALASIAN COLONIES, 1851 TO 1893.

Period.	Victoria.	New South Wales.	Queensland.	South Australia.	Tasmania.	New Zealand.
	ozs.	ozs.	ozs.	ozs.	ozs.	ozs.
1851 to 1855	11,218,772	1,920,200	...	...	...	...
1856 to 1860	12,712,946	1,360,763	4,127	...	...	35,845
1861 to 1865	8,341,464	2,233,001	52,580	...	...	2,288,088
1866 to 1870	7,105,820	1,309,911	512,803	...	3,504	3,218,916
1871 to 1875	6,130,962	1,612,227	1,319,952	24,685	25,296	2,412,446
1876 to 1880	4,136,753	639,435	1,668,819	59,910	154,883	1,596,899
1881 to 1885	4,081,269	624,835	1,327,366	88,366	235,973	1,237,456
1886 to 1890	3,111,373	546,726	2,598,254	130,218	169,017	1,028,571
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
1893	671,126	179,288	616,940	42,905	37,230	226,811

\* See footnote (†) on next page.

1404. According to the above figures, together with an estimate for Western Australia, the total quantity of gold raised in each colony from 1851 to 1893 has been as follows:—

Gold produce of Australasia, 1851 to 1893.

SUMMARY OF GOLD RAISED IN AUSTRALASIA, 1851 TO 1893.

	ozs.		ozs.
Victoria ...	58,741,341	South Australia ...	411,835*
New Zealand ...	12,535,107	Western Australia ...	359,047†
New South Wales ...	10,736,592		
Queensland ...	9,292,838*	Total ...	92,796,542
Tasmania ...	719,782		

1405. The average value of the gold raised varies in the different colonies. If it be estimated at £4 per oz., the total value would be £371,186,168, or if at £3 15s. per oz., it would be £347,987,033.

Value of gold raised in Australasia.

1406. The South African gold-fields, which are of quite recent growth, and are rapidly increasing in importance, are now yielding nearly as much gold as Australasia. The following are the quantities and values raised in the Transvaal, where the principal gold-fields are located, in the last five years:—

Gold raised in South Africa.

GOLD RAISED IN THE TRANSVAAL (SOUTH AFRICAN) REPUBLIC, 1890 TO 1894.

Year.	Quantity.	Value.
	ozs.	£
1890§	529,117	1,851,905
1891	833,632	2,917,702
1892	1,325,394	4,638,879
1893	1,610,335	5,636,122
1894	1,631,250¶	6,929,414

1407. By the following table—which, with the exception of the figures for Australasia, has been taken from the report for 1893 of Mr. Edward O. Leech, director of the United States Mint—it appears that during the four years ended with 1892, the world's annual production of gold has averaged more than 6¼ million ozs., and appears to be increasing, being larger in 1892 than in any of the three previous

Gold produce of the world, 1889 to 1892.

\* The estimate for Queensland is higher by 45,425 ozs., but that for South Australia lower by 8,756 ozs., than that furnished by the Registrar-Generals of those colonies and published by the "Australasian Statistics, 1893," for which see Table XXIII. in Appendix B, *post*.

† For Western Australia, the yield prior to 1889 has been estimated roughly at 120,000 ozs., and to this has been added the quantities which have since appeared in the export returns, viz., 15,492 ozs. in 1889, viz., 22,806 ozs. in 1890, 30,311 ozs. in 1891, 59,548 ozs. in 1892, and 110,890 ozs. in 1893. 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.

§ Accounted for in export returns only.

|| Estimated.

¶ Fine ounces.

years; the largest quantities in 1892 having been produced in Australasia, the United States, Russia, and Africa:—

GOLD PRODUCE OF EACH COUNTRY, 1889 TO 1892.\*

Countries.	1889.	1890.	1891.	1892.
	OZS.	OZS.	OZS.	OZS.
Australasia ...	1,745,570	1,595,625	1,672,784	1,808,595
Europe—				
Great Britain ...	3,118	1,607	3,246	2,475
Russia ...	1,120,695	1,023,433	1,167,076	1,199,700
Sweden ...	2,379	2,828	3,536	2,828
Germany ...	62,934	59,495	59,495	59,495
France ...	12,857	12,857	6,428	6,750
Austria-Hungary ...	70,648	67,627	73,412	72,705
Turkey ...	321	321	321	321
Italy ...	4,757	4,757	4,821	4,404
Asia—				
British India ...	72,673	96,715	120,661	160,485
China ...	435,267	257,779	257,779	241,804
Corea ...	47,506	36,256	36,256	36,256
Japan ...	19,478	12,278	24,589	24,749
Africa† ...	415,275	529,117	833,632	1,325,394
America—				
Canada ...	72,320	72,320	80,548	44,741
United States ...	1,586,304	1,588,490	1,604,432	1,595,979
Mexico ...	33,846	37,092	48,374	54,609
Salvador and Costa Rica	7,264	7,264	7,264	7,907
Colombia ...	165,885	178,710	167,910	167,910
Venezuela ...	88,873	55,991	48,342	38,988
Guiana (British) ...	28,349	54,416	87,041	87,041
Guiana (Dutch) ...	15,653	26,164	21,471	26,229
Guiana (French) ...	26,517	26,517	26,517	48,278
Brazil ...	21,535	21,535	21,182	21,182
Peru ...	4,500	3,343	3,632	3,632
Bolivia ...	2,893	2,893	3,246	3,246
Chile ...	69,491	69,491	69,491	69,491
Argentine Republic ...	3,953	3,953	3,953	3,953
Uruguay ...	3,375	4,500	4,500	4,500
The World ...	6,144,236	5,853,374	6,461,939	7,123,647

Value of the world's gold produce, 1889-1892.

1408. According to the figures, the gold raised in the world during 1892, if valued at £4 per oz., would be £28,494,600; or if at £3 15s. an oz., it would be £26,713,700. During the four years the value of the whole quantity raised (25,583,200 ozs.) would be £102,332,800 at the former, or £95,937,000 at the latter valuation.

\* See U.S. Mint Report, 1893, 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 ozs. troy. When the figures for any year were not given by Mr. Leech, those for a previous year have been inserted. The figures for Australasia and South Africa, however, have been obtained from other sources.

