

SECTION VIII.

AGRICULTURAL PRODUCTION.

NOTE.—Except where otherwise stated, the “agricultural” years hereinafter mentioned are taken as ending on the 31st March.

§ 1. Introductory.

1. **Early Attempts at Agriculture.**—The instructions issued to Captain Phillip on the 25th April, 1787, directed him, amongst other things, to proceed as soon as possible to the cultivation of the soil “under such regulations as may appear to be necessary and best calculated for securing supplies of grain and provisions.” When the settlers landed at Botany Bay, however, it was found that the glowing accounts published in England by members of Captain Cook’s expedition of the fertility of the soil in that locality were considerably overdrawn. Even when Phillip and his company moved round to Port Jackson on the 26th January, 1788, matters were for a time in no better case. The ground in the immediate neighbourhood of the settlement was not suitable for the cultivation of cereal crops, and when the time came to cultivate the soil it was found that there were very few who possessed the slightest acquaintance with the art of husbandry.

2. **The First Sowing.**—In his despatch of the 15th May, 1788, Captain Phillip states that it was proposed to sow eight acres with wheat and barley, although, owing to the depredations of field mice and ants, he was doubtful of the success of the crops.

3. **Discovery of Suitable Agricultural Land.**—A branch settlement was formed at Rosehill, on the Parramatta River, towards the close of 1788, and here corn crops were successfully raised. In his despatch of 12th February, 1790, Phillip refers to the harvest at Rosehill at the end of December, 1789, as consisting of 200 bushels of wheat and 60 of barley, in addition to small quantities of oats, Indian corn, and flax. By the year 1791 there were 218 acres under crop in this locality. In 1792 a new settlement was formed at Toongabbie, about three miles westward of Parramatta, where Phillip states “there are several thousand acres of exceeding good ground.” The Hawkesbury Valley, which probably contains some of the richest land in the world, was first settled in 1794. For a long time agricultural operations in Australia were restricted to the narrow belt of country between the tableland and the east coast of New South Wales, as it was not until the year 1813 that a passage was discovered across the Blue Mountains to the fertile plains of the west.

§ 2. Progress of Agriculture.

1. **Early Records.**—In an “Account of Live Stock and Ground under Crop in New South Wales, 19th August, 1797,” Governor Hunter gives the acreage under crop as follows:—Wheat, 3361 acres; maize, 1527 acres; barley, 26 acres; potatoes, 11 acres; and vines, 8 acres.

At a muster taken in 1808 the following was the return of crops:—Wheat, 6877 acres; maize, 3389 acres; barley, 544 acres; oats, 92 acres; peas and beans, 100 acres; potatoes, 301 acres; turnips, 13 acres; orchards, 546 acres; and flax and hemp, 34 acres.

By the year 1850 the area under crop had increased to 491,000 acres, of which 198,000 acres were cultivated in what is now the State of New South Wales, and 169,000 acres in Tasmania. At the end of 1850 the area under cultivation in Victoria, which was then the Port Phillip District of New South Wales, was 52,190 acres.

The gold discoveries of 1851 and subsequent years had at first a very disturbing effect on agricultural progress, the area under crop declining from 491,000 acres in 1850 to 458,000 acres in 1854; the area under cultivation in New South Wales decreased by nearly 66,000 acres, while in Tasmania a falling-off of over 41,000 acres was experienced. The demand for agricultural products occasioned by the large influx of population was, however, soon reflected in the increased area cultivated, for at the end of 1858 the land under crop in Australia totalled over a million acres. The largest increase took place in Victoria, which returned an area of 299,000 acres. For the same year South Australia had 264,000 acres in cultivation, Tasmania 229,000 acres, and New South Wales 223,000 acres.

2. **Progress of Cultivation since 1860.**—The following table shews the area under crop in each of the Commonwealth States and Territories at quinquennial intervals since 1860 and during each of the last five seasons. The area under permanent artificially-sown grasses is excluded in all the States, except for the years 1860-79 in the case of New South Wales, where the acreage cannot be separated. During those years, however, the area laid down under permanent grasses could not have been very large:—

AREA UNDER CROP IN AUSTRALIA, 1860 to 1915-16.

| Season. | New South Wales. | Victoria. | Queensland. | South Australia. | W. Aust. | Tasmania. | N.T. | Fed. Terr. | Commonwealth. |
|---------|------------------|-----------|-------------|------------------|-----------|-----------|--------|------------|---------------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1860-1 | 260,798 | 387,282 | 3,353 | 359,284 | 24,705 | 152,860 | ... | ... | 1,188,282 |
| 1865-6 | 378,255 | 448,194 | 14,414 | 547,124 | 38,180 | 159,547 | ... | ... | 1,585,714 |
| 1870-1 | 426,976 | 692,840 | 52,210 | 801,571 | 54,527 | 157,410 | ... | ... | 2,185,534 |
| 1875-6 | 451,139 | 736,520 | 77,347 | 1,111,882 | 47,571 | 142,547 | ... | ... | 2,567,006 |
| 1880-1 | 629,180 | 1,548,809 | 113,978 | 2,087,237 | 57,707 | 140,788 | ... | ... | 4,577,699 |
| 1885-6 | 737,701 | 1,867,496 | 198,334 | 2,298,412 | 60,058 | 144,761 | ... | ... | 5,306,762 |
| 1890-1 | 852,704 | 2,081,955 | 224,993 | 2,093,515 | 69,678 | 157,376 | ... | ... | 5,430,221 |
| 1895-6 | 1,348,600 | 2,413,235 | 285,319 | 2,092,942 | 97,821 | 212,703 | ... | ... | 6,450,620 |
| 1900-1 | 2,445,564 | 3,114,132 | 457,397 | 2,369,680 | 201,338 | 224,352 | ... | ... | 8,812,463 |
| 1905-6 | 2,840,235 | 3,219,962 | 522,748 | 2,255,569 | 364,704 | 230,237 | ... | ... | 9,433,455 |
| 1910-11 | 3,386,017 | 3,952,070 | 667,113 | 2,746,334 | 855,024 | 286,920 | 360 | ... | 11,893,838 |
| 1911-12 | 3,628,513 | 3,640,241 | 526,388 | 2,965,338 | 1,072,653 | 270,000 | 375 | 3,509 | 12,107,017 |
| 1912-13 | 3,737,085 | 4,079,356 | 668,483 | 3,062,998 | 1,199,991 | 286,065 | 330 | 3,741 | 13,038,049 |
| 1913-14 | 4,567,592 | 4,391,321 | 747,814 | 3,169,559 | 1,537,923 | 264,140 | 354 | 4,309 | 14,683,012 |
| 1914-15 | 4,807,001 | 4,622,759 | 792,568 | 3,232,364 | 1,867,547 | 274,474 | 391 | 4,870 | 15,651,974 |
| 1915-16 | 5,796,376 | 5,711,265 | 729,588 | 3,763,570 | 2,189,456 | 333,334 | 274 | 4,371 | 18,528,234 |

The increase in the area under crop during the past ten years has been most marked in the case of New South Wales, Victoria and Western Australia, the respective increases being 2,956,141, 2,491,303, and 1,824,752 acres. During the same period an increase of 1,508,001 acres was experienced in South Australia, 206,840 in Queensland, and 103,097 acres in Tasmania. The total area under crop in the Commonwealth increased during the period by 9,094,779 acres, and the total for 1915-16 was the highest ever attained by the Commonwealth. During these past ten seasons the percentage of increase was particularly high in Western Australia, viz., 500 per cent. New South Wales had an increase of 104 per cent., while Victoria, South Australia, Tasmania, and Queensland added to their areas under crop to the extent of 77½, 67, 45 and 39½ per cent. respectively. The increase for the whole of the Commonwealth during the same period was over 96 per cent.

3. **Relation to Population.**—From the following table it will be seen that for the Commonwealth as a whole the area under crop has, during the seasons under review, with the exception of 1911-12, increased at a rate which is somewhat greater than that

at which the population of the Commonwealth has increased. This relatively greater increase is in evidence in all the States, being most marked in the case of Western Australia, which has now a larger area under crop per head of population than any State except South Australia. Details for 1901-2 and for the past five seasons are as follows:—

TOTAL AREA UNDER CROP PER 1000 OF POPULATION.

| Season. | N.S.W. | Vic. | Q'land. | S. Aust. | W. Aus. | Tas. | Northern Territory | Federal Terr. | C'wth. |
|---------|--------|--------|---------|----------|---------|--------|--------------------|---------------|--------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2 | 1,656 | 2,451 | 954 | 6,224 | 1,123 | 1,327 | ... | ... | 2,200 |
| 1911-12 | 2,169 | 2,671 | 846 | 7,091 | 3,646 | 1,396 | 115 | 1,827 | 2,650 |
| 1912-13 | 2,102 | 2,955 | 1,050 | 7,122 | 3,920 | 1,451 | 95 | 1,928 | 2,755 |
| 1913-14 | 2,494 | 3,110 | 1,133 | 7,203 | 4,796 | 1,310 | 96 | 2,168 | 3,014 |
| 1914-15 | 2,582 | 3,231 | 1,171 | 7,431 | 5,782 | 1,363 | 98 | 2,486 | 3,168 |
| 1915-16 | 3,099 | 4,025 | 1,075 | 8,584 | 6,885 | 1,658 | 60 | 2,390 | 3,757 |

4. **Relation to Total Area.**—The next table furnishes a comparison of the area under crop in the Commonwealth and the several States and Territories, with the respective total areas. For the Commonwealth as a whole, the area under crop in 1915-16 represented only about one acre in every 103. In Victoria the proportion was about one acre in every 10, in New South Wales one in 34, in Tasmania one in 50, in South Australia one in 65, in Western Australia one in 285, in Queensland one in 588, in the Federal Territory one in 134, and in the Northern Territory one in 1,223,054.

PERCENTAGE OF AREA UNDER CROP TO TOTAL AREA OF EACH STATE AND OF THE COMMONWEALTH FOR SEASONS 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Vic. | Q'land. | S. Aust. | W. Aus. | Tas. | Northern Territory | Federal Terr. | C'wth. |
|---------|--------|--------|---------|----------|---------|-------|--------------------|---------------|--------|
| | % | % | % | % | % | % | % | % | % |
| 1901-2 | 1.147 | 5.273 | 0.113 | 0.919 | 0.035 | 1.386 | ... | ... | 0.442 |
| 1911-12 | 1.832 | 6.472 | 0.123 | 1.219 | 0.172 | 1.609 | 0.0002 | 0.609 | 0.636 |
| 1912-13 | 1.887 | 7.253 | 0.156 | 1.259 | 0.192 | 1.705 | 0.0001 | 0.641 | 0.685 |
| 1913-14 | 2.230 | 7.807 | 0.174 | 1.303 | 0.246 | 1.574 | 0.0001 | 0.738 | 0.771 |
| 1914-15 | 2.427 | 8.219 | 0.185 | 1.349 | 0.299 | 1.636 | 0.0001 | 0.834 | 0.822 |
| 1915-16 | 2.927 | 10.154 | 0.170 | 1.547 | 0.351 | 1.937 | 0.0001 | 0.749 | 0.973 |

5. **Artificially-Sown Grasses.**—In all the States considerable areas are devoted to artificially-sown grasses, frequently sown on uncultivated land after burning off the existing vegetation. Statistics regarding the area under such grasses are as shewn hereunder:—

AREA UNDER SOWN GRASSES, 1901-2 and 1911-12 to 1915-16.

| Season. | New South Wales. | Victoria. | Queensland. | South Australia. | Western Australia. | Tasmania. | Fed. Terr. | Commonwealth. |
|---------|------------------|-----------|-------------|------------------|--------------------|-----------|------------|---------------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2 | 467,839 | 162,954 | 34,679 | 23,510 | 3,711 | 314,422 | ... | 1,007,115 |
| 1911-12 | 1,119,738 | 1,041,772 | 166,175 | 30,431 | 5,760 | 505,940 | 50 | 2,869,866 |
| 1912-13 | 1,152,399 | 1,085,346 | 205,363 | 30,377 | 5,168 | 508,714 | 50 | 2,987,419 |
| 1913-14 | 1,234,405 | 1,094,566 | 236,582 | 30,277 | 6,919 | 605,559 | 50 | 3,208,362 |
| 1914-15 | 1,278,883 | 1,202,130 | 290,147 | 24,974 | 8,025 | 647,602 | 70 | 3,451,831 |
| 1915-16 | 1,247,029 | 1,182,995 | 305,186 | 25,443 | 9,119 | 675,335 | 70 | 3,445,377 |

(a) Including 2 acres Northern Territory 1912-13, 4 acres 1913-14, and 200 acres 1915-16.

The considerable increase in the area of the grass lands of the Commonwealth is due in large measure to the great development of the dairying industry which has taken place during the last ten years, and which is referred to in the succeeding section. The areas contained in the above table relate in most cases, to grasses sown for grazing purposes on uncultivated land, generally after "burning off," and are consequently not included with "area under crop."

§ 3. Relative Importance of Crops.