† See last table.



1409. Of the gold which was raised during 1893 in Victoria, 452,453 ozs. was obtained from quartz reefs, and 218,673 ozs. from alluvial deposits. These figures, as compared with those of the previous year, show a decrease of 45 ozs. in the yield of quartz reefs, but an increase of 16,715 ozs. in that of alluvial workings. The respective proportions of quartz and alluvial gold raised were 69 and 31 per cent. in 1892, and 67 and 33 per cent. in 1893.

Gold derived from alluvial and quartz working.

1410. 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 eleven years:—

Value of gold per miner.

VALUE OF GOLD PER MINER,† 1883 TO 1893.

	£	s.	d.		£	s.	d.
1883	95	6	3½	1889	101	2	3
1884	106	14	6¼	1890	98	15	7
1885	108	15	9¼	1891	97	0	6
1886	104	18	4	1892	111	6	3
1887	96	17	2	1893	105	3	11
1888	97	8	7				

1411. In proportion to the number of miners engaged in alluvial and quartz mining, the yield of gold from the latter has frequently been more than twice as large as that from the former. The following are the figures for the last five years:—

Value of gold per alluvial and quartz miner.

VALUE OF GOLD PER ALLUVIAL AND QUARTZ MINER, 1889 TO 1893.

Year.	Alluvial Miners.			Quartz Miners.		
	£	s.	d.	£	s.	d.
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
1893	73	16	8	132	7	6

\* For the number of gold miners at work in 1893, see paragraph 118, ante.

† These amounts are sometimes incorrectly spoken of as the "average earnings" of the miners. It has been pointed out on former occasions that, as a very large proportion of the miners are working on wages, the gold they raise no more represents their individual earnings than do the products of a manufactory represent the earnings of its operatives. For wages of miners, see Part "Interchange," ante. For figures relating to the years 1871-82, see last issue of this work, Vol. II., paragraph 494.

Estimated  
gold yield,  
1894.

1412. The estimated yield of gold in the year 1894 was 673,680 ozs. as against 671,126 ozs. in 1893. The yield in 1894 was thus 2,554 ozs. more than in the preceding year; and was, moreover, much larger than in any previous year since 1885.

Dividends of  
gold mining  
companies.

1413. 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 1893. The total shows a decrease of nearly £36,500 on the previous year:—

DIVIDENDS OF GOLD MINING COMPANIES, 1893.

Quarter ended 31st March	...	...	...	£138,418
” 30th June	...	...	...	117,498
” 30th September	...	...	...	169,758
” 31st December	...	...	...	158,218
Total in 12 months	...	...	...	<u>£583,892</u>

Steam-  
engines used  
in mining.

1414. Of the steam-engines employed in connexion with gold mining, about a sixth are used on alluvial and five-sixths on quartz workings. The particulars were not returned for 1893, but the following is the number of engines in use and their horse-power in each of the previous ten years:—

STEAM-ENGINES USED IN GOLD MINING, 1883 TO 1892.

Year.	Number.	Horse-power.	Year.	Number.	Horse-power.
1883	1,087	25,933	1888	1,119	27,472
1884	1,104	26,228	1889	1,123	26,680
1885	1,085	26,627	1890	1,104	27,153
1886	1,072	26,920	1891	1,094	27,812
1887	1,080	27,218	1892	1,112	27,780

Mining  
machinery

1415. 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. There is no later information.

Average  
yield of  
quartz.

1416. 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 856,535 tons in 1892, and 904,367 tons in 1893. The average yield per ton of these crushings

was 9dwt. 23gr. in the former, and 9dwt. 6gr. in the latter year. From similar estimates, extending over a long series of years, and embodying information respecting the crushing of nearly 28,140,000 tons of quartz, an average is obtained of 10dwt. 7gr. of gold to the ton of quartz crushed.

1417. The following is the estimate of the Mining Department\* of the gross and average yield of over 50 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 1893 :—

## GOLD FROM VARIOUS MATRICES.

Matrix.	Quantity Treated.	Yield of Gold.			
		Total.	Average per ton.		
	tons.	ozs.	oz.	dwt.	gr.
<i>From Quartz Reefs.</i>					
Quartz ... ..	28,139,975	14,500,540	0	10	7
Tailings and mullock ... ..	2,423,214	363,140	0	2	23
Pyrites ... ..	152,099	338,558	2	4	5
<i>From Alluvial Workings.</i>					
Washdirt ... ..	18,843,233	1,418,300	0	1	12
Cement ... ..	473,745	106,539	0	4	11
<b>Total ... ..</b>	<b>50,032,266</b>	<b>16,727,077</b>	<b>0</b>	<b>6</b>	<b>16</b>

1418. The ten deepest shafts in the colony are those of Lansell's 180 mine, 3,000 feet; New Chum and Victoria Company, 2,800 feet; New Chum Consolidated Company, 2,632 feet; Lazarus Company, 2,595 feet; New Chum Railway Company, 2,533 feet; Victory and Pandora Company, 2,500 feet; Carlisle Company, 2,485 feet; Victoria Consols Company, 2,482 feet; Magdala Company, 2,409 feet; New Chum United, 2,396 feet. It thus appears that the greatest depth to which the earth's crust has been pierced in this colony by a shaft is about 3,000 feet. The ninth mine mentioned is at Stawell; all the others are at Bendigo.

1419. 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

\* *Mineral Statistics, 1893, Statement No. 6.*

from that source. It is difficult to obtain reliable information respecting silver produce, as, in consequence of the silver being generally associated with lead and other metals, it is sometimes found economical to send the ore in a concentrated form to Europe for smelting. For 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) raised in Victoria, New South Wales, Tasmania, and New Zealand, during the 31 years ended with 1893:—

SILVER RAISED IN AUSTRALASIAN COLONIES, 1863 TO 1893.

Year or Period.	Victoria. †	New South Wales.	Tasmania. †	New Zealand. †
	ozs.	ozs.	ozs.	ozs.
1863 to 1865 ...	10,165	...	...	...
1866 to 1870 ...	8,187	14,621	...	48,186
1871 to 1875 ...	56,106	318,432	...	223,174
1876 to 1880 ...	116,042	335,734	...	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	245,000	28,023
1892 ...	35,857	13,697,600 ‡	220,600	22,053
1893 ...	40,941	15,747,242	1,142,200	63,076
Total to end of } 1893	553,089	78,607,633 §	1,776,300	667,761

1420. The total quantity of silver raised in five of the colonies—including Queensland, for which an estimate of 3,373,000 ozs. has been made—was 84,977,783 ozs., which would represent a value, at 3s. 10d. || per oz., of £16,287,048.

1421. 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

\* It is known that in Queensland 685 tons of silver-lead ore, valued at £17,309, were raised in 1893; 225,000 ozs. of silver, valued at £36,436, were raised in 1892; 875 tons of silver-lead ore, valued at £21,879, in 1891; 8,021 tons, valued at £295,043, in the five years 1886-90; and 17,896 tons, valued at £274,591, in the previous seven 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 3,366,000 ozs. have been raised in Queensland up to the end of 1893.

† 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.

§ No official statement having been published in New South Wales of the quantity of silver raised in that colony in the last seven years, the quantities from 1887 to 1893, 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 seven years, equivalent to 3s. 6½d. 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.

Value of  
silver raised  
in Austral-  
asia.

Broken Hill  
silver  
mines.

13th August, 1885, to the 31st May, 1894, the ore treated (including moisture) amounted to 1,818,077 tons, the total yield of which was 234,580 tons of lead, 58,615,416 fine ozs. of silver, 7,896 ozs. of gold, and 1,580 tons of copper; of which 13,820,569 ozs. of silver, 51,248 tons of lead, 2,773 ozs. of gold, and 774 tons of copper were produced in the year 1893-4.\* During the year 1893-4, the net furnace return per ton of ore treated was 9·90 per cent. of lead, and 26·64 ozs. of silver; whilst the average since the commencement was 13·53 per cent. of lead, and 13·53 ozs. of silver—the total treated having exceeded 1,700,000 tons. Considerable attention is now being given to the economical treatment of sulphide ores. The deepest shaft in the mine is over 700 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 £7,296,000, of which £5,552,000 were dividends and cash bonuses. For the six months ended with May, 1894, the profits amounted to £397,378, and the mine paid dividends to the amount of £312,000. The number of men permanently employed at and in connexion with the mine at Broken Hill on 31st May, 1894, was 3,352 (as against 2,938 twelve months previous), of whom 998 (as against 1,099 in 1893) were underground, 458 surface miners, and 647 contractors' men (quarrying, &c.), 738 were smelters, 198 were engaged on general construction and repairs, 104 on the amalgamating mill, 84 on crushing and chloridizing works, 61 on leaching works, and 64 on miscellaneous works. The mine wages and salaries paid during the half-year ended 31st May, 1894 (including contracts) amounted to £177,418, and the smelter wages and salaries to £86,301, besides over £26,290 paid for other services.

1422. During the year ended 31st May, 1894, the average price obtained from the sale of refined silver (.996 fine) by the Broken Hill Proprietary Company was 2s. 11d. per oz., or nearly 2d. more than what would have been received at the London market prices. Price of silver in Melbourne.

1423. The average cost of treating ore, including all charges, from the time of its arrival on the smelter floors to the delivery of the bullion on truck, at the Broken Hill mines during the six months ended 31st May, 1894, was £1 8s. 2d., as compared with £1 11s. in the half-year ended May, 1893, per net ton of ore, made up of the following items:—Coke, 13s. 3½d.; limestone, 6s. 0¼d.; coal, 1s. 3½d.; castings, 2¼d.; stores, 4d.; water, 2½d.; labour, 6s. 3½d.; superintendence and Cost of treating silver ores.

\* From the neighbouring Broken Hill mines, moreover, 3,848,082 ozs. of silver and (exclusive of British Broken Hill) 17,879 tons of lead were obtained in 1893.

assaying,  $2\frac{3}{4}$ d.; ironstone and scrap iron,  $2\frac{1}{2}$ d.; all other items (rates, &c.),  $1\frac{1}{4}$ d. At Port Pirie, S.A., the cost of smelting a ton of dry ore was only 17s.  $7\frac{1}{4}$ d., and at Broken Hill £1 3s.  $1\frac{1}{4}$ d. per ton; whilst the cost for separating and refining was £1 9s.  $3\frac{3}{4}$ d. per ton. During the year 1893-4, the value per ton of ore treated was £4 5s. 4d., whilst the cost of production was £1 12s. 2d., resulting in a net profit of £2 13s. 2d.

Silver  
produce  
of each  
country.

1424. The next table, with the exception of the figures for Australasia, has been taken from Mr. Leech's Mint Report for 1893, and shows that the world's production of silver during the four years ended with 1892 averaged more than  $143\frac{1}{2}$  million ozs. per annum, whilst the returns for 1891 and 1892 show an increase on those for 1889 and 1890 of upwards of 16 million ozs. per annum; the largest quantities raised in 1892 being in the United States and Mexico, and the next largest in Australasia, Bolivia, and Germany:—

SILVER PRODUCE\* OF EACH COUNTRY, 1889 TO 1892.

Countries.	1889.	1890.	1891.	1892.
	ozs.	ozs.	ozs.	ozs.
Australasia ...	9,500,235	11,560,603	17,101,062	14,201,110
Europe—				
Russia ...	462,491	439,285	445,070	314,927
Sweden ...	137,150	134,385	117,575	1,704
Norway ...	165,435	178,035	182,084	144,478
Germany ...	6,196,785	5,852,608	6,171,264	5,940,420
Austria-Hungary ...	1,692,309	1,626,803	1,690,605	593,341
Turkey ...	42,524	42,524	42,524	42,524
Italy ...	260,607	260,607	260,607	1,280,955
France ...	1,587,686	2,601,638	2,285,843	3,310,626
Spain ...	1,655,377	1,655,377	1,655,377	1,303,550
Great Britain ...	280,728	218,373	291,689	169,388
Asia—				
Japan ...	1,363,592	1,184,593	1,391,170	1,767,360
America—				
Canada ...	297,763	383,293	400,618	314,895
United States ...	49,996,431	54,496,761	58,326,223	57,996,286
Mexico ...	42,936,184	38,669,397	40,989,568	45,629,876
Central America ...	1,546,770	1,546,770	1,546,770	1,546,770
Colombia ...	773,369	568,431	1,003,859	1,003,859
Peru ...	2,419,103	2,114,654	2,406,761	2,406,761
Bolivia ...	7,407,445	7,407,445	11,978,231	11,978,231
Chile ...	5,973,623	3,975,805	2,320,170	2,275,461
Argentine Republic ...	328,684	471,877	479,494	479,494
The World† ...	135,024,291	135,389,264	151,086,564	152,702,016

\* See U.S. Mint Report, 1893, 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 ozs. troy.