1. Various Crops.—In the following table are furnished details concerning the areas in the several States under each of the principal crops for the season 1915-16 :—

DISTRIBUTION OF CROPS IN AUSTRALIA, 1915-16.

| Crop. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N.T. | Fed. Terr. | Total for C'wth. |
|----------------------|------------------|------------------|----------------|------------------|------------------|----------------|------------|--------------|-------------------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| Wheat ... | 4,186,493 | 3,679,971 | 93,703 | 2,739,214 | 1,734,117 | 48,642 | ... | 2,372 | 12,484,512 |
| Oats ... | 58,449 | 353,932 | 339 | 126,529 | 104,086 | 78,212 | ... | 97 | 721,644 |
| Maize ... | 154,119 | 22,258* | 146,474 | 702 | 28 | ... | 45 | 11 | 323,637 |
| Barley— | | | | | | | | | |
| Malting ... | 4,373 | 29,473 | 945 | 61,966 | 4,545 | 4,915 | ... | ... | 106,217 |
| Other ... | 1,996 | 31,927 | 422 | 22,934 | 5,524 | 494 | ... | ... | 63,297 |
| Beans and Peas | 318 | 8,563 | 103 | 4,069 | 596 | 12,628 | ... | ... | 26,277 |
| Rye ... | 2,864 | 3,137 | 26 | 2,773 | 570 | 1,240 | ... | 4 | 10,614 |
| Other Cereals ... | ... | 4 | 1 | 100 | 36 | ... | 25 | ... | 166 |
| Hay ... | 1,107,228 | 1,330,455 | 55,174 | 709,831 | 290,036 | 108,216 | 140 | 1,691 | 3,597,771 |
| Green Forage ... | 162,898 | 60,426 | 236,293 | 32,664 | 15,622 | 7,587 | 24 | 137 | 515,561 |
| Grass Seed ... | * | 2,435 | 568 | ... | ... | 1,848 | ... | ... | 4,851 |
| Orchards & other | | | | | | | | | |
| Fruit Gardens | 57,515 | 80,120 | 22,616 | 27,576 | 21,805 | 37,351 | ... | 25 | 247,008 |
| Vines— | | | | | | | | | |
| Productive ... | 6,217 | 17,822 | 1,225 | 23,778 | 2,333 | ... | ... | ... | 51,375 |
| Unproductive | 1,666 | 4,531 | 148 | 3,986 | 418 | ... | ... | ... | 10,749 |
| Market Gardens | 10,940 | 11,379 | 2,330 | 1,712 | 2,787 | 485 | ... | 27 | 29,610 |
| Sugar Cane— | | | | | | | | | |
| Productive ... | 6,030 | ... | 94,459 | ... | ... | ... | ... | ... | 100,489 |
| Unproductive | 5,228 | ... | 58,568 | ... | ... | ... | ... | ... | 63,796 |
| Potatoes ... | 19,582 | 56,910 | 5,796 | 4,341 | 4,866 | 29,491 | ... | 7 | 120,993 |
| Onions ... | 190 | 9,294 | 105 | 376 | 158 | 66 | ... | ... | 10,189 |
| Other root crops | 1,676 | 2,310 | 2,295 | 279 | 278 | 4,929 | 15 | ... | 11,782 |
| Tobacco ... | 1,277 | 160 | 469 | ... | ... | ... | ... | ... | 1,906 |
| Broom Millet ... | 2,422 | 715 | 438 | ... | ... | ... | 5 | ... | 3,580 |
| Pumpkins and | | | | | | | | | |
| Melons ... | 3,907 | 2,440 | 4,359 | 203 | 643 | ... | 20 | ... | 11,572 |
| Hops ... | ... | 107 | ... | 3 | ... | 1,405 | ... | ... | 1,515 |
| All other crops | 1,078 | 2,896 | 2,732 | 534 | 1,008 | 875 | ... | ... | 9,123 |
| Total Area... | 5,796,376 | 5,711,265 | 729,588 | 3,763,570 | 2,189,456 | 333,334 | 274 | 4,371 | 18,528,234 |

* Included with acreage under green forage and hay.

2. Relative Areas of Crops in States and Territories.—Taking the principal crops, i.e., those in the case of which the cultivation amounts to more than 50,000 acres in the Commonwealth, the proportion of each in the various States and Territories to the total area under crop for the season 1915-16 is shown in the next table. In four of the States, viz., New South Wales, Victoria, South Australia, and Western Australia, wheat-growing for grain is by far the most extensive form of cultivation, while in the same States the hay crop is second in importance. In Victoria, South Australia, Western Australia, and Tasmania the oat crop occupies third position. In Queensland, on the other hand, the three principal crops in the order of importance are green forage, maize, and sugar cane, while in Tasmania hay, oats, and wheat occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent over 90½ per cent. of the total area under crop.

PROPORTION OF AREA UNDER CHIEF CROPS, 1915-1916.

| Crop. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N.T. | Federal Terr. | C'wealth |
|----------------------------|--------|-----------|---------|----------|----------|--------|--------|---------------|----------|
| | % | % | % | % | % | % | % | % | % |
| Wheat ... | 72.22 | 64.43 | 12.84 | 72.78 | 79.20 | 14.59 | ... | 54.27 | 67.98 |
| Hay ... | 19.10 | 23.30 | 7.56 | 18.86 | 13.25 | 30.96 | 51.10 | 38.69 | 19.42 |
| Oats ... | 1.01 | 6.20 | 0.04 | 3.36 | 4.75 | 23.46 | ... | 2.22 | 3.89 |
| Maize ... | 2.66 | 0.39 | 20.08 | 0.02 | ... | ... | 16.42 | 0.25 | 1.75 |
| Green Forage | 2.81 | 1.06 | 32.39 | 0.87 | 0.71 | 2.28 | 8.76 | 3.13 | 2.78 |
| Orchards and Fruit Gardens | 0.99 | 1.40 | 3.10 | 0.73 | 1.00 | 11.21 | ... | 0.57 | 1.33 |
| Sugar Cane... | 0.19 | ... | 20.97 | ... | ... | ... | ... | ... | 0.89 |
| Potatoes ... | 0.35 | 1.00 | 0.79 | 0.12 | 0.22 | 8.85 | ... | 0.16 | 0.67 |
| Barley ... | 0.11 | 1.08 | 0.19 | 2.26 | 0.46 | 1.62 | ... | ... | 0.91 |
| Vineyards ... | 0.14 | 0.39 | 0.19 | 0.73 | 0.13 | ... | ... | ... | 0.34 |
| All Other ... | 0.42 | 0.75 | 1.85 | 0.27 | 0.28 | 7.03 | 23.72 | 0.71 | 0.64 |
| Total | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

3. Relative Positions of States and Territories in regard to Principal Crops.—

The relative proportion of acreage of the several crops and the position regarding them in each State and Territory is shewn in the following table. New South Wales exhibits the largest area under wheat and maize; Victoria the leading position in regard to hay, oats, orchards and fruit gardens, and potatoes; and Queensland is first in sugar cane and green forage and second in maize. South Australia had the largest area under vineyards, and barley; Western Australia third position in oats and barley and fourth in wheat, hay, and vineyards; while Tasmania was second in regard to potatoes, third in orchards and fruit gardens, and fourth in oats.

RELATIVE POSITIONS OF SEVERAL STATES AND TERRITORIES IN REGARD TO AREA UNDER EACH OF THE PRINCIPAL CROPS DURING THE SEASON 1915-16.

| Crop. | N.S.W. | Vict. | Q'land. | S. Aust. | W.A. | Tas. | N.T. | Federal Terr. | C'wlth |
|-------------------------------|--------|-------|---------|----------|-------|-------|------|---------------|--------|
| Wheat ... | 33.53 | 29.48 | 0.75 | 21.94 | 13.89 | 0.39 | ... | 0.02 | 100.00 |
| position | 1 | 2 | 5 | 3 | 4 | 6 | ... | 7 | |
| Hay ... | 30.78 | 36.99 | 1.53 | 19.73 | 8.06 | 2.87 | ... | 0.04 | 100.00 |
| position | 2 | 1 | 6 | 3 | 4 | 5 | ... | 7 | |
| Oats ... | 8.10 | 49.04 | 0.05 | 17.54 | 14.42 | 10.84 | ... | 0.01 | 100.00 |
| position | 5 | 1 | 6 | 2 | 3 | 4 | ... | 7 | |
| Maize ... | 47.62 | 6.80 | 45.34 | 0.22 | 0.01 | ... | 0.01 | ... | 100.00 |
| position | 1 | 3 | 2 | 4 | 6 | ... | 5 | ... | |
| Green Forage | 31.58 | 11.72 | 45.83 | 6.34 | 3.03 | 1.47 | ... | 0.03 | 100.00 |
| position | 2 | 3 | 1 | 4 | 5 | 6 | ... | 7 | |
| Orchards and Fruit Gardens... | 23.28 | 32.44 | 9.16 | 11.16 | 8.83 | 15.12 | ... | 0.01 | 100.00 |
| position | 2 | 1 | 5 | 4 | 6 | 3 | ... | 7 | |
| Sugar Cane | 6.85 | ... | 93.15 | ... | ... | ... | ... | ... | 100.00 |
| position | 2 | ... | 1 | ... | ... | ... | ... | ... | |
| Potatoes ... | 16.37 | 46.15 | 6.08 | 3.52 | 3.95 | 23.93 | ... | ... | 100.00 |
| position | 3 | 1 | 4 | 6 | 5 | 2 | ... | ... | |
| Barley ... | 3.76 | 36.22 | 0.81 | 50.08 | 5.94 | 3.19 | ... | ... | 100.00 |
| position | 4 | 2 | 6 | 1 | 3 | 5 | ... | ... | |
| Vineyards ... | 12.69 | 35.98 | 2.21 | 44.69 | 4.43 | ... | ... | ... | 100.00 |
| position | 3 | 2 | 5 | 1 | 4 | ... | ... | ... | |
| All other crops | 22.30 | 34.50 | 9.81 | 8.45 | 5.16 | 19.70 | 0.05 | 0.03 | 100.00 |
| position | 2 | 1 | 4 | 5 | 6 | 3 | 7 | 8 | |
| Total area under crop | 31.28 | 30.82 | 3.94 | 20.31 | 11.82 | 1.81 | ... | 0.02 | 100.00 |
| position | 1 | 2 | 5 | 3 | 4 | 6 | ... | 7 | |

4. **Acreege of Principal Crops, Commonwealth.**—The acreage devoted to each of the principal crops in the whole Commonwealth during the last five seasons is shewn below :—

ACREAGE OF CHIEF COMMONWEALTH CROPS, 1911-12 to 1915-16.

| Crop. | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. |
|-----------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | Acres. | Acres. | Acres. | Acres. | Acres. |
| Wheat | 7,427,834 | 7,339,651 | 9,237,398 | 9,651,081 | 12,484,512 |
| Hay | 2,518,288 | 3,217,041 | 2,754,672 | 2,628,613 | 3,597,771 |
| Oats | 616,857 | 874,034 | 859,020 | 774,734 | 721,644 |
| Maize | 340,065 | 314,936 | 331,879 | 339,781 | 323,637 |
| Green Forage | 424,440 | 428,006 | 486,504 | 1,352,158 | 515,561 |
| Orchards and Fruit Gardens | 194,524 | 205,174 | 216,021 | 232,711 | 247,008 |
| Sugar Cane | 144,283 | 155,567 | 160,976 | 172,616 | 164,285 |
| Potatoes | 130,463 | 128,889 | 174,262 | 151,845 | 120,993 |
| Barley | 116,466 | 181,387 | 222,564 | 153,656 | 169,514 |
| Vineyards | 60,602 | 62,388 | 61,197 | 60,985 | 62,124 |
| All other Crops | 133,195 | 130,976 | 128,519 | 133,794 | 121,185 |
| Total | 12,107,017 | 13,038,049 | 14,683,012 | 15,651,974 | 18,528,234 |

During the period under review the area devoted to the several crops has varied considerably, that under wheat attaining a maximum in the season 1915-16, and a minimum in 1912-13, while hay also reached its maximum area in 1915-16 but its minimum in 1911-12. Of the other crops, green forage and sugar cane attained their maximum areas in 1914-15, maize in 1911-12, oats and vineyards in 1912-13, potatoes and barley in 1913-14, and orchards and fruit gardens in 1915-16.

§ 4. Wheat.

1. **Progress of Wheat-Growing.**—(i.) *Acreege.* The area under wheat for grain is given below for each State at various periods since 1860, and is shewn diagrammatically in the graph hereinafter :—

AREA UNDER WHEAT, 1860-1 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | N.T. | Fed. Terr. | C'wealth. |
|---------|-----------|-----------|---------|------------|-----------|--------|--------|------------|------------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1860-1 | 128,829 | 161,252 | 196 | 273,672 | 13,584 | 66,450 | ... | ... | 643,983 |
| 1865-6 | 131,653 | 178,628 | 2,068 | 410,608 | 22,249 | 73,270 | ... | ... | 818,476 |
| 1870-1 | 147,997 | 284,167 | 2,892 | 604,761 | 26,640 | 57,382 | ... | ... | 1,123,839 |
| 1875-6 | 133,609 | 321,401 | 4,478 | 898,820 | 21,561 | 42,745 | ... | ... | 1,422,614 |
| 1880-1 | 253,138 | 977,285 | 12,632 | 1,733,542 | 27,686 | 50,022 | ... | ... | 3,054,305 |
| 1885-6 | 264,867 | 1,020,082 | 10,093 | 1,922,555 | 29,511 | 30,266 | ... | ... | 3,277,374 |
| 1890-1 | 333,233 | 1,145,163 | 10,390 | 1,673,573 | 33,820 | 32,452 | ... | ... | 3,228,631 |
| 1895-6 | 596,684 | 1,412,736 | 27,090 | 1,649,929 | 23,241 | 64,652 | ... | ... | 3,774,332 |
| 1900-1 | 1,530,609 | 2,017,321 | 79,304 | 1,913,247 | 74,308 | 51,825 | ... | ... | 5,666,614 |
| 1905-6 | 1,939,447 | 2,070,517 | 119,356 | 1,757,036 | 195,071 | 41,319 | ... | ... | 6,122,746 |
| 1910-11 | 2,128,826 | 2,398,089 | 106,718 | 2,104,717 | 581,862 | 52,242 | 2 | ... | 7,372,456 |
| 1911-12 | 2,379,968 | 2,164,066 | 42,962 | 2,190,782 | 612,104 | 37,208 | 2 | 742 | 7,427,834 |
| 1912-13 | 2,230,500 | 2,085,216 | 124,963 | 2,079,633 | 793,096 | 25,226 | 3 | 1014 | 7,339,651 |
| 1913-14 | 3,203,572 | 2,565,861 | 132,655 | 2,267,851 | 1,097,193 | 18,432 | 9 | 1825 | 9,287,398 |
| 1914-15 | 2,756,343 | 2,363,535 | 127,015 | 2,502,630 | 1,376,012 | 23,865 | ... | 1681 | 9,651,081 |
| 1915-16 | 4,186,498 | 3,679,971 | 93,703 | 2,739,214 | 1,734,117 | 48,642 | ... | 2372 | 12,484,512 |

The area devoted in the Commonwealth to the production of wheat for grain was higher for the season 1915-16 than for any previous season, there being an increase in all the States with the exception of Queensland, which shewed a falling-off. The figures for the previous season shew that the maximum area under wheat for grain was then

attained by all the States with the exception of Queensland and Tasmania, the maximum for those States being for the seasons 1912-13 and 1898-9 respectively. The average area under wheat in the Commonwealth in the past ten seasons was 7,677,774 acres. The past six seasons exceeded this average, while the previous four seasons fell short of it.