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

1425. At 3s. 4d. per oz. the quantity of silver raised in the world during 1892 would be worth £25,450,000. The quantity raised in the four years ended with 1892 would be worth £95,700,356 at the same valuation.\* If the former ratio to gold (*i.e.*, 15½ to 1) were restored, as proposed by some bimetallists, this would increase the value of the world's annual production by £12,700,000.

Value of  
the world's  
silver  
produce,  
1889-1892.

1426. Since 1851 almost equal quantities of gold have been contributed by Australasia and the United States, or more than one-third in each case of the production of the whole world, the total quantity of which has probably amounted in the last 43 years to over 258 million ozs. 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 are of recent growth) was equal to little more than a twenty-eighth of the world's production, amounting to over 2,790 million ozs. In connexion with the remarkable depreciation of silver before alluded to,† it is important to note that, whilst the annual production of gold has declined gradually from nearly 6¾ million ozs. during the decade 1851-60 to 5½ million ozs. during 1881-92, the annual production of silver rose, notwithstanding its declining value, from less than 30 million ozs. during 1851-60 to nearly 150 million ozs. in 1892. The following are the figures for successive decennial or quinquennial periods from 1851 to 1890, also for the years 1891 to 1893 where available :—

World's  
production  
of gold and  
silver, 1851-  
1893.

WORLD'S PRODUCTION OF GOLD AND SILVER (IN OUNCES TROY),  
1851 TO 1893.  
(000's omitted.)

Period.	Australasia.	United States.	Russia.	Other Countries.	Total.
	ozs.	ozs.	ozs.	ozs.	ozs.
<b>GOLD.</b>					
1851 to 1860 ...	27,253,	26,670,	8,250,	5,140,	67,313,
1861 to 1865 ...	12,915,	10,720,	3,870,	2,675,	30,180,
1866 to 1870 ...	12,151,	12,215,	4,830,	2,485,	31,681,
1871 to 1875 ...	11,526,	9,476,	5,664,	2,354,	29,020,
1876 to 1880 ...	8,257,	9,531,	6,531,	2,760,	27,079,
1881 to 1885 ...	7,595,	7,730,	5,750,	4,178,	25,253,
1886 to 1890 ...	7,584,	8,070,	5,311,	6,764,	27,729,
1891 ...	1,673,	1,605,	1,167,	2,017,	6,462,
1892 ...	1,809,	1,596,	1,200,	2,519,	7,124,
1893 ...	1,885,	1,740,	...	...	...
<b>Total Gold ...</b>	<b>92,648,</b>	<b>89,353,</b>	<b>42,573,‡</b>	<b>30,892,‡</b>	<b>251,841,‡</b>

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 United States Mint Reports and *The Commercial and Financial Chronicle of New York*.

\* In 1892 the average price per oz. paid for silver bullion for coinage (standard silver) was rather less than 3s. 4d., or 5d. lower than the average price for 1891. See table following paragraph 1040 *ante*.

† See paragraph 1040, *ante*.

‡ Exclusive of 1893.

WORLD'S PRODUCTION OF GOLD AND SILVER (IN OUNCES TROY),  
1851 TO 1893—*continued.*  
(000's omitted.)

Period.	United States.	Mexico.	Australasia.	Other Countries.	Total.
	ozs.	ozs.	ozs.	ozs.	ozs.
<b>SILVER.</b>					
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 ... <sup>as</sup>	182,900,	124,003,	2,313,	129,742,	438,958,
1886 to 1890 ...	230,980,	150,520,	32,746,	144,904,	559,150,
1891 ...	58,330,	40,990,	17,101,	34,666,	151,087,
1892 ...	58,000,	45,630,	14,201,	34,871,	152,702,
1893 ...	60,500,	44,371,	17,115,	...	...
<b>Total Silver ...</b>	<b>948,279,</b>	<b>908,917,</b>	<b>84,977,</b>	<b>814,177,*</b>	<b>2,634,346,*</b>

See note previous page.

World's relative production of gold and silver, 1873 to 1892.

1427. 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 20 years from the figures in the following table, showing the value of the gold, and the quantity and value of the silver, produced in the world for each year since 1872, when the price of silver first began to decline. These are given in the last column, by which it will be seen that the supply of silver relatively to gold was tolerably uniform until 1879, the average of the seven years ended with that date being nearly 13 (12·8) ozs. of silver to 1 of gold; but after that year the proportion rose rapidly, until in the years 1890–92 it stood at over 22½ times that of gold:—

PRODUCT OF GOLD AND SILVER IN THE WORLD, 1873–92.  
(000's omitted.)

Years.	Gold (Value).	Silver.		Proportion in Quantity of Silver Produced to 1 of Gold.
		Quantity.	Value.	
	£	Fine ozs.	£	
1873	20,042,	63,267,	17,108,	13·4
1874	18,906,	55,300,	14,724,	12·4
1875	20,313,	62,262,	16,162,	13·0
1876	21,604,	67,753,	16,317,	13·3
1877	23,750,	62,648,	15,675,	11·2
1878	24,792,	73,476,	17,634,	12·6
1879	22,708,	74,250,	17,371,	13·9
1880	22,188,	74,791,	17,841,	14·3

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 56, where the values have been given in dollars, which have been reduced to sterling money.

\* Exclusive of 1893.



PRODUCT OF GOLD AND SILVER IN THE WORLD, 1873-92—*continued.*  
(000's omitted.)

Years.	Gold (Value.)	Silver.		Proportion in Quantity of Silver Produced to 1 of Gold.
		Quantity.	Value.	
	£	Fine ozs.	£	
1881	21,458,	78,890,	18,704,	15·6
1882	21,250,	86,470,	20,465,	17·3
1883	19,875,	89,177,	20,622,	19·1
1884	21,187,	81,597,	18,920,	16·4
1885	22,583,	91,652,	20,326,	17·3
1886	22,083,	93,276,	19,328,	18·0
1887	22,036,	96,124,	19,590,	18·5
1888	22,958,	108,827,	21,288,	20·1
1889	25,726,	125,420,	24,431,	20·7
1890	25,096,	134,380,	29,395,	22·7
1891	26,283,	143,994,	29,638,	23·3
1892	28,929,	151,949,	27,699,	22·6

See note previous page.

1428. 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 1893, when it took  $25\frac{3}{4}$  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 23 years, 1871 to 1893 :—

RELATIVE VALUE OF SILVER AS COMPARED WITH GOLD,  
1871 TO 1893.\*

Equivalent in Silver to 1 part of Gold by weight.			Equivalent in Silver to 1 part of Gold by weight.		
1871	...	15·57	1883	...	18·64
1872	...	15·63	1884	...	18·57
1873	...	15·92	1885	...	19·41
1874	...	16·17	1886	...	20·78
1875	...	16·59	1887	...	21·13
1876	...	17·88	1888	...	21·99
1877	...	17·22	1889	...	22·09
1878	...	17·94	1890	...	19·76
1879	...	18·40	1891	...	20·92
1880	...	18·05	1892	...	23·72
1881	...	18·16	1893	...	25·77†
1882	...	18·19			

\* The relative values for the years prior to 1893 have been taken from the U.S. Mint Report, 1893, page 162.

† Nine months.

Minerals  
other than  
gold exist-  
ing in  
Victoria.

1429. 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 1893. 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 1893 amounted to 53 tons of tin ore, valued at £2,170. Some argentiferous and auriferous lead ores have recently been discovered near Casterton, which promise to give good yields. The following metals also exist in Victoria, but up to this date have not been discovered in paying quantities:—Bismuth, cobalt, cadmium, lead, manganese, molybdenite, osmiridium, silver, mercury, and zinc-blende. Various lime-stones and marbles, as well as kaolin and other clays, also exist, and have been worked to a certain extent.

Coal.

1430. The coal raised in Victoria in 1893 amounted to 91,726 tons,\* as compared with only 23,363 tons in 1892, making a total yield up to the end of 1893 of 195,886 tons, valued at £142,579. An impetus has been given to coal-mining by the Government reducing the railway freights to  $\frac{1}{2}$ d. per ton per mile, or by about  $\frac{1}{4}$ d. less than the actual cost, and by preference being given in Government contracts to the local products, as against the somewhat superior imported article. The principal mines are at Korumburra, Jumbunna, Outtrim, and neighbouring districts, which had a population in 1894 of about 3,300. In these and other parts of Gippsland, the area of country containing seams of workable coal is about 100 square miles, in which, it is estimated, there is about 20 million tons of coal available.† The Secretary for Mines considers that the colony is now practically independent of outside supplies.

Coal raised  
in Austral-  
asian  
Colonies.

1431. 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. In these colonies over  $4\frac{1}{3}$  millions tons of coal were raised in 1893, but

\* Exclusive of 4,500 tons of lignite (or brown coal) valued at £2,207.

† For further particulars about coal and lignite (or brown coal) and the economic value of Victorian coal for various purposes, see last issue of this work, Vol. II., paragraphs 515 to 517.

nearly 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 1893.

Year.	Tons of Coal raised in—				
	New South Wales.	Queensland.	Tasmania.	New Zealand.	Victoria.
1876 ... ..	1,319,918	50,627	6,100	...	1,095
1877 ... ..	1,444,271	60,918	9,470	...	2,420
1878 ... ..	1,575,497	52,580	12,311	162,218	Nil
1879 ... ..	1,583,381	55,012	9,514	231,218	Nil
1880 ... ..	1,466,180	58,052	12,219	299,923	3
1881 ... ..	1,769,597	65,612	11,163	337,262	Nil
1882 ... ..	2,109,282	74,436	8,803	378,272	10
1883 ... ..	2,521,457	104,269	8,872	421,764	428
1884 ... ..	2,749,109	129,980	7,194	480,831	3,280
1885 ... ..	2,878,863	209,698	5,334	511,063	800
1886 ... ..	2,830,175	228,656	10,391	534,353	86
1887 ... ..	2,922,497	238,813	27,763	558,620	3,357
1888 ... ..	3,203,444	311,412	41,577	613,895	8,573
1889 ... ..	3,655,632	265,507	40,300	586,445	14,596
1890 ... ..	3,060,876	338,344	53,812	637,397	14,601
1891 ... ..	4,037,922	271,603	45,524	668,794	22,834
1892 ... ..	3,780,968	257,803	35,669	673,315	23,363
1893 ... ..	3,278,328	264,403	34,042	691,548	91,726*

1432. During 1893 the average value of coal at the pit's mouth was as follows :—Newcastle, New South Wales, 7s. 1 $\frac{3}{4}$ d. ; Tasmania, 7s. 10d.; Victoria, 10s. 9d. per ton. Price of coal, 1893.

1433. The following is a statement of the quantity of coal raised in various countries during one year, the returns being generally those for 1892, except where otherwise indicated :— Coal raised in various countries.

ANNUAL PRODUCTION OF COAL IN VARIOUS COUNTRIES, 1892.†

	Tons.		Tons.
United Kingdom ...	181,786,871	Canada (1893) ...	3,719,170
United States ...	179,329,071	Japan (1890) ...	2,396,530
Germany ...	94,252,278	British-India ...	2,650,680
France ...	26,548,860	Spain (1891) ...	1,286,000
Austria-Hungary (1889)	25,326,417	Italy (1891) ...	289,286
Belgium ...	19,591,908	Sweden (1890) ...	2,343,895
Chile (average) ...	10,000,000	Other Countries (estimated)	7,639,420
Australasia (1893) ...	4,360,047		
Russia (1889) ...	6,118,550	Total ... ..	571,638,983
China (1889) ...	4,000,000		

\* Exclusive of lignite, 4,500 tons.  
 † Some of the figures in this table have been derived from *The Statistical Year-Book of Canada* for 1893.