Although final figures for 1916-7 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in the Commonwealth as about 11,170,000 acres, representing a decrease of 10½ per cent. on the 1915-16 area. New South Wales returns shew an acreage of 3,521,331; Victoria, 3,125,692; South Australia, 2,765,383; Western Australia, 1,566,533, and Queensland, 168,340, while the approximate total for the Commonwealth is 11,169,936 acres.

(ii.) *Yield.* The production during the same period for each State and for the Commonwealth as a whole is given below:—

PRODUCTION OF WHEAT, 1860-1 to 1916-17.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N. T. | Federal Terr. | C'wealth. |
|--------------|------------|------------|-----------|------------|------------|-----------|----------|---------------|-------------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1860-1 ... | 1,581,598 | 3,459,914 | 3,136 | 3,576,593 | 208,332 | 1,415,896 | ... | ... | 10,245,469 |
| 1865-6 ... | 1,013,863 | 3,514,227 | 33,088 | 3,587,800 | 231,594 | 1,273,766 | ... | ... | 9,654,338 |
| 1870-1 ... | 999,595 | 2,870,409 | 39,787 | 6,961,164 | 316,769 | 896,881 | ... | ... | 12,084,605 |
| 1875-6 ... | 1,958,640 | 4,978,914 | 97,400 | 10,739,834 | 237,171 | 700,092 | ... | ... | 18,712,051 |
| 1880-1 ... | 3,717,355 | 9,727,369 | 223,243 | 8,606,510 | 332,232 | 750,040 | ... | ... | 23,356,749 |
| 1885-6 ... | 2,733,133 | 9,170,538 | 51,598 | 14,612,876 | 339,376 | 524,348 | ... | ... | 27,431,869 |
| 1890-1 ... | 3,649,216 | 12,751,295 | 207,990 | 9,399,389 | 467,889 | 642,980 | ... | ... | 27,118,259 |
| 1895-6 ... | 5,195,312 | 5,669,174 | 123,630 | 5,929,300 | 188,077 | 1,164,855 | ... | ... | 18,270,348 |
| 1900-1 ... | 16,173,771 | 17,847,321 | 1,194,088 | 11,253,148 | 774,653 | 1,110,421 | ... | ... | 48,355,492 |
| 1905-6 ... | 20,737,200 | 23,417,670 | 1,137,321 | 20,143,798 | 2,308,305 | 776,478 | ... | ... | 68,520,772 |
| 1910-11 ... | 27,913,547 | 34,813,019 | 1,022,373 | 24,344,740 | 5,897,540 | 1,120,744 | 20 | ... | 95,111,983 |
| 1911-12 ... | 25,080,111 | 20,891,877 | 285,109 | 20,352,720 | 4,358,904 | 659,615 | 20 | 7,991 | 71,636,347 |
| 1912-13 ... | 32,466,506 | 26,223,104 | 1,975,505 | 21,496,216 | 9,168,594 | 630,315 | ... | 20,830 | 91,981,070 |
| 1913-14 ... | 37,996,068 | 32,936,245 | 1,769,432 | 16,936,988 | 13,331,350 | 349,736 | ... | 24,313 | 103,344,132 |
| 1914-15 ... | 12,812,803 | 3,940,947 | 1,585,087 | 3,527,428 | 2,624,190 | 384,220 | ... | 17,727 | 24,892,402 |
| 1915-16 ... | 66,726,459 | 58,521,706 | 414,458 | 34,134,504 | 18,236,355 | 993,790 | ... | 38,451 | 179,065,703 |
| 1916-17* ... | 36,743,500 | 51,162,438 | 2,463,141 | 43,830,972 | 16,107,804 | 492,110 | ... | † | 150,799,965 |

* Final figures Victoria and Queensland, those for remaining States approximate.

† Included with New South Wales.

The harvest of 1915-16 was the largest ever reaped in the Commonwealth, and exceeded by over 75,700,000 bushels that of 1913-14, the previous largest harvest; the 1910-11 yield was 95,111,983 bushels, for 1912-13, 91,981,070 bushels, and that for 1909-10 was 90,413,597 bushels, these being the only five occasions, prior to 1916-17, on which a yield exceeding 90,000,000 bushels has been obtained. The harvest for 1914-15 was poor, the prolonged drought having been disastrous to the wheat areas. The yield was 24,892,402 bushels, the lowest since 1902. The approximate estimate for the 1916-17 season gives 150,800,000 bushels which, if obtained, will constitute the second largest yield on record.

(iii.) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the seasons 1901-2 and 1911-12 to 1915-16 and for the decennium:—

YIELD OF WHEAT PER ACRE, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Vic. | Q'land. | S. Aus. | W. Aus. | Tasmania. | N.T. | Fed. Terr. | C'wealth. |
|------------------------|----------|---------|---------|---------|---------|-----------|---------|------------|-----------|
| | Bushels. | B'shls. | B'shfs. | B'shls. | B'shls. | B'shls. | B'shls. | B'shls. | B'shls. |
| 1901-2 ... | 10.64 | 6.91 | 19.40 | 4.60 | 10.10 | 21.86 | ... | ... | 7.54 |
| 1911-12 ... | 10.54 | 9.65 | 6.64 | 9.29 | 7.12 | 17.73 | 10.00 | 10.77 | 9.64 |
| 1912-13 ... | 14.56 | 12.58 | 15.81 | 10.34 | 11.56 | 24.99 | ... | 20.54 | 12.53 |
| 1913-14 ... | 11.86 | 12.84 | 13.34 | 7.47 | 12.15 | 18.97 | ... | 13.32 | 11.13 |
| 1914-15 ... | 4.65 | 1.38 | 12.48 | 1.41 | 1.91 | 16.10 | ... | 10.55 | 2.58 |
| 1915-16 ... | 15.94 | 15.90 | 4.42 | 12.46 | 10.52 | 20.43 | ... | 16.21 | 14.34 |
| Average for 10 seasons | 11.81 | 11.24 | 11.37 | 9.66 | 9.03 | 20.66 | ... | 14.32 | 10.81 |

As the above figures shew, there were considerable variations in the average yields, chiefly due to the vagaries of the season.

For the Commonwealth as a whole the average yield for 1914-15 of 2.58 bushels per acre was 8.23 below the average yield of 10.81 per acre during the last ten seasons. The highest average yield for any State was in Tasmania with 16.10 bushels per acre, and the lowest in Victoria with 1.38 bushels per acre. The yield per acre for the Commonwealth for 1915-16 was 14.34 bushels, exceeding that of any previous year by over three-fifths of a bushel. The average yield per acre for New South Wales was 15.94, for Victoria 15.90 bushels, while that for South Australia was 12.46 bushels.

(iv.) *Relation to Population.* During the seasons embraced in the following table, the Commonwealth's production of wheat per head of population has varied between $3\frac{1}{2}$ bushels in 1902-3 and $36\frac{1}{2}$ bushels in 1915-16. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1916-17 had a yield averaging over 101 bushels per head. Taking a series of years Queensland is the State in which the average production of wheat per head is least. Particulars for 1901-2 and the past six seasons are as follows:—

AUSTRALIAN WHEAT PRODUCTION PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N.T. | Fed. Terr. | C'wealth. |
|---------|----------|-----------|----------|----------|----------|---------|---------|------------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels | Bush'ls | Bush'ls | Bushels |
| 1901-2 | 10,766 | 10,023 | 3,340 | 22,299 | 4,943 | 5,499 | ... | ... | 10,082 |
| 1911-12 | 14,993 | 15,330 | 485 | 48,671 | 14,817 | 3,409 | 6 | 4,056 | 15,955 |
| 1912-13 | 18,265 | 18,995 | 3,104 | 49,981 | 29,950 | 3,196 | ... | 10,737 | 19,433 |
| 1913-14 | 20,743 | 23,324 | 2,680 | 38,489 | 41,572 | 1,734 | ... | 12,230 | 21,212 |
| 1914-15 | 6,883 | 2,755 | 2,342 | 7,986 | 8,124 | 1,908 | ... | 9,049 | 5,038 |
| 1915-16 | 35,675 | 41,241 | 611 | 77,854 | 57,344 | 4,944 | ... | 21,023 | 36,307 |
| 1916-17 | 19,746 | 36,550 | 3,617 | 101,481 | 52,162 | 2,461 | ... | † | 30,931 |

* Approximate, except for Victoria, and Queensland. † Included with New South Wales.

2. *Australian and Foreign Wheat Yields.*—In the next table will be found a statement of the average return per acre in the principal wheat-growing countries of the world, ranging from Denmark with a maximum of 47.14 bushels per acre, to Mexico with a minimum of under 3 bushels per acre. Australia with approximately 14.34 occupies a subordinate position. (See table on previous page.)

AVERAGE YIELD OF WHEAT PER ACRE IN VARIOUS COUNTRIES, 1915.

| Country. | Average Yield in bushels per acre. | Country. | Average Yield in bushels per acre. |
|---------------------|------------------------------------|-------------------------|------------------------------------|
| Denmark ... | 47.14 | United States ... | 16.37 |
| Netherlands ... | 37.22 | Servia* ... | 16.03 |
| Belgium* ... | 34.94 | Chile ... | 14.41 |
| United Kingdom* ... | 31.70 | Australia ... | 14.34 |
| Sweden (1912) ... | 30.08 | Spain ... | 13.45 |
| Germany* ... | 29.58 | Italy ... | 13.22 |
| Canada ... | 25.10 | Russia in Europe ... | 13.09 |
| Egypt ... | 23.99 | India ... | 11.53 |
| Bulgaria (1913) ... | 23.82 | Argentine Republic* ... | 11.17 |
| New Zealand ... | 21.59 | Algeria ... | 10.47 |
| Austria (1913) ... | 19.89 | Portugal (1911) ... | 9.78 |
| Japan* ... | 18.44 | Tunis ... | 9.61 |
| Rumania ... | 18.39 | Russia in Asia ... | 8.99 |
| Hungary ... | 17.89 | Uruguay ... | 4.26 |
| France ... | 16.97 | Mexico* ... | 2.97 |

* 1914.

3. *Wheat Crops of the World.*—The latest available official statistics of the production of wheat in various countries are given in the following table:—

WHEAT YIELD IN VARIOUS COUNTRIES, 1915.

| Country. | Yield in Bushels. | Country. | Yield in Bushels. |
|------------------------------|--------------------|---------------------------|-------------------|
| United States ... | 980,552,947 | Turkey in Asia ... | 33,929,000 |
| Russia in Europe (1913)* ... | 812,334,900 | Algeria ... | 33,593,588 |
| India ... | 371,644,694 | Japan ... | 23,138,609 |
| Canada ... | 325,968,505 | Chile ... | 18,430,539 |
| France ... | 230,204,079 | Turkey in Europe ... | 17,449,200 |
| Australia ... | 179,065,703 | Persia ... | 15,510,400 |
| Argentine Republic ... | 172,767,437 | Tunisia ... | 10,685,696 |
| Italy ... | 165,322,445 | Servia ... | 9,694,000 |
| Germany ... | 155,104,000 | Sweden ... | 8,724,600 |
| Hungary ... | 148,254,220 | Belgium ... | 7,755,200 |
| Spain ... | 135,035,481 | Denmark ... | 7,730,965 |
| Russia in Asia (1913) ... | 111,120,380 | New Zealand ... | 7,103,360 |
| Rumania ... | 86,510,225 | Portugal ... | 6,369,927 |
| Austria ... | 75,013,200 | Netherlands ... | 5,955,024 |
| United Kingdom ... | 74,021,445 | Union of South Africa ... | 5,849,360 |
| Bulgaria ... | 44,797,913 | Mexico ... | 3,877,600 |
| Egypt ... | 37,950,071 | Uruguay ... | 3,312,440 |

* Including Poland and Northern Caucasia.

Various estimates of the total quantity of wheat produced in the world have been made. That furnished by the International Institute of Agriculture, Rome, gives the following figures for the ten years 1905 to 1914:—

WORLD'S PRODUCTION OF WHEAT.

| Year. | 1,000 bushels. | Year. | 1,000 bushels. | Year. | 1,000 bushels. |
|----------|----------------|----------|----------------|----------|----------------|
| 1905 ... | 3,300,502 | 1909 ... | 3,586,977 | 1913 ... | 4,047,819 |
| 1906 ... | 3,414,945 | 1910 ... | 3,528,098 | 1914 ... | 3,883,779 |
| 1907 ... | 3,130,403 | 1911 ... | 3,511,966 | | |
| 1908 ... | 3,141,456 | 1912 ... | 3,797,529 | | |

In this estimate the figures given for Australia and New Zealand relate to the agricultural year ending on 31st March in the year specified.

For the ten years referred to, the Australian production of wheat aggregated 749,211,000 bushels, thus representing slightly under 2½ per cent. of the world's production. The total quantity of wheat produced in the British Empire during the same period of ten years was approximately 6,580 million bushels, so that the Australian production of wheat represented 11.4 per cent. of that of the British Empire, while the British Empire production represented 18.6 per cent. of the world's total.