Minerals  
other than  
gold raised.

1434. 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 1893 :—

VALUE OF MINERALS AND METALS OTHER THAN GOLD,  
1851 TO 1893.

Name.	Estimated Value.		
	1851 to 1892.	Year 1893.	Total.
	£	£	£
Silver* ... ..	100,906	6,375	107,281
Tin ... ..	680,150	2,170	682,320
Copper and copper ore ... ..	191,423	...	191,423
Antimony ... ..	176,038	431	176,469
Calcite and silicate of alumina ... ..	305	...	305
Lead ... ..	5,419	...	5,419
Iron ... ..	12,540	...	12,540
Coal† ... ..	93,430	49,167	142,597
Lignite ... ..	10,231	2,207	12,438
Kaolin ... ..	7,444	...	7,444
Flagging ... ..	83,084	45	83,129
Slates ... ..			
Gypsum ... ..	7	...	7
Magnesite ... ..	12	...	12
Ores, mineral earthy clays, &c. ... ..	10,901	...	10,901
Diamonds ... ..	108	...	108
Sapphires, &c. ... ..	630	...	630
Total ... ..	1,372,628	60,395	1,433,023

Miners for  
minerals  
other than  
gold.

1435. 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 1893. The figures show an increase of 457 in the miners for coal and lignite, but a decrease of 15 in those for antimony, of 63 in those for tin, of 6 in those for silver and lead, and of 4 in those for infusorial earth; the net increase being 369 as compared with 1892 :—

MINERS FOR MINERALS OTHER THAN GOLD, 1893.

	Number of Miners.		Number of Miners.
Antimony ... ..	12	Slate and flagging ... ..	50
Coal and lignite ... ..	560	Tin ... ..	41
Turquoise ... ..	10		
Silver ... ..	6	Total ... ..	679

\* 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 195,886 tons.

‡ For number of gold miners, see paragraph 118 *ante*.

1436. In New South Wales the number of hands employed in coal mining alone in 1893 was 10,028 ; whilst the average output of coal was about 328 tons per miner, as compared with 163 tons per miner in Victoria. Coal miners in New South Wales.

1437. The revenue derived from the gold-fields amounted to £20,859 in 1891-2, and £20,592 in 1892-3. The amount in the latter year was made up of the following items :— Revenue from gold-fields.

REVENUE FROM GOLD-FIELDS, 1892-3.

Miners' rights ... ..	£6,556
Business licences ... ..	143
Rents for leases of auriferous and mineral lands ... ..	9,734
„ mining on private property ... ..	2,005
Water-right and searching licences ... ..	1,052
Fees for leases ... ..	1,102
Total ... ..	£20,592

1438. The State aid to the mining industry during the year 1892-3 was £104,498, as compared with £126,380 in 1891-2.\* The former sum is made up of £29,434, cost of the Mining Department and Mining Boards ; £60,151 to assist miners in prospecting operations, and to defray the cost and working expenses of diamond drills ; £7,500 for prospecting and boring for coal ; and £7,413 for geological and underground surveys, cutting tracks in unexplored regions, &c. The last item includes £221 for sending an expert to Europe to inquire into the treatment of refractory ores and the manufacture of brown coal briquettes. State aid to mining.

1439. 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. Loans to mining companies.

1440. In 1893, inclusive of the cost of wear and tear of diamonds, £31,339 was spent on working diamond drills, of which £21,176 was expended in gold prospecting, and £10,163 in coal prospecting. The average cost of boring with diamond drills was 13s. 5½d. per foot, and with other machines on contract, 4s. 11½d. per foot. The average cost of boring for coal alone was 11s. 6½d. Diamond drills.

1441. Of the nineteen diamond drills belonging to the Mining Department, seven were engaged in prospecting for gold and twelve for coal at the end of December, 1893. The number of bores made in 1893 was 168, viz., 149 in search of gold, and 19 in search of coal ; the aggregate depth bored was 32,721 feet for gold, and 17,598 feet for coal. Operations of diamond drills.

\* See page 119 ante.

Value of  
mining  
produce.

1442. The estimated value of the produce raised from Victorian mines and quarries in 1893 is summarized as follows:—

## VALUE OF MINING PRODUCE, 1893.

Gold	...	...	...	...	£2,684,504
Other metals and minerals	...	...	...	...	60,395
Stone from quarries	...	...	...	...	40,302
Total	...	...	...	...	£2,785,201

Agricultural,  
pastoral,  
and mining  
produce.

1443. The estimated value of the principal items of agricultural, pastoral, and mining produce raised in Victoria, during each of the last twenty years, is given in the following table. It should be borne in mind that the prices of agricultural and pastoral produce, on which the value mainly depends, fluctuates from year to year.\* The decreased valuation in 1893 is principally due to the adoption of a fresh basis of calculation, which gave a much lower, but it is believed, a more accurate result. In several of the years the value of the pastoral produce was greater than that of the other two industries combined:—

VALUE OF AGRICULTURAL, PASTORAL, AND MINING PRODUCE,  
1874 TO 1893.

Year.	Estimated Value of—			Total.
	Agricultural Produce.	Pastoral Produce.†	Mining Produce.‡	
	£	£	£	£
1874	4,410,436	9,840,562	4,740,679	18,991,677
1875	4,835,894	9,541,551	4,475,876	18,853,321
1876	5,574,239	10,069,570	3,949,135	19,592,944
1877	5,792,898	8,652,471	3,322,264	17,767,633
1878	4,912,745	8,360,265	3,211,990	16,485,000
1879	5,875,313	6,375,965	3,136,527	15,387,805
1880	5,395,021	9,855,800	3,397,661	18,648,482
1881	5,893,874	8,684,218	3,533,658	18,111,750
1882	6,439,972	9,297,812	3,681,245	19,419,029
1883	7,372,143	10,203,914	3,357,252	20,933,309
1884	6,565,527	9,887,229	3,228,738	19,681,494
1885	7,118,388	9,049,679	3,091,244	19,259,311
1886	7,260,735	8,911,336	2,839,120	19,011,191
1887	7,078,653	8,651,599	2,661,625	18,391,877
1888	6,601,601	9,016,573	2,711,024	18,329,198
1889	7,845,739	9,063,910	2,687,098	19,596,747
1890	7,800,139	10,105,498	2,682,444	20,588,081
1891	7,770,658	10,237,952§	2,503,272	20,511,882
1892	7,204,401	10,092,558	2,726,433	20,023,392
1893	5,222,918	7,676,129§	2,785,201	15,684,248§

\* For prices of agricultural produce in different years, see table following paragraph 1307 *ante*.