4. **Prices of Wheat.**—(i.) *British Wheat.* Since the United Kingdom is the largest importer of Australian wheat, the price of wheat in the British markets is a matter of prime importance to the local producer. The table below gives the average prices per Imperial quarter realised for British-grown wheat:—

PRICES OF BRITISH WHEAT PER QUARTER, 1861 to 1915.

| Year. | Average for Year. | | Highest Weekly Average. | | Lowest Weekly Average. | | Year. | Average for Year. | | Highest Weekly Average. | | Lowest Weekly Average. | |
|----------|-------------------|----|-------------------------|----|------------------------|----|----------|-------------------|----|-------------------------|----|------------------------|----|
| | s. | d. | s. | d. | s. | d. | | s. | d. | s. | d. | s. | d. |
| 1861 ... | 55 | 4 | 61 | 6 | 50 | 0 | 1907 ... | 30 | 7 | 36 | 3 | 26 | 0 |
| 1871 ... | 56 | 8 | 60 | 0 | 52 | 6 | 1908 ... | 32 | 0 | 35 | 6 | 30 | 5 |
| 1881 ... | 45 | 4 | 55 | 2 | 40 | 9 | 1909 ... | 36 | 11 | 44 | 9 | 31 | 4 |
| 1891 ... | 37 | 0 | 41 | 8 | 32 | 3 | 1910 ... | 31 | 8 | 33 | 9 | 29 | 0 |
| 1901 ... | 26 | 9 | 27 | 8 | 25 | 8 | 1911 ... | 31 | 8 | 33 | 4 | 30 | 0 |
| 1902 ... | 28 | 1 | 31 | 8 | 24 | 10 | 1912 ... | 34 | 9 | 39 | 2 | 29 | 10 |
| 1903 ... | 26 | 9 | 30 | 3 | 24 | 11 | 1913 ... | 31 | 8 | 34 | 3 | 30 | 0 |
| 1904 ... | 28 | 4 | 30 | 6 | 26 | 3 | 1914 ... | 34 | 11 | 43 | 3 | 30 | 11 |
| 1905 ... | 29 | 8 | 32 | 3 | 26 | 8 | 1915 ... | 52 | 10 | 62 | 0 | 42 | 9 |
| 1906 ... | 28 | 3 | 30 | 9 | 25 | 9 | | | | | | | |

(ii.) *Australian and other Wheat.* Generally speaking, Australian wheat shews a grain of bright clear texture, rich in gluten, and of fine milling quality. Its excellence is attested by the high price which it realises in the home markets. The statement below shews, for the last five years, the average value per Imperial quarter of the wheat imported into the United Kingdom from the chief producing countries. Owing to the drought during the 1914-15 season the quantity of Australian wheat imported into the United Kingdom in 1915 was negligible:—

AVERAGE PRICE OF FOREIGN WHEAT IMPORTED INTO THE UNITED KINGDOM, 1911 TO 1915.

| Country. | Average Price per Imperial Quarter. | | | | | Country. | Average Price per Imperial Quarter. | | | | |
|-------------------|-------------------------------------|-------|-------|-------|-------|-------------------|-------------------------------------|-------|-------|-------|-------|
| | 1911. | 1912. | 1913. | 1914. | 1915. | | 1911. | 1912. | 1913. | 1914. | 1915. |
| | s. d. | s. d. | s. d. | s. d. | s. d. | | s. d. | s. d. | s. d. | s. d. | s. d. |
| Australia ... | 34 10 | 38 5 | 37 6 | 36 6 | 44 9 | Germany ... | 33 6 | 36 8 | 31 0 | 32 0 | ... |
| Russia ... | 33 4 | 37 6 | 33 11 | 33 6 | 50 0 | Bulgaria ... | 35 1 | 36 4 | ... | 34 1 | ... |
| Rumania ... | 34 7 | 37 3 | 33 3 | 33 7 | ... | United States ... | 34 9 | 35 9 | 35 1 | 37 3 | 54 7 |
| British India ... | 33 7 | 37 0 | 36 6 | 39 5 | 54 4 | Argentina ... | 33 4 | 35 6 | 35 8 | 34 1 | 60 8 |
| Chile... .. | 33 0 | 36 9 | 36 7 | 35 7 | ... | Canada ... | 34 10 | 35 2 | 34 8 | 37 5 | 54 10 |

In the next table will be found a statement of the export values of Australian wheat during each of the last ten years:—

EXPORT VALUES OF AUSTRALIAN WHEAT, 1906 to 1915-16.

| Year. | 1906. | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. | 1913. | 1914-15. | 1915-16. |
|------------------|---------|---------|---------|---------|---------|---------|----------|---------|----------|----------|
| Price per bushel | 3s. 3d. | 3s. 4d. | 4s. 1d. | 4s. 2d. | 4s. 2d. | 3s. 6d. | 3s. 11d. | 3s. 9d. | 4s. 1d. | 5s. 7d. |

The export values here shewn are the average declared values for the successive years at the several ports of shipment in the Commonwealth.

5. *Imports and Exports of Wheat and Flour.*—(i.) *Quantities.* The table hereunder shews the imports, exports, and net exports of wheat and flour during 1901 and from 1911 to 1915-16. For the sake of convenience, flour has been expressed at its equivalent in wheat, one ton of flour being taken as equal to 50 bushels of grain. During 1903 and 1915-16 the Commonwealth imports of wheat and flour were equivalent to 12,607,940 and 5,633,596 bushels of wheat respectively. This importation was necessitated by the failure of the crop in the preceding season. In ordinary seasons the import of wheat and flour is negligible. During the past five years the export has ranged between 6,886,293 bushels in 1914-15 and 63,942,390 bushels in 1911, the net exports for the period averaging 40,362,523 bushels.

IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH, 1901 AND 1911 TO 1915-16.

| Year. | Imports. | | | Exports. | | | Net Exports. |
|---------|-----------|-------------------------|-----------|------------|-------------------------|------------|--------------|
| | Wheat. | Flour. | Total. | Wheat. | Flour. | Total. | |
| | Bushels. | Eq. Bshls. ¹ | Bushels. | Bushels. | Eq. Bshls. ¹ | Bushels. | Bushels. |
| 1901 | 22,992 | 302,550 | 325,542 | 20,260,058 | 4,840,700 | 25,100,758 | 24,775,216 |
| 1911 | 113 | 12,150 | 12,263 | 55,147,840 | 8,794,550 | 63,942,390 | 63,930,127 |
| 1912 | 1,483 | 7,300 | 8,783 | 32,604,248 | 8,404,700 | 41,008,948 | 41,000,165 |
| 1913 | 60 | 2,650 | 2,710 | 42,922,887 | 11,082,900 | 54,005,787 | 54,003,077 |
| 1914-15 | 1,641,237 | 5,150 | 1,646,387 | 4,210,593 | 2,675,700 | 6,886,293 | 5,239,906 |
| 1915-16 | 5,616,696 | 16,900 | 5,633,596 | 28,621,445 | 7,347,750 | 35,969,195 | 30,335,599 |

1. Equivalent in bushels of wheat.

(ii.) *Destination of Exported Breadstuffs.* In the next two tables will be found a list of the principal countries to which the Commonwealth exported wheat and flour during each

year of the period 1911 to 1915-16. The countries are as shewn in the Australian Customs returns, but owing to the fact that wheat ships are frequently instructed to call for orders at various ports, the countries to which these ports belong cannot always be considered as the ultimate destination of the whole of the wheat said to be exported to them.

EXPORTS OF WHEAT FROM THE COMMONWEALTH, 1911 to 1915-16.

| Country to which Exported. | 1911. | 1912. | 1913. | 1914-15. | 1915-16. | Total for Five Years. |
|----------------------------|-------------------|-------------------|-------------------|------------------|-------------------|-----------------------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| U. Kingdom | 37,475,188 | 23,099,670 | 27,922,717 | 1,532,693 | 14,494,243 | 104,524,516 |
| Sth. African Union ... | 2,458,780 | 1,784,382 | 4,482,865 | 1,088,507 | 2,919,608 | 12,734,142 |
| Canary Is. ... | 4,756,647 | 3,107,257 | 1,477,005 | ... | 2,960,553 | 12,301,467 |
| France ... | 5,468,993 | 53,773 | 1,943,208 | 9,482 | 2,186,567 | 9,662,023 |
| Peru ... | 1,594,610 | 1,201,682 | 943,130 | 290,810 | 156,302 | 4,186,534 |
| Belgium ... | 1,639,140 | 1,414,263 | 1,742,803 | ... | ... | 4,796,206 |
| Chile ... | 477,573 | ... | ... | 650,510 | ... | 1,128,083 |
| Japan ... | 99,560 | 42,550 | 1,215,778 | 223,996 | ... | 1,581,884 |
| Germany ... | 255,740 | 556,508 | 290,553 | ... | ... | 1,102,801 |
| India ... | ... | ... | ... | ... | ... | ... |
| China ... | ... | ... | ... | ... | ... | ... |
| Italy ... | ... | 488,697 | 1,879,923 | 157,000 | 3,258,313 | 5,783,933 |
| Egypt ... | 156,485 | 427,988 | 92,413 | ... | 267,568 | 944,454 |
| Philippine I. ... | 152 | 1,667 | ... | ... | 2 | 1,821 |
| New Zealand | 12,247 | 1,695 | ... | 151,042 | 30,380 | 195,364 |
| New Caledonia ... | 642 | 1,400 | 1,129 | 743 | 173 | 4,087 |
| Ceylon ... | 1,325 | 1,487 | 1,748 | 853 | 337 | 5,750 |
| Other Countries ... | 750,758 | 421,229 | 929,615 | 104,957 | 2,347,385 | 4,553,944 |
| Total ... | 55,147,840 | 32,604,248 | 42,922,887 | 4,210,593 | 28,621,441 | 163,507,009 |

* For orders.

The exports of flour during the same period and the principal countries of destination were as follows:—

EXPORTS OF FLOUR FROM THE COMMONWEALTH, 1911 to 1915-16.

| Country to which Exported. | 1911. | 1912. | 1913. | 1914-15. | 1915-16. | Total for Five Years. |
|----------------------------|----------------|----------------|----------------|---------------|----------------|-----------------------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| Sth. African Union | 35,136 | 26,230 | 38,209 | 14,075 | 22,019 | 135,669 |
| United Kingdom | 24,616 | 38,535 | 18,894 | 850 | 43,604 | 126,499 |
| Java ... | 30,964 | 29,275 | 38,103 | 6,003 | 11,674 | 116,019 |
| Portuguese East Africa ... | 8,421 | 4,264 | 15,612 | 3,163 | 216 | 31,676 |
| Philippine Islands | 16,634 | 16,240 | 14,366 | 3,313 | 3,383 | 53,936 |
| Straits Settlements | 22,036 | 15,177 | 21,625 | 3,352 | 5,023 | 67,213 |
| Hong Kong ... | 5,687 | 1,952 | 2,466 | 140 | 1,442 | 11,687 |
| New Zealand ... | 2,818 | 1,641 | 3,057 | 5,064 | 2,190 | 14,770 |
| New Caledonia ... | 4,174 | 4,012 | 4,143 | 3,791 | 3,566 | 19,686 |
| Mauritius ... | 1,974 | 1,240 | 1,906 | 1,810 | ... | 6,930 |
| Ceylon ... | 3,046 | 3,901 | 5,454 | 2,173 | 342 | 14,916 |
| China ... | 1,656 | 1,738 | 2,188 | 545 | 384 | 6,511 |
| Fiji ... | 2,230 | 2,429 | 2,619 | 1,834 | 1,257 | 10,369 |
| Japan ... | 269 | 453 | 610 | 2 | 53 | 1,387 |
| Other Countries ... | 16,230 | 21,007 | 52,406 | 7,399 | 51,802 | 148,844 |
| Total ... | 175,891 | 168,094 | 221,658 | 53,514 | 146,955 | 766,112 |

For the five years under review the export of wheat to the United Kingdom amounted to 104,524,516 bushels, or nearly 64 per cent. of the total export for the period. On the other hand, the export of flour to the United Kingdom aggregated only 126,499 tons, or 16½ per cent. of the total export. During the quinquennium the heaviest exports of flour have been to South Africa, the United Kingdom, Java, Portuguese East Africa, the Philippine Islands, the Straits Settlements, and New Caledonia.

(iii.) *Exports of Wheat and Flour.* From the foregoing returns it will be seen that the quantity of Australian wheat exported in the form of flour during the past five years represents, on the average, slightly under 19 per cent. of the total equivalent in wheat exported as wheat or flour from the Commonwealth. One cause of this, and probably the chief one, is the fact that Australian wheats are in considerable demand with the English millers for mixing purposes, while the Australian flour has not, up to the present, received that consideration from the English bakers which its admitted qualities undoubtedly merit. Steps which have recently been taken to bring these qualities before the British public may possibly have the effect of increasing the proportion of wheat exported in the form of flour.

A point of some interest in connection with the export of wheat, and one which bears also on the proportions of wheat and flour exports just referred to, is that concerning the quantity of phosphoric acid which this export has the effect of removing from the Commonwealth, and the necessity which exists for the return to the soil of this substance in some form.

According to an estimate furnished by the chemist to the New South Wales Department of Agriculture (F. B. Guthrie, Esq., F.C.S., etc.), the proportions of milled product from a bushel (60 lbs.) of wheat are, approximately, 42 lbs. of flour, 9 lbs. of bran, and 9 lbs. of pollard, while the percentage of phosphoric acid contained in these products is as follows:—

| | |
|----------------|---|
| Flour | 0.32 per cent., or 0.13 lb. per bushel. |
| Bran | 3.00 " 0.27 " |
| Pollard | 0.90 " 0.08 " |

The total amount of phosphoric acid contained in a bushel of wheat is, therefore, 0.48 lb., of which 0.13 lb. is in the flour and 0.35 lb. in the offal.

During the past ten years the net exports from the Commonwealth of wheat and its milled products have amounted to 309,630,663 bushels of wheat, 1,480,587 tons of flour, and 3,317,455 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 159,000,000 lbs. of phosphoric acid, the value of which as a fertiliser would be over a million pounds sterling.

(iv.) *Local Consumption of Wheat.* The estimated consumption of wheat for food and for seed purposes in the Commonwealth during the past ten years is given in the following tables:—

WHEAT USED FOR HUMAN CONSUMPTION IN THE COMMONWEALTH.

| Year. | Flour Milled. | Net Exports of Flour. | | Net Quantity Available for Home Consumption. | | Net Quantity Available per Head of Population. | |
|------------------------|------------------|-----------------------|--------------------------|--|-------------------------------|--|-------------------------------|
| | | Flour. | Flour in Biscuits Exp'd. | Flour. | Equivalent in Terms of Wheat. | Flour. | Equivalent in Terms of Wheat. |
| 1906 ... | Tons. 613,923 | Tons. 166,005 | Tons. 1,570 | Tons. 446,348 | Bushels. 22,317,400 | Tons. .1099 | Bushels. 5,496 |
| 1907 ... | 652,135 | 163,064 | 1,840 | 487,231 | 24,361,550 | .1182 | 5,908 |
| 1908 ... | 552,388 | 116,625 | 1,810 | 433,953 | 21,697,650 | .1035 | 5,173 |
| 1909 ... | 603,688 | 129,889 | 1,980 | 471,819 | 23,590,950 | .1104 | 5,519 |
| 1910 ... | 649,282 | 139,774 | 2,340 | 507,168 | 25,358,400 | .1161 | 5,803 |
| 1911 ... | 691,301 | 175,649 | 2,570 | 513,082 | 25,654,100 | .1143 | 5,713 |
| 1912 ... | 677,053 | 167,948 | 2,820 | 506,285 | 25,314,250 | .1090 | 5,450 |
| 1913 ... | 760,813 | 221,605 | 2,600 | 536,408 | 26,820,400 | .1117 | 5,583 |
| 1914 ... | 713,845 | 174,180 | 2,400 | 537,265 | 26,863,250 | .1092 | 5,461 |
| 1915 ... | 541,810 | 7,633 | 2,160 | 532,017 | 26,600,850 | .1075 | 5,374 |
| Aggregate 10 years ... | 6,456,038 | 1,462,372 | 22,090 | 4,971,576 | 248,578,800 | .1110 | 5,548 |

**ESTIMATED QUANTITY OF WHEAT USED FOR SEED PURPOSES IN THE
COMMONWEALTH.**

| Year. | Wheat for Seed Purposes. | | |
|-------------------------------|--------------------------|-----------|-------------------------|
| | Quantity. | Per Acre. | Per Head of Population. |
| | Bushels. | | Bushels. |
| 1906 | 6,664,000 | .954 | 1.641 |
| 1907 | 6,261,000 | .960 | 1.518 |
| 1908 | 6,429,000 | .962 | 1.533 |
| 1909 | 7,322,000 | .960 | 1.713 |
| 1910 | 8,332,000 | .966 | 1.907 |
| 1911 | 8,282,000 | .922 | 1.844 |
| 1912 | 8,484,000 | .919 | 1.827 |
| 1913 | 9,747,000 | .908 | 2.029 |
| 1914 | 10,059,000 | .914 | 2.045 |
| 1915 | 13,041,000 | .905 | 2.634 |
| Aggregate for 10 years | 84,621,000 | .937 | 1.869 |

In addition to the above, there is to be taken into consideration grain fed to poultry and other live stock. This, doubtless, varies in quantity from year to year according to the prices current for wheat, and other causes. No data is available on which to base an estimate of actual quantity so consumed. The flour available for human consumption necessarily fluctuates from year to year coincident with stocks being heavy or light. In 1907 the flour available per head of population, after deducting net exports from quantity milled, shewed a substantial increase over the average for the previous year, this, however, being counterbalanced by a decline in the following year. The average quantity of flour consumed per annum for the ten years under consideration was 0.1110 tons per head of population, this, when expressed in equivalent terms in wheat, representing 5.548 bushels. The estimates of quantity of grain used for seed purposes have been based on data supplied by the Agricultural Departments of the several States giving average quantities of seed used per acre for wheat sown either for grain, hay or green fodder. The average annual quantity thus used during the ten years was 1.869 bushels per head of population, and 0.937 bushels per acre sown.

Reference will be found in a subsequent section to Commonwealth and State legislation for control of trade and prices of commodities during the war. Various State Boards and Commissions and a Federal Royal Commission were appointed to collect information and to report on such matters as the supply of foodstuffs and other necessaries required by, and available for, Australia, and other important matters relating to conditions of trade and industry.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1915-16 is shewn below :—

VALUE OF THE WHEAT CROP,* 1915-16.

| Particulars. | N.S.W. | Vic. | Q'land. | S. Aust. | W. Aust. | Tas. | Fed. Terr. | C'w'lth. |
|------------------------|--------------|--------------|-----------|-------------|-------------|-----------|------------|--------------|
| Aggregate value | £ 15,013,453 | £ 13,167,734 | £ 113,970 | £ 7,680,263 | £ 4,103,180 | £ 248,447 | £ 8,651 | £ 40,335,698 |
| Value per acre | £3/11/9 | £3/11/7 | £1/4/4 | £2/16/1 | £2/7/4 | £5/2/2 | £3/12/11 | £3/4/7 |

* Exclusive of the value of straw.

7. **The Australian Wheat Marketing Scheme.**—(i.) *General Principles.* Owing to the abnormal conditions prevailing, a Wheat Marketing Scheme was entered into by the Governments of the Commonwealth and of the States of New South Wales, Victoria,

South Australia, and Western Australia, for the purpose of realising to the best advantage the 1915-16 wheat harvest of the States named, and of making advances to farmers pending realisation. It was subsequently decided that the 1916-17 harvest should be dealt with on similar lines to those of the 1915-16 harvest.

The general principles of the scheme may be shortly stated thus:—

1. That all growers should participate equitably in the realisation of the harvest and the proceeds thereof.
2. That the limited freights available should be allotted between the States in accordance with the exportable surplus of each.

The securing and general allotment of freights is under the control of the Chartering Agents who are responsible to the Commonwealth Government.

The distribution of freights among the States is in charge of the Australian Wheat Board, which also has the duty of realising the crop. This Board consists of Ministerial representatives of the Governments of the Commonwealth and of the States. It has the assistance of an Advisory Board consisting of well-known wheat shippers. A London Wheat Committee, consisting of the High Commissioner and the Agents-General of the States concerned, acting with the advice of the London representatives of the wheat shippers, arranges overseas sales. Adjustments are to be made between the States so that, having regard to the quantity shipped, each will ultimately receive the average net result of the whole of the overseas realisations.

In certain States the crop is bought by the State Government, and in others the wheat is received from the growers for sale on their behalf.

The Australian Wheat Board fixes all prices at which wheat may be sold, except in the case of poultry feed, which is left to the States to regulate.

Each State has a local Board or Commission to control the operations of the scheme within the State concerned. This Board or Commission effects all local sales, including sales to millers.

(ii.) *Advances and Finance.* Under arrangements made by the Commonwealth and State Governments, advances are made to farmers upon delivery of their wheat at railway stations to representatives of agents appointed by the different State Governments. Upon the 1915-16 crop, advances made (inclusive of one arranged for July, 1917) amount to 4s. 6d. per bushel, less rail freight and handling charges. This will still leave for distribution a small amount, varying in the different States in accordance with differences in local realising, and in interest and other expenses. Upon the 1916-17 crop, advances (inclusive of one arranged for August, 1917) amount to 3s. per bushel.

Proceeds of wheat as realised are applied in reduction of the bank overdrafts caused by payment of advances and expenses. The rate of interest payable to the banks is five per cent. The Government of each State has undertaken to repay all advances made on account of such State, and the Commonwealth Government has guaranteed repayment by the States. Advances to growers were made by means of certificates issued by the agents appointed by the various States. The certificates were payable at banks named by the growers. In Victoria and South Australia inducements are held out to growers to refrain from cashing certificates. In these States growers are allowed five per cent. per annum on their uncashed certificates. In New South Wales and Western Australia interest is not allowed.

(iii.) *Results of the Scheme.* In all the States, certain wheat, particularly seed wheat, has not been brought under the scheme. The quantity of wheat pooled therefore differs from that harvested in each State. In addition, wheat grown in one State may

be pooled in another. A considerable quantity of New South Wales wheat is included in Victorian returns, and the Victorian total includes a small quantity of South Australian wheat.

Deliveries made on account of each harvest are as follows :—

| | 1915-16. | | 1916-17. | |
|--------------------------|-------------|-------------|------------|------------|
| | Bushels. | | Bushels. | |
| New South Wales | 58,233,000 | 31,568,000 | 59,158,000 | 49,800,000 |
| Victoria | 29,893,000 | 40,000,000 | 14,967,000 | 13,400,000 |
| South Australia | | | | |
| Western Australia | | | | |
| Total | 162,251,000 | 134,768,000 | | |

On 21st May, 1917, the total overdraft on both pools amounted to £2,445,000.

The quantities of wheat disposed of and on hand on that date were as follows (a bag may roughly be taken as equivalent to three bushels) :—

| Particulars. | N.S.W. | Vic. | S.A. | W.A. | Total. |
|----------------------------------|--------|--------|--------|-------|--------|
| 1915-16. (In thousands of bags). | | | | | |
| Shipments | 8,730 | 8,977 | 5,362 | 3,334 | 26,403 |
| Local Sales | 7,402 | 4,599 | 1,446 | 1,456 | 14,903 |
| Stocks on hand | 3,896 | 5,833 | 2,992 | 277 | 12,498 |
| Total | 19,528 | 19,409 | 9,800 | 5,067 | 53,804 |
| 1916-17. (In thousands of bags). | | | | | |
| Shipments | ... | 18 | 251 | 1 | 270 |
| Local Sales | 386 | 696 | 432 | 105 | 1,619 |
| Stocks on hand | 11,093 | 15,758 | 12,635 | 4,287 | 43,773 |
| Total | 11,479 | 16,472 | 13,318 | 4,393 | 45,662 |

The value realised to 21st May, 1917 (both pools) is as follows :—

| Particulars. | N.S.W. | Vic. | S.A. | W.A. | Total. |
|---|------------|------------|-----------|-----------|------------|
| | £ | £ | £ | £ | £ |
| Overseas Sales ... (Wheat shipments) | 7,241,000 | 7,087,000 | 4,140,000 | 2,576,000 | 21,044,000 |
| Local Sales | 5,169,000 | 4,056,000 | 1,353,000 | 661,000 | 11,239,000 |
| Total value of Wheat shipped and deliveries | 12,410,000 | 11,143,000 | 5,493,000 | 3,237,000 | 32,283,000 |

Since the initiation of the "Pool," several sales of magnitude have been made, including one of 3,000,000 tons to the British Wheat Commission, at a rate of 4s. 9d. per bushel f.o.b., equalling £26,600,000. This is the largest wheat transaction ever recorded.

8. Lucerne Pool.—Early in 1916 the Victorian State Government decided to form a Lucerne Pool, to be operated for the benefit of settlers within the Government Irrigation Settlements, which included Swan Hill, Bamawm, Ballendella, Nanneella and Tongala. The object was to advance £2 per ton on delivery at the sending station, where it was proposed to store the hay, as it was considered that the market value would be very little more than £2 per ton. The pool, however, placed itself in touch with the local market, and a few days after the commencement of the operation a large sale was made to the Defence Department at £3 8s. 6d. per ton, free on rails at sending stations, and other large orders were placed in New South Wales and Victoria at prices ranging from £3 11s. to £3 19s. per ton on rails at sending stations.

In addition to the original advance of £2 per ton, several dividends have been paid, bringing the total net return to growers to between £3 5s. and £3 8s. per ton.

§ 5. Oats.

1. Progress of Cultivation.—Oats comes next in importance to wheat amongst the grain crops cultivated last season, but while wheat grown for grain accounted for over 67 per cent., oats represented less than 4 per cent. of the area under crop in the Commonwealth. The progress of cultivation of oats since 1860 is shewn in the table hereunder, and more fully in the graphs hereinafter:—

CULTIVATION OF OATS, 1860-61 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Federal Terr. | C'wealth. |
|---------|---------|-----------|---------|----------|----------|--------|---------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1860-1 | 6,535 | 86,937 | 7 | 2,273 | 507 | 30,303 | ... | 125,962 |
| 1865-6 | 10,939 | 102,817 | 348 | 2,872 | 1,232 | 28,538 | ... | 146,746 |
| 1870-1 | 10,683 | 149,309 | 122 | 6,188 | 2,095 | 30,946 | ... | 199,343 |
| 1875-6 | 18,856 | 124,100 | 114 | 3,640 | 1,256 | 32,556 | ... | 180,522 |
| 1880-1 | 17,923 | 134,089 | 116 | 4,355 | 1,319 | 19,853 | ... | 177,655 |
| 1885-6 | 14,117 | 215,994 | 208 | 7,871 | 1,596 | 29,247 | ... | 269,033 |
| 1890-1 | 14,102 | 221,048 | 411 | 12,475 | 1,934 | 20,740 | ... | 270,710 |
| 1895-6 | 23,750 | 255,503 | 922 | 34,098 | 1,880 | 32,699 | ... | 348,852 |
| 1900-1 | 29,383 | 362,689 | 385 | 27,988 | 4,790 | 45,073 | ... | 470,308 |
| 1905-6 | 38,543 | 312,052 | 533 | 56,950 | 15,713 | 42,776 | ... | 466,567 |
| 1910-11 | 77,991 | 392,681 | 2,537 | 77,674 | 61,918 | 63,887 | ... | 676,688 |
| 1911-12 | 70,880 | 302,238 | 557 | 107,881 | 77,488 | 57,593 | 167 | 616,794 |
| 1912-13 | 84,979 | 439,242 | 4,232 | 155,545 | 127,645 | 62,445 | 196 | 874,284 |
| 1913-14 | 103,262 | 442,060 | 4,093 | 116,932 | 133,625 | 58,886 | 154 | 859,020* |
| 1914-15 | 43,285 | 434,815 | 2,728 | 140,567 | 96,085 | 57,063 | 191 | 774,734 |
| 1915-16 | 58,449 | 353,932 | 339 | 126,529 | 104,086 | 78,212 | 97 | 721,644 |

* Including 8 acres, Northern Territory.