† The pastoral produce referred to is that derived from the live stock kept by farmers as well as that kept by graziers and squatters.

‡ Including the value of stone raised from quarries.

§ The basis of valuation was raised in 1891, and again in 1893, giving on each occasion, but especially the latter, a reduced result.

1444. 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 about 30 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 1893 would be £7,486,000, 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 1893, amounting in the aggregate to £23,170,248.

Agricultural,  
pastoral,  
mining,  
and manu-  
facturing  
produce.

1445. In addition to the foregoing, there are numerous other products concerning which it is difficult to obtain information, but an attempt is made, for the first time, to estimate the annual value of some of them—such as poultry, game, fish, timber, and a total is arrived at of nearly  $2\frac{3}{4}$  millions sterling, or about the same as the mining industry, as follows :—

Annual value  
of other  
miscel-  
laneous  
products.

#### VALUE OF MISCELLANEOUS PRODUCTS, 1893-4.

	£
Honey and wax ... ..	11,914
Poultry ... ..	2,257,300
Rabbits and hares ... ..	63,800
Wild fowl ... ..	6,750
Kangaroo and opossum skins (net exports only) ...	18,508
Fish ... ..	70,000
Timber (product of forest saw-mills only) ...	175,702
Bark (wattle) ... ..	92,550
	-----
Total ... ..	2,696,524
	-----

1446. The patents for inventions applied for in 1893 numbered 830, or 52 less than in 1892, and also less than in any previous year since 1887. Since 1854 the total number of patents applied for has been 11,084.

Patents.

\* See paragraph 1394 *ante*.

Copyrights. 1447. The first Victorian Copyright Act\* came into force in December, 1869. Copyrights—especially those for literary productions—have been increasingly numerous during the last ten or eleven years, during which period they averaged about 670 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 1893.

Subject of Copyright.	Copyrights Registered.		
	Prior to 1893.	During 1893.	Total.
DESIGNS.			
Articles of manufacture, chiefly of—			
Metals ... ..	400	19	419
Wood, stone, cement, or plaster ...	122	10	132
Glass ... ..	19	4	23
Earthenware ... ..	24	...	24
Ivory, bone, papier-mâché, &c. ...	97	8	105
Woven fabrics ... ..	26	3	29
Miscellaneous ... ..	20	1	21
LITERARY PRODUCTIONS.			
Literary works ... ..	5,847	985	6,832
Dramatic " ... ..	142	10	152
Musical " ... ..	119	1	120
WORKS OF ART.			
Paintings ... ..	13	3	16
Drawings ... ..	43	1	44
Engravings ... ..	1,378	17	1,395
Photographs ... ..	1,275	29	1,304
Sculpture ... ..	6	3	9
Total ... ..	9,531	1,094	10,625

Trade marks. 1448. Provision for the registration of trade marks was established under the *Trade Marks Registration Act* 1876, which came into operation on the 22nd September of that year. The law has since been amended, and is now embodied in the Consolidated Act (54 Vict. No. 1146). The registration of a person as the proprietor of a trade mark is *primâ facie* evidence of his right to its exclusive use, subject

\* 33 Vict. No. 350, repealed and re-enacted by 54 Vict. No. 1076.



to the provisions of the Act as to its connexion with the good-will of a business. From the period of the commencement of the Act to the end of 1893, 3,732 trade marks were submitted for registration, and 2,663 were registered. During the year 1893 the number submitted was 326, or 108 less than in 1892, and the number registered was 257, or 89 less than in 1892.

1449. The following bonuses\* are payable by the Agricultural Department, under certain regulations approved by the Governor in Council, for the following vegetable products properly grown in Victoria prior to the 30th June, 1896, and successfully harvested; also to factories for the fabrication or manufacture of articles of proper marketable qualities, the produce of the colony, prior to the same date :—

GENERAL VEGETABLE PRODUCTS.

Sowing or planting and cultivating the following, to be used for manufacturing purposes (not less than 1 acre in the case of sugar plants, than ½ acre of fibre plants, nor less than ¼ acre of the others):—

			Bonus not exceeding—	Maximum to one Person or Company—
<i>Fibre Plants.</i>			£2 per acre.	£100
Agave (sisal hemp)	Corchorus (jute)	Phormium (New Zealand flax)		
Boehmeria (ramee)	Fourcroya			
Cannabis (hemp)	Linum (flax)			
<i>Paper Plants, including Stipa (esparto).</i>				
<i>Oil Plants.</i>				
Arachis (earth nut)	Cyperus (ground almond)	Ricinus (castor oil)		
Brassica (mustard)	Helianthus (sunflower)	Sesamum (gingili)		
<i>Sugar Plants.</i>				
Andropogon (sorghum)	Beta (beet)			
<i>Tannin Plants.</i>				
Cæsalpinia	Elephanthorrhiza	Rhus (sumach)		
Cytisus (broom brush)	Osris	Rumex (canaigre)		
Duvaua	Prosopis (algarobylla bark)			

\* For particulars of the expenditure from the grants up to 30th June, 1893, see table following paragraph 201 ante. The grants are rapidly being exhausted.