2. Total Yield.—The total oat crop of the several States for the same period is furnished in the following table:—

COMMONWEALTH OAT CROP, 1860-61 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tasmania. | Fed. Terr. | C'wealth. |
|---------|-----------|-----------|----------|-----------|-----------|-----------|------------|------------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bush'ls | Bushels. |
| 1860-1 | 98,814 | 2,633,693 | 91 | 52,989 | 11,925 | 926,418 | ... | 3,723,930 |
| 1865-6 | 116,005 | 2,279,468 | 4,524 | 42,642 | 19,005 | 688,740 | ... | 3,150,384 |
| 1870-1 | 119,365 | 2,237,010 | 1,586 | 88,383 | 39,974 | 691,250 | ... | 3,177,568 |
| 1875-6 | 352,966 | 2,719,795 | 1,482 | 60,749 | 18,840 | 827,043 | ... | 3,980,875 |
| 1880-1 | 356,121 | 2,362,425 | 2,081 | 50,070 | 21,104 | 439,446 | ... | 3,231,247 |
| 1885-6 | 279,107 | 4,692,303 | 1,006 | 97,201 | 97,201 | 784,325 | ... | 5,877,084 |
| 1890-1 | 256,659 | 4,919,325 | 8,967 | 116,229 | 38,791 | 519,395 | ... | 5,859,366 |
| 1895-6 | 374,196 | 2,880,045 | 10,887 | 184,012 | 19,326 | 906,934 | ... | 4,375,400 |
| 1900-1 | 593,548 | 9,582,332 | 7,855 | 366,229 | 86,433 | 1,406,913 | ... | 12,043,310 |
| 1905-6 | 883,081 | 7,232,425 | 5,858 | 869,146 | 283,987 | 1,200,024 | ... | 10,474,521 |
| 1910-11 | 1,702,706 | 9,699,127 | 50,469 | 1,136,618 | 776,233 | 2,063,303 | ... | 15,428,456 |
| 1911-12 | 1,152,827 | 4,585,326 | 5,783 | 1,349,480 | 961,385 | 1,504,633 | 2,337 | 9,561,771 |
| 1912-13 | 1,669,259 | 8,323,639 | 82,420 | 1,673,508 | 2,105,812 | 2,257,258 | 4,816 | 16,116,712 |
| 1913-14 | 1,832,616 | 8,890,321 | 56,236 | 1,200,740 | 1,655,681 | 1,593,664 | 2,790 | 15,232,048 |
| 1914-15 | 511,759 | 1,608,419 | 43,607 | 368,425 | 464,943 | 1,341,800 | 2,151 | 4,341,104 |
| 1915-16 | 1,344,138 | 9,328,894 | 2,454 | 2,134,374 | 1,533,092 | 2,189,467 | 1,560 | 16,538,979 |

The principal oat-growing State of the Commonwealth is Victoria. During the past five seasons it has produced about 53 per cent. of the total quantity of oats grown in the Commonwealth; Tasmania, South Australia, Western Australia, and New South Wales come next in order of importance. In New South Wales and Tasmania, the highest production of oats for any season was that of 1909-10, while Victoria and South Australia experienced maximum yields in 1915-16, and Queensland and Western Australia in 1912-13. For the Commonwealth as a whole, the record yield was that of 17,541,210 bushels in the season 1903-4, while the yields of 16,538,979 and 16,248,857 for 1914-15 and 1908-9 respectively, rank second and third.

3. Average Yield.—The average yield per acre of the oat crop of the Commonwealth varies considerably in the different States, being highest in Tasmania and lowest in South Australia. Particulars as to average yield in each of the seasons 1901-2 and 1911-12 to 1915-16, and also for the decennium, are given in the succeeding table:—

AVERAGE YIELD OF OATS PER ACRE.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Fed. Terr. | C'wealth. |
|------------------------|----------|-----------|----------|----------|----------|----------|------------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bush'ls | Bushels. |
| 1901-2 ... | 21.31 | 20.43 | 27.50 | 13.54 | 16.78 | 31.48 | ... | 21.22 |
| 1911-12 ... | 16.25 | 15.17 | 10.38 | 12.51 | 12.41 | 26.13 | 13.99 | 15.50 |
| 1912-13 ... | 19.64 | 18.95 | 19.48 | 10.76 | 16.50 | 36.15 | 24.57 | 18.43 |
| 1913-14 ... | 17.75 | 20.11 | 13.74 | 10.27 | 12.39 | 27.06 | 18.12 | 17.73 |
| 1914-15 ... | 11.82 | 3.70 | 15.98 | 2.62 | 4.84 | 23.51 | 11.26 | 5.60 |
| 1915-16 ... | 23.00 | 26.36 | 7.24 | 16.87 | 14.78 | 27.99 | 16.08 | 22.92 |
| Average for 10 Seasons | 19.03 | 19.13 | 17.53 | 11.98 | 13.19 | 30.29 | 16.96 | 18.39 |

The smallest average yield per acre for the Commonwealth for the past ten-year period was that experienced in the season 1914-15, being 5.60, while the largest was that of the season 1908-9, amounting to 24.03 bushels per acre.

4. **Relation to Population.**—The State in which oat production occupies the most important position in relation to population is Tasmania, the yield for that State representing about 8.9 bushels per head during the last five years under review, as compared with 2.6 bushels per head for the Commonwealth as a whole. Particulars for the seasons 1901-2 and 1911-12 to 1915-16 are furnished in the succeeding table:—

OAT PRODUCTION PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Federal Territory. | C'wealth. |
|---------|----------|-----------|----------|----------|----------|----------|--------------------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1901-2 | 500 | 5,558 | 83 | 1,306 | 845 | 9,734 | ... | 2,559 |
| 1911-12 | 689 | 3,365 | 9 | 3,227 | 3,268 | 7,777 | 1,217 | 2,093 |
| 1912-13 | 939 | 6,029 | 129 | 3,891 | 6,879 | 11,446 | 2,482 | 3,405 |
| 1913-14 | 1,000 | 6,296 | 85 | 2,729 | 5,163 | 7,902 | 1,403 | 3,126 |
| 1914-15 | 275 | 1,124 | 64 | 834 | 1,439 | 6,662 | 1,098 | 879 |
| 1915-16 | 719 | 6,574 | 4 | 4,868 | 4,837 | 10,892 | 820 | 3,353 |

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1915-16 is as follows:—

VALUE OF OAT CROP,* 1915-16.

| Particulars. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Fed. Terr. | C'wealth. |
|-----------------|----------|------------|---------|----------|----------|----------|------------|------------|
| Aggregate value | £201,616 | £1,010,630 | £614 | £222,338 | £179,444 | £510,875 | £234 | £2,125,751 |
| Value per acre | £3/9/0 | £2/17/1 | £1/16/3 | £1/15/2 | £1/16/6 | £6/10/8 | £2/8/3 | £2/18/11 |

* Exclusive of the value of straw.

6. **Imports and Exports.**—The production of oats in the Commonwealth has not yet reached such a stage as to admit of a regular export trade in this cereal; in fact in certain years the imports have exceeded the exports, notably in 1903, 1906, 1908, and in each of the past four years. The quantities and values of oats imported into and exported from the Commonwealth during the years 1901 and 1911 to 1915-16 are given hereunder:—

COMMONWEALTH IMPORT AND EXPORT OF OATS, 1901 and 1911 to 1915-16.

| Year. | Imports. | | Exports. | | Net Exports. | |
|---------|-----------|---------|-----------|---------|--------------|---------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Bushels. | £ | Bushels. | £ | Bushels. | £ |
| 1901 | 1,526,599 | 153,674 | 2,874,334 | 285,347 | 1,347,735 | 131,673 |
| 1911 | 4,522 | 639 | 391,465 | 46,493 | 386,943 | 45,854 |
| 1912 | 2,939,325 | 398,114 | 106,275 | 14,688 | 2,833,050 | 383,426 |
| 1913 | 146,102 | 20,282 | 111,280 | 14,102 | 34,822 | 6,180 |
| 1914-15 | 1,767,490 | 344,201 | 38,163 | 7,904 | 1,729,327 | 336,297 |
| 1915-16 | 2,473,412 | 501,755 | 582,055 | 85,119 | 1,891,357 | 416,636 |

Note. — signifies net imports.

The principal countries from which the Commonwealth imports of oats have been obtained are the Dominion of New Zealand, Chili, Japan, and the United States of America, while the principal countries to which oats were exported during the period under review were the South African colonies in the earlier, and the United Kingdom, Ceylon and India in the later years.

7. **Oatmeal, etc.**—Importations of oatmeal, etc., into the Commonwealth take place principally from the United Kingdom, the United States, and Canada. The total importations of oatmeal, wheatmeal, and rolled oats during 1915-16 amounted to 599,133 lbs., and represented a value of £10,077 while the exports amounted to 140,230 lbs., valued at £1,752, principally to New Zealand and the Pacific Islands.

8. **Comparison with other Countries.**—A comparison of the Australian production of oats with that of the leading oat-producing countries of the world, is furnished in the following table:—

PRODUCTION OF OATS IN VARIOUS COUNTRIES, 1915.

| Country. | Quantity of Oats produced. | Country. | Quantity of Oats produced | Country. | Quantity of Oats produced. |
|-------------------|----------------------------|---------------|---------------------------|----------------------|----------------------------|
| | Bushels. | | Bushels. | | Bushels. |
| United States ... | 1,493,226,922 | Hungary ... | 78,448,695 | Netherlands | 19,042,898 |
| Russia in Europe | 976,169,320 | Sweden ... | 67,858,000 | Australia ... | 16,538,979 |
| Germany ... | 630,110,000 | Argentina ... | 61,452,200 | Algeria ... | 14,620,490 |
| Canada ... | 466,315,329 | Denmark ... | 41,562,055 | Union of | |
| France ... | 236,078,950 | Belgium ... | 38,776,000 | South Africa | 9,305,373 |
| United Kingdom | 189,196,826 | Spain ... | 35,818,360 | Bulgaria ... | 9,252,923 |
| Austria ... | 149,287,600 | Italy ... | 30,480,844 | Norway ... | 9,039,655 |
| Russia in Asia | 116,076,925 | Rumania ... | 26,164,947 | New Zealand | 7,653,208 |

9. **Comparison of Yields.**—The average yield per acre of oats in Australia is a somewhat low one compared with the results obtained in other countries, where the cultivation of this cereal is more extensively carried on. Arranging the countries contained in the foregoing table, with the exception of Norway and Union of South Africa, for which particulars are not available, according to the magnitude of the average yield of oats for the years specified the results are as follow:—

YIELD OF OATS PER ACRE, VARIOUS COUNTRIES, 1915.

| Country. | Average per Acre. | Country. | Average per Acre. | Country. | Average per Acre. |
|--------------------|-------------------|--------------------|-------------------|----------------------|-------------------|
| | Bushels. | | Bushels. | | Bushels. |
| Belgium (1914) ... | 70.29 | Austria (1913) ... | 31.35 | Algeria ... | 24.76 |
| Germany (1914) ... | 55.67 | Hungary ... | 29.45 | Australia ... | 22.92 |
| Netherlands ... | 54.25 | Rumania ... | 26.45 | Russia in Europe | 21.80 |
| United Kingdom | 45.60 | France ... | 26.08 | Argentina ... | 21.42 |
| Canada ... | 41.03 | Sweden (1914) ... | 25.99 | Bulgaria (1914) ... | 20.90 |
| Denmark ... | 40.59 | Spain ... | 25.53 | Russia in Asia | |
| United States ... | 36.62 | Italy ... | 25.23 | (1913) ... | 20.50 |
| New Zealand ... | 35.98 | | | | |

10. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1915 are given in the following table:—

AVERAGE WHOLESALE PRICE OF OATS PER BUSHEL, 1915.

| Particulars. | Sydney. | Melbourne. | Brisbane. | Adelaide. | Perth. | Hobart. |
|------------------------------|---------|------------|-----------|-----------|--------|---------|
| | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. |
| Average price per bushel ... | 3 6½ | 4 7 | 5 6½ | 4 2 | 4 6½ | 4 6 |

§ 6. Maize.

1. **States Growing Maize.**—The only States in which maize is at all extensively grown for grain are those of New South Wales and Queensland, the area so cropped in these two States during the season 1915-16 being 300,593 acres, or 93 per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 22,258 acres, South Australia 702 acres, Western Australia 28 acres, and the Northern Territory 45 acres. The climate of Tasmania prevents the growing of maize for grain in that State. In South Australia, prior to 1908, particulars concerning maize had not been specially asked for on the form used in the collection of agricultural statistics. In all the States, maize is grown to a greater or less extent as green forage, particularly in connection with the dairying industry.

2. **Area under Maize.**—The area devoted to the growing of maize for grain in each State, from 1875 onwards, is given in the following table, and the actual fluctuations from year to year are shown more fully on the graph hereinafter.

The total area under maize in the Commonwealth exceeded 300,000 acres for the first time in the season 1890-1, and although it fluctuated somewhat during the succeeding seventeen years, it may be considered to have remained at about that figure. The greatest divergence during the period occurred in 1903-4, when a record total of 371,906 acres was harvested. For 1908-9 and the two following seasons a continuous increase in the area devoted to maize was in evidence, and the total of 414,914 acres for 1910-11 is the highest ever attained. The unfavourable weather conditions during 1911-12 resulted in the acreage under maize for that season being reduced by 74,849 acres as compared with the preceding one; the 1912-13 season showed a further slight decline, and the two following seasons a small increase, followed by another slight fall in 1915-16.

AREA UNDER MAIZE, 1875-6 to 1915-16.

| Season. | N.S.W. | Victoria. | Queensland. | South Aust. | W. Aust. | N.T. | Fed. Terr. | C'wealth. |
|---------|---------|-----------|-------------|-------------|----------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1875-6 | 117,582 | 2,346 | 38,711 | ... | 60 | ... | ... | 158,699 |
| 1880-1 | 127,196 | 1,769 | 44,109 | ... | 32 | ... | ... | 173,106 |
| 1885-6 | 132,709 | 4,530 | 71,741 | ... | 120 | ... | ... | 209,100 |
| 1890-1 | 191,152 | 10,357 | 99,400 | ... | 81 | ... | ... | 300,990 |
| 1895-6 | 211,104 | 7,186 | 100,481 | ... | 23 | ... | ... | 318,794 |
| 1900-1 | 206,051 | 9,389 | 127,974 | ... | 91 | ... | ... | 343,505 |
| 1905-6 | 189,353 | 11,785 | 113,720 | ... | 43 | ... | ... | 314,901 |
| 1910-11 | 213,217 | 20,151 | 180,862 | *619 | 46 | 19 | ... | 414,914 |
| 1911-12 | 167,712 | 18,223 | 153,916 | 97 | 29 | 19 | 69 | 340,065 |
| 1912-13 | 176,415 | 19,986 | 117,993 | 176 | 25 | 35 | 56 | 314,686 |
| 1913-14 | 156,793 | 17,962 | 156,775 | 239 | 38 | 45 | 27 | 331,879 |
| 1914-15 | 143,663 | 19,433 | 176,372 | 189 | 73 | 51 | ... | 339,781 |
| 1915-16 | 154,119 | 22,258 | 146,474 | 702 | 28 | 45 | 11 | 323,637 |

* Particulars for years prior to 1907-8 not available.

3. **Total Yield.**—The average yield per acre of this cereal for the season 1915-16 was considerably below that obtaining for some of the previous years, being 6.39 bushels under the decennial average. The 1910-11 crop was a record one, and exceeded 13,000,000 bushels. The average annual production of maize during the last decade was 9,249,841 bushels. Particulars concerning the yield from 1875 onwards are as hereunder:—

MAIZE CROP, 1875-6 to 1915-16.

| Season. | N.S.W. | Victoria. | Queensland. | S. Aust. | W. Aust. | N.T. | Fed. Terr. | C'wealth. |
|---------|-----------|-----------|-------------|----------|----------|---------|------------|------------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | B'shls. | B'shls. | Bushels. |
| 1875-6 | 3,410,517 | 37,177 | 1,006,486 | ... | 1,200 | ... | ... | 4,455,380 |
| 1880-1 | 4,518,897 | 49,299 | 1,409,607 | ... | 896 | ... | ... | 5,978,699 |
| 1885-6 | 4,336,163 | 181,240 | 1,574,294 | ... | 1,417 | ... | ... | 6,093,114 |
| 1890-1 | 5,713,205 | 574,083 | 2,373,803 | ... | 1,526 | ... | ... | 8,662,617 |
| 1895-6 | 5,687,030 | 351,891 | 2,391,378 | ... | 600 | ... | ... | 8,430,899 |
| 1900-1 | 6,292,745 | 604,180 | 2,456,647 | ... | 1,399 | ... | ... | 9,354,971 |
| 1905-6 | 5,539,750 | 641,216 | 2,164,674 | ... | 428 | ... | ... | 8,346,068 |
| 1910-11 | 7,594,130 | 982,103 | 4,460,306 | *6,375 | 718 | 449 | ... | 13,044,081 |
| 1911-12 | 4,506,547 | 792,660 | 3,637,562 | 1,490 | 401 | 400 | 795 | 8,939,855 |
| 1912-13 | 5,111,056 | 715,299 | 2,524,371 | 2,628 | 470 | 1,400 | 934 | 8,356,158 |
| 1913-14 | 4,452,989 | 800,529 | 3,915,376 | 2,336 | 421 | 1,350 | 320 | 9,173,321 |
| 1914-15 | 3,174,825 | 1,018,419 | 4,260,673 | 170 | 999 | 475 | ... | 8,455,561 |
| 1915-16 | 3,773,405 | 999,886 | 2,003,463 | 15,837 | 273 | 450 | 195 | 6,793,509 |

* Particulars for years prior to 1907-8 not available.

4. **Average Yield.**—In the following table particulars are given of the average yield per acre of the maize crops of the several States for the seasons 1901-2 and 1911-12 to 1915-16, and also for the decennium:—

AVERAGE YIELD OF MAIZE PER ACRE, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'sland. | S. Aust. | W. Aust. | N.T. | Fed. Terr. | C'wealth. |
|------------------------|----------|-----------|----------|----------|----------|----------|------------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | B'shls. | Bushels. |
| 1901-2 ... | 22.98 | 61.42 | 21.96 | * | 10.16 | ... | ... | 23.86 |
| 1911-12 ... | 26.87 | 43.50 | 23.63 | 15.36 | 13.83 | 21.05 | 11.52 | 26.29 |
| 1912-13 ... | 28.93 | 35.79 | 21.39 | 14.93 | 18.80 | 40.00 | 16.68 | 26.53 |
| 1913-14 ... | 28.40 | 44.57 | 24.97 | 9.77 | 11.08 | 30.00 | 11.85 | 27.64 |
| 1914-15 ... | 22.10 | 52.41 | 24.16 | 0.90 | 13.68 | 9.31 | ... | 24.89 |
| 1915-16 ... | 24.48 | 44.92 | 13.68 | 22.56 | 9.75 | 10.00 | 17.73 | 20.99 |
| Average for 10 Seasons | 29.43 | 48.01 | 22.53 | †14.36 | 12.69 | ‡21.14 | 13.76 | 27.38 |

* Particulars not available. † Average for 9 seasons. ‡ Average for 6 seasons. || Average for 4 seasons.

The extraordinarily high average yield obtained in Victoria is due, in large measure, to the fact that the area under maize in that State is comparatively small and is situated in districts that are peculiarly suited to the production of this grain. The average yield in New South Wales is appreciably higher than that obtained in Queensland.

5. **Value of Maize Crop.**—The value of the Commonwealth maize crop for the season 1915-16 has been estimated at £1,558,048, made up as follows:—

VALUE OF MAIZE CROP, 1915-16.

| Particulars. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | N.T. | Federal Terr. | C'wealth. |
|-----------------|---------|-----------|----------|----------|----------|--------|---------------|-----------|
| | £ | £ | £ | £ | £ | £ | £ | £ |
| Aggregate value | 801,846 | 224,997 | 525,909 | 4,949 | 123 | 180 | 44 | 1,553,048 |
| Value per acre | £5/4/1 | £10/2/2 | £3/11/10 | £7/1/0 | £4/7/10 | £4/0/0 | £4/0/0 | £4/16/3 |

6. **Relation to Population.**—During the past ten seasons the Commonwealth production of maize has ranged between 1.4 bushels per head of population in 1915-16 and 3 bushels per head in 1910-11. The production in Queensland, the State in which the maize yield per head of population is highest, ranged during the same period between 3 bushels per head in 1915-16 and 7½ bushels per head in 1910-11. Details for the several States for the seasons 1901-2 and 1911-12 to 1915-16 are as follow:—

MAIZE PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | N. T. | Federal Terr. | C'wealth. |
|---------|----------|-----------|----------|----------|----------|----------|---------------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1901-2 | 2,795 | 509 | 5,070 | * | 27 | ... | ... | 1,839 |
| 1911-12 | 2,786 | 596 | 5,921 | 4 | 1 | 121 | 447 | 2,013 |
| 1912-13 | 2,875 | 518 | 3,967 | 6 | 2 | 403 | 481 | 1,765 |
| 1913-14 | 2,431 | 567 | 5,931 | 5 | 1 | 368 | 161 | 1,883 |
| 1914-15 | 1,705 | 712 | 6,216 | ... | 3 | 120 | ... | 1,711 |
| 1915-16 | 2,017 | 705 | 2,952 | 36 | 1 | 99 | 107 | 1,377 |

* Particulars not available.

7. **Australian and Foreign Maize Production.**—The following table gives the production of maize in Australia and in the leading maize-producing countries of the world. The figures shew that of the total production the United States of America was responsible for 71½ per cent.

PRODUCTION OF MAIZE IN VARIOUS COUNTRIES, 1915.

| Country. | Production of Maize. | Country. | Production of Maize. |
|------------------------|----------------------|---------------------------|----------------------|
| | Bushels. | | Bushels. |
| United States ... | 2,901,066,229 | Austria (1914) ... | 42,053,600 |
| Argentine Republic ... | 327,885,009 | Bulgaria ... | 33,929,000 |
| Hungary ... | 175,025,170 | Spain ... | 24,551,993 |
| Italy ... | 114,489,046 | Servia (1914) ... | 19,388,000 |
| Rumania ... | 106,856,962 | Canada ... | 14,147,423 |
| Egypt (1914) ... | 75,858,458 | France ... | 13,571,600 |
| Russia in Europe ... | 72,516,936 | Philippine Islands ... | 12,927,918 |
| India (British) ... | 62,817,120 | Russia in Asia (1913) ... | 10,765,860 |
| Mexico ... | 58,164,000 | Australia ... | 6,793,509 |

8. **Comparison of Yields.**—The average yield per acre of maize in the Commonwealth during the last ten years was 27.91 bushels, and may be regarded as highly satisfactory when compared with that of other maize-producing countries. Canada, Bulgaria, Egypt, Hungary, and Argentine Republic are the only countries shewing a higher average. The remaining countries shewn in the following table had average yields per acre ranging from 10 to 27 bushels.

AVERAGE YIELD OF MAIZE PER ACRE IN VARIOUS COUNTRIES, 1915.

| Country. | Average yield per acre. | Country. | Average yield per acre. |
|------------------------------|-------------------------|---------------------------|-------------------------|
| | Bushels. | | Bushels. |
| Canada ... | 55.99 | Australia* ... | 20.99 |
| Egypt ... | 43.03 | Rumania ... | 20.52 |
| Argentine Republic ... | 31.57 | Bulgaria (1914) ... | 19.07 |
| Italy ... | 28.96 | Austria (1913) ... | 18.61 |
| Hungary ... | 28.26 | Russia in Europe (1913)† | 17.98 |
| United States of America ... | 26.78 | Servia (1913) ... | 15.85 |
| Spain ... | 21.54 | Russia in Asia (1913) ... | 10.09 |

* Average yield for 10 years, 27.38.

† Exclusive of Poland.

9. **Oversea Imports and Exports.**—Except in the years 1902, 1903, 1912, 1914-15 and 1915-16, when many of the maize crops failed, the Commonwealth oversea trade in maize has been practically insignificant. In the first of the years mentioned, nearly two million, and in the latter year nearly three and a half million bushels were imported. In 1908 and 1909 also, owing to the small harvests of the seasons 1907-8 and 1908-9, the imports of maize were largely in excess of the exports. Details of imports and exports for 1901 and the past five years are as follows:—

COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1901 and 1911 to 1915-16.

| Year. | Imports. | | Exports. | | Net Imports. | |
|-------------|-----------|---------|-----------|--------|--------------|---------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Bushels. | £ | Bushels. | £ | Bushels. | £ |
| 1901 ... | 188,423 | 24,764 | 533 | 75 | 187,890 | 24,689 |
| 1911 ... | 31,764 | 4,925 | 19,914 | 3,438 | 11,850 | 1,487 |
| 1912 ... | 1,133,755 | 218,233 | 37,968 | 8,402 | 1,095,787 | 209,831 |
| 1913 ... | 273,123 | 53,387 | 15,261 | 3,349 | 257,862 | 50,038 |
| 1914-15 ... | 1,457,660 | 282,461 | 12,266 | 2,873 | 1,445,394 | 279,588 |
| 1915-16 ... | 3,432,571 | 712,650 | 4,237 | 1,088 | 3,428,334 | 711,562 |

The principal countries to which maize has been exported from the Commonwealth are New Zealand and China, while the principal countries from which importations have taken place are the United States, the Pacific Islands, South Africa, and Java.

10. **Prepared Maize.**—A fairly large quantity of corn-flour is imported annually into the Commonwealth, the principal countries of supply being the United Kingdom and the United States. During the year 1915-16 these importations amounted to 442,631 lbs., and represented a value of £5,712.

11. **Price of Maize.**—The average wholesale price of maize in the Sydney market is given in the following table for each of the years 1906 to 1915:—

AVERAGE PRICE OF MAIZE PER BUSHEL, 1906 to 1915.

| Particulars. | 1906. | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. | 1913. | 1914. | 1915. |
|--------------------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|
| Average price per bushel | s. d. 3 0 | s. d. 3 2 | s. d. 4 7 | s. d. 4 2 | s. d. 2 11 | s. d. 3 0 | s. d. 4 8 | s. d. 4 1 | s. d. 4 6 | s. d. 5 2 |

§ 7. Barley.

1. **Area under Barley.**—The area devoted to barley in the Commonwealth has fluctuated very considerably, though with a tendency to increase during the past few years. Taking a series of years, the principal barley-growing State is Victoria. For the past three seasons South Australia has attained the lead in regard to acreage, and for 1915-16 accounted for 50 per cent. of the Commonwealth area devoted to this crop; Victoria was next in importance with a percentage of 36; the remaining 14 per cent. being represented by Western Australia, New South Wales, Tasmania, and Queensland in the order named. The figures here given relate to the areas harvested for grain; only small areas are cropped for hay, while more considerable quantities are cut for green forage. These, however, are not included in this sub-section. The area under barley for grain in the several States from 1875 onwards is shewn in the following table:—

COMMONWEALTH AREA UNDER BARLEY, 1875-6 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tasmania. | C'wealth. |
|---------|--------|-----------|---------|------------|----------|-----------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1875-6 | 4,817 | 31,568 | 613 | 13,969 | 5,014 | 5,939 | 61,920 |
| 1880-1 | 8,056 | 68,630 | 1,499 | 13,074 | 6,363 | 8,297 | 105,919 |
| 1885-6 | 5,298 | 74,112 | 406 | 16,493 | 6,178 | 6,833 | 109,320 |
| 1890-1 | 4,937 | 87,751 | 584 | 14,472 | 5,322 | 4,376 | 117,442 |
| 1895-6 | 7,590 | 78,438 | 721 | 14,184 | 1,932 | 6,178 | 109,043 |
| 1900-1 | 9,435 | 58,853 | 7,533 | 15,352 | 2,536 | 4,502 | 98,211 |
| 1905-6 | 9,519 | 40,998 | 5,201 | 26,250 | 3,665 | 5,372 | 90,945 |
| 1910-11 | 7,082 | 52,687 | 5,578 | 34,473 | 3,369 | 5,235 | 108,424 |
| 1911-12 | 10,803 | 53,541 | 1,634 | 40,743 | 3,664 | 6,081 | 116,466 |
| 1912-13 | 16,909 | 71,631 | 9,447 | 68,964 | 5,626 | 8,802 | *181,387 |
| 1913-14 | 20,601 | 83,351 | 8,826 | 90,552 | 11,502 | 7,723 | *222,564 |
| 1914-15 | 4,861 | 62,492 | 7,166 | 66,315 | 6,986 | 5,836 | 153,656 |
| 1915-16 | 6,369 | 61,400 | 1,367 | 84,900 | 10,069 | 5,409 | 169,514 |

* Including 1 acre Northern and 7 acres Federal Territory in 1912-13, and 9 acres Federal Territory 1913-14.

2. Malting and other Barley.—In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for the Commonwealth for 1915-16 season are as follows:—

AREA UNDER MALTING AND OTHER BARLEY, 1915-16.

| Particulars. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | North. Ter. | Fed. Ter. | C'wealth. |
|----------------|--------|-----------|---------|----------|----------|--------|-------------|-----------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| Malting barley | 4,373 | 29,473 | 945 | 61,966 | 4,545 | 4,915 | ... | ... | 106,217 |
| Other barley | 1,996 | 31,927 | 422 | 22,934 | 5,524 | 494 | ... | ... | 63,297 |
| Total ... | 6,369 | 61,400 | 1,367 | 84,900 | 10,069 | 5,409 | ... | ... | 169,514 |

It will be seen that, taking the Commonwealth as a whole, about 63 per cent. of the area devoted to this grain in 1915-16 was cropped with malting barley. The proportion varies considerably in the several States.

3. Total Yield.—The total production of barley in the Commonwealth for the season 1915-16 amounted to 3,801,550 bushels, giving an average yield of 22.43 bushels per acre as compared with 18.16 for the decennium. Particulars concerning the yields of the several States from 1875 onwards are as follows:—

COMMONWEALTH BARLEY CROP, 1875-6 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tasmania. | C'wealth. |
|---------|----------|-----------|----------|------------|----------|-----------|------------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1875-6 | 98,576 | 700,665 | 12,260 | 197,315 | 70,196 | 165,357 | 1,244,369 |
| 1880-1 | 163,395 | 1,068,830 | 31,433 | 151,886 | 89,082 | 169,156 | 1,673,782 |
| 1885-6 | 85,606 | 1,302,854 | 9,826 | 218,334 | 89,581 | 176,466 | 1,882,667 |
| 1890-1 | 81,383 | 1,571,599 | 12,673 | 175,583 | 85,451 | 99,842 | 2,026,531 |
| 1895-6 | 96,119 | 715,592 | 7,756 | 140,391 | 18,691 | 138,833 | 1,117,382 |
| 1900-1 | 114,228 | 1,215,478 | 127,144 | 211,102 | 29,189 | 116,911 | 1,814,052 |
| 1905-6 | 111,266 | 1,062,139 | 61,816 | 505,916 | 49,497 | 106,042 | 1,896,676 |
| 1910-11 | 82,005 | 1,340,387 | 83,621 | 544,471 | 33,566 | 142,318 | 2,226,368 |
| 1911-12 | 129,008 | 1,024,584 | 15,369 | 702,855 | 37,011 | 148,009 | 2,056,836 |
| 1912-13 | 289,562 | 1,744,527 | 146,847 | 1,318,734 | 93,418 | 265,908 | *3,859,116 |
| 1913-14 | 303,297 | 1,812,890 | 115,975 | 1,332,714 | 167,915 | 187,484 | *3,920,425 |
| 1914-15 | 46,500 | 600,599 | 105,613 | 447,310 | 24,090 | 104,798 | 1,328,910 |
| 1915-16 | 114,846 | 1,734,511 | 8,130 | 1,697,670 | 130,870 | 115,523 | 3,801,550 |

* Including 120 bushels, Federal Territory, 1912-13, 150 bushels 1913-14.

4. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the seasons 1913-14, 1914-15, and 1915-16 was £564,871, £343,423, and £655,917 respectively. The extent to which the several States have contributed to the latter total is shewn in the following table:—

VALUE OF BARLEY CROP,* 1915-16.

| Particulars. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | Fed. Terr. | C'wealth. |
|-----------------|---------|-----------|---------|------------|----------|---------|------------|-----------|
| Total value ... | £23,350 | £316,279 | £1,931 | £260,519 | £20,625 | £33,213 | ... | £655,917 |
| Value per acre | £3/13/4 | £5/3/0 | £1/8/3 | £3/1/5 | £2/1/0 | £6/2/10 | ... | £3/17/5 |

* Exclusive of the value of straw.

5. **Relation to Population.**—During the seasons embraced in the following table, the quantity of barley produced in the Commonwealth has averaged about half a bushel per head of population. For the season 1915-16 the production ranged from nearly four bushels per head in South Australia to one-eightieth of a bushel in Queensland. Details for the season 1901-2 and for the last quinquennium are as follows:—

BARLEY PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | C'wealth. |
|-------------|----------|-----------|----------|----------|----------|----------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1901-2 ... | 75 | 573 | 547 | 677 | 179 | 956 | 397 |
| 1911-12 ... | 78 | 771 | 25 | 1,709 | 129 | 778 | 458 |
| 1912-13 ... | 163 | 1,264 | 231 | 3,066 | 305 | 1,348 | 815 |
| 1913-14 ... | 166 | 1,284 | 176 | 3,029 | 524 | 930 | 805 |
| 1914-15 ... | 25 | 420 | 156 | 1,012 | 75 | 520 | 269 |
| 1915-16 ... | 61 | 1,222 | 12 | 3,872 | 412 | 575 | 771 |

6. **Commonwealth Imports and Exports.**—The Commonwealth oversea trade in barley is not extensive, and in most years the imports exceed the exports. In 1902, 1903, 1912, and 1914-15 somewhat extensive importations of barley from the United States and New Zealand took place, owing to the shortage in local supply resulting from the severe droughts of those periods. In 1904, the excellent crop of the season furnished the material for a heavy exportation to Japan, the total exported thither during that year being 551,821 bushels. In 1909 also there was a fairly heavy export, mainly to the United Kingdom. Particulars of the Commonwealth oversea imports and exports of barley for the years 1901 and 1911 to 1915-16 are contained in the following table:—

COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1901 and 1911 to 1915-16.

| Year. | Imports. | | Exports. | | Net Exports. | |
|-------------|-----------|---------|-----------|--------|--------------|----------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Bushels. | £ | Bushels. | £ | Bushels. | £ |
| 1901 ... | 55,508 | 7,208 | 17,474 | 1,942 | — 38,034 | — 5,266 |
| 1911 ... | 218,316 | 58,922 | 9,420 | 1,256 | —208,896 | — 57,666 |
| 1912 ... | 546,177 | 109,466 | 1,426 | 322 | —544,751 | —109,144 |
| 1913 ... | 22,810 | 6,026 | 7,414 | 1,069 | — 15,396 | — 4,957 |
| 1914-15 ... | 290,226 | 66,402 | 103,522 | 15,245 | —186,704 | — 51,157 |
| 1915-16 ... | 147,144 | 27,387 | 185,122 | 36,661 | 37,978 | 9,274 |

Note. — signifies net imports.

Only in four years during the period embraced in the above table have the Commonwealth exports of barley exceeded in value the imports, viz., in 1904, 1905, 1909, and 1915-16. During the last ten years the total importations amounted to 2,205,891 bushels, valued at £484,453, and the total exports to 577,644 bushels, valued at £94,867, giving a net importation of 1,628,247 bushels with a value of £389,586.

In addition to the above, which relates to the unprepared grain, there is a small importation into the Commonwealth of pearl and Scotch barley, mainly from the United Kingdom and Japan. The total imported during 1915-16 amounted to only 3,396 lbs. weight, with a value of £35.

From time to time a considerable export trade in Australian pearl and Scotch barley has been carried on, mainly with the United Kingdom and New Zealand, the total exports for 1909 reaching 1,155,346 lbs., valued at £3,573, and for 1910, 119,337 lbs., valued at £510. During 1911 and 1912, the exports were only 588 lbs., valued at £8, and 712 lbs., valued at £10, respectively; in 1913, they increased to 62,992 lbs., with a value of £406, while during 1914-15 only 7,314 lbs., valued at £52, were exported. During 1915-16, however, the exports amounted to 83,982 lbs., valued at £656, the bulk of which went to New Zealand.

7. **Commonwealth Imports and Exports of Malt.**—The importations of malt into the Commonwealth are fairly extensive, the supply being obtained principally from the United Kingdom. Details of imports and exports for the years 1901 and 1911 to 1915-16 are given hereunder:—

COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1901 and 1911 to 1915-16.

| Year. | Imports. | | Exports. | | Net Imports. | |
|----------------|---------------------|--------------|-----------------|----------|---------------------|--------------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| 1901 | Bushels. 516,135 | £ 140,615 | Bushels. ... | £ ... | Bushels. 516,135 | £ 140,615 |
| 1911 | 102,760 | 32,798 | 82 | 32 | 102,678 | 32,766 |
| 1912 | 128,800 | 45,226 | 117 | 48 | 128,683 | 45,178 |
| 1913 | 85,002 | 31,071 | 120 | 55 | 84,882 | 31,016 |
| 1914-15 | 68,215 | 23,743 | 165 | 87 | 68,050 | 23,656 |
| 1915-16 | 23,910 | 9,596 | 30 | 13 | 23,880 | 9,583 |

8. **Comparison with other Countries.**—In comparison with the barley production of other countries of the world, that of Australia appears very small indeed. Particulars for some of the leading countries for the year 1915 are as follows, the Australian figures being added for the sake of comparison:—

PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1915.

| Country. | Production of Barley. | Country. | Production of Barley. |
|--------------------------|-----------------------|----------------------|-----------------------|
| | Bushels. | | Bushels. |
| Russia in Europe (1913) | 540,530,000 | Rumania ... | 27,810,147 |
| United States ... | 229,756,524 | Denmark ... | 25,105,521 |
| Germany | 145,410,000 | Sweden ... | 13,571,600 |
| Japan | 90,558,439 | Tunis | 11,130,650 |
| Spain | 80,230,452 | Italy | 10,711,870 |
| Austria | 77,552,000 | Egypt (1914) ... | 10,636,000 |
| Hungary | 54,466,708 | Belgium ... | 3,877,600 |
| Canada | 49,311,439 | Australia ... | 3,801,550 |
| United Kingdom ... | 47,192,330 | Chili | 3,635,250 |
| Russia in Asia (1913)... | 40,932,000 | Netherlands ... | 3,134,070 |
| British India ... | 38,776,000 | Norway... .. | 2,511,715 |
| Algeria | 38,646,100 | Servia | 2,181,150 |
| France | 35,138,811 | New Zealand ... | 820,173 |

9. **Average Yield.**—The average yield per acre of barley varies considerably in the different States, being as a rule highest in Tasmania and Victoria, and lowest in Western Australia. Details for each State for 1901-2 and the past five seasons, and also for the decennium, are given in the following table:—

AVERAGE YIELD PER ACRE OF BARLEY, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | West Aust. | Tas. | C'wealth. |
|----------------------------|----------|-----------|----------|------------|------------|----------|-----------|
| | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. | Bushels. |
| 1901-2 ... | 17.16 | 21.40 | 23.53 | 15.63 | 13.01 | 27.44 | 20.40 |
| 1911-12 ... | 11.94 | 19.14 | 9.41 | 17.25 | 10.10 | 24.34 | 17.66 |
| 1912-13 ... | 17.12 | 24.35 | 15.54 | 19.12 | 16.60 | 30.21 | 21.28 |
| 1913-14 ... | 14.72 | 21.75 | 13.14 | 14.72 | 14.60 | 24.28 | 17.61 |
| 1914-15 ... | 9.57 | 9.61 | 14.74 | 6.75 | 3.45 | 17.96 | 8.65 |
| 1915-16 ... | 18.03 | 28.25 | 5.95 | 20.00 | 13.00 | 21.36 | 22.43 |
| Average for 10 Seasons ... | 14.71 | 21.00 | 14.70 | 16.01 | 11.46 | 24.87 | 18.16 |

10. **Price of Barley.**—The average prices of barley in the Melbourne market during each of the past ten years are given in the following table:—

AVERAGE PRICE OF BARLEY PER BUSHEL, 1906 to 1915.

| Particulars. | 1906. | 1907. | 1908. | 1909. | 1910. | 1911. | 1912. | 1913. | 1914. | 1915. |
|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. |
| Malting barley | 4 5 | 4 8 | 4 10 | 3 10 | 4 1 | 4 10½ | 5 11½ | 3 11½ | 3 9½ | 5 4½ |
| Cape barley ... | 2 4 | 2 8 | 3 8 | 2 7 | 2 5 | 2 8 | 4 11 | 3 0 | 2 9½ | 4 4½ |

§ 8. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the only grain and pulse crops at all extensively grown in the Commonwealth are beans, peas and rye. The total area under the two former crops for the season 1915-16 was 26,277 acres, giving a yield of 413,814 bushels, or an average of 15.75 bushels per acre, being 1.90 below the average yield for the decennium ended 1915-16, which was 17.65 bushels per acre. The States in which the greatest area is devoted to beans and peas are Tasmania, Victoria and South Australia. The total area under rye in the Commonwealth during the season 1915-16 was 10,614 acres, yielding 126,765 bushels, and giving an average of 11.94, this being above the average for the past ten seasons, which is 10.59 bushels per acre. Nearly 34 per cent. of the rye grown during the season was produced in Victoria, 25 per cent. in New South Wales, and 24 per cent. in South Australia. In addition to these grain crops a small area of rice has for some years been cultivated in Queensland and the Northern Territory. The results obtained, however, have not up to the present been very satisfactory. Should rice-growing ever be seriously taken up in Australia, it is probable that large tracts of country in the northern parts of Western Australia and in the Northern Territory will be found well suited to its cultivation