GENERAL VEGETABLE PRODUCTS—*continued.*

			Bonus not exceeding—	Maximum to one Person or Company—		
<i>Drug Plants.</i>						
Aletris (colic root)	Ferula (asafoetida)	Pilocarpus	} £2 per acre.	£100		
Aloe	Gentiana (gentian)	Pimpinella (aniseed)				
Anthemis (camomile)	Glycyrrhiza (liquorice)	Ruta (rue)				
Aristolochia (putchuk)	Hedeoma (pennyroyal)	Rheum (rhubarb)				
Arnica	Hyoscyamus (henbane)	Smilax (sarsaparilla)				
Artemisia	Ipomœa (jalap)	Tanacetum (tansy)				
Barosma (bucco)	Lippia	Taraxacum (dandelion)				
Cassia (senna)	Matricaria (camomile)	Urginea (squills)				
Cucumis (colocynth)	Mentha (peppermint, pennyroyal)	Colchicum (meadow saffron)				
Convolvulus (scammony)	Nepeta (ground ivy)	Podophyllum (man-drake)				
Digitalis (foxglove)	Papaver (opium poppy)					
Erythroxyton						
<i>Dye Plants.</i>						
Alkanna	Indigofera (indigo)	Polygonum			} £2 per acre.	£100
Cæsalpinia	Isatis (dyers' wood)	Reseda (weld)				
Carthamus (safflower)	Lyperia	Rhamnus				
Crocus (saffron)	Maharanga	Rubia (madder)				
Crozophora	Onosma	Spartium				
Heterothalamus						
<i>Scent Plants.</i>						
Aloysia (scented ver-bena)	Melissa (balm herb)	Pycnanthemum	} £2 per acre.	£100		
Boronia	Narcissus	Rosa (rose)				
Cedronella	Origanum (marjoram)	Rosmarinus (rosemary)				
Dracocephalum	Osmanthus	Teucrium				
Jasminum (jasmine)	Pelargonium	Thymus (thyme)				
Lavandula (lavender)	Pittosporum	Triphasia				
Lippia	Pogostemon	Viola (violet)				
	Polianthes (tuberose)					
<i>Insecticide Plants.</i>						
Artemisia	Chrysanthemum (pyrethrum)	Schkuhria				

## FRUIT-DRYING FACTORIES.

For dried raisins, currants, figs, or prunes preserved by any individual or company, for any quantity not less than half a ton

£5 per ton. £100

## VEGETABLE OIL FACTORIES.

Vegetable oils as follow :—

Almond	Earth nut	Sesame	} 1s. per gallon.	£500
Castor	Linseed	Sunflower		
Colza	Olive			

FLAX AND HEMP FACTORIES.

Fibre manufactured from flax or hemp	...	...	...	...	Bonus not exceeding— £5 per ton	Maximum to one Person or Company— £500
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SUGAR FACTORIES.

Syrup or sugar manufactured from beet or sorghum, amounting to 20 tons	...	...	...	...	£100	} £500
For every additional ton	...	...	...	...	£5	

INSECTICIDE FACTORIES.

Insect-destroying powder, of not less than one ton	...	...	...	...	£40	} £100
For every additional ton	...	...	...	...	£20	

TOBACCO FACTORIES.

Tobacco manufactured exclusively from Victorian-grown plants, amounting to 2,000 lbs.	...	...	...	...	£50	} £500
For every additional 200 lbs.	...	...	...	...	£5	

IMPORTATION OF NEW VARIETIES OF SEEDS AND PLANTS.

Any new variety of plant introduced and approved by the Minister of Agriculture (1,000 approved scions or plants thereof to be supplied, if necessary, at a price not exceeding 6d. each)	...	...	...	...	£20	...
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FOREST TREES OF AN ECONOMIC CHARACTER.

For planting and maintaining in a vigorous and healthy condition not less than one nor more than 50 acres, and not cut nor injured for five years, trees of any of the following kinds:—	At expiration of—	Per acre.
	1 year	15s.
	2 years	7s. 6d.
	3 "	5s.
	4 "	2s. 6d.
	5 "	10s.

- |                               |                             |
|-------------------------------|-----------------------------|
| Acacia (blackwood)            | Flindersia (Australian ash) |
| Acer (maple)                  | Fraxinus (ash)              |
| Alantus                       | Grevillea (silky oak)       |
| Alnus (alder)                 | Juglans (walnut)            |
| Argania (argan-tree)          | Juniperus (juniper)         |
| Betula (birch)                | Libocedrus (cedar)          |
| Carya (hickory)               | Nageia or Podocarpus        |
| Catalpa                       | Pinus (pine)                |
| Cedrela (cedar)               | Pistacia                    |
| Cedrus (deodar)               | Platanus (plane)            |
| Ceratonia (carob)             | Populus (poplar)            |
| Cinchona                      | Prosopis (algeroba)         |
| Cinnamomum (camphor-tree)     | Quercus (oak)               |
| Cupressus (cyprus)            | Salix (willow)              |
| Dacrydium (pine)              | Sequoia (redwood)           |
| Dammara (pine)                | Thuya (cedar)               |
| Eucalyptus (gum and ironbark) | Tilia (linden or lime)      |
| Fagus (beech)                 | Ulmus (elm)                 |

1450. To encourage the export of fruit a bonus of 2s. per case (but not exceeding 25 per cent. of the sale price) was offered for green fruits of good quality, grown in the colony, exported to approved

Bonus on export of fruit.

foreign ports, account sales of which should be presented to the Minister of Agriculture not later than the 20th August, 1895.\*

Agricultural grants for improvement of methods, publication of reports, and technical instruction.

1451. A grant of £11,000 has been made available for the introduction of new machinery and appliances to perfect the treatment of new agricultural products, and to improve present agricultural methods, and for prizes for new inventions in appliances and machinery for the treatment of vegetable products ; one of £12,000 for publishing agricultural reports, including illustrations in connexion with the educational work of the experts, and of the distribution of the bonuses generally ; and one of £43,000 for establishing a system of technical education by the employment of experts to supply instruction in the following subjects:—Vine culture ; wine making ; fruit culture ; fruit drying, bottling, and canning ; culture of fibre, paper, oil, tannin, drugs, dye, scents, or insecticide plants ; the preparation of any such articles for the manufacturer ; irrigation for agricultural purposes ; dairying ; sericulture.

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\* See regulation approved by Governor in Council, dated 20th December 1894.

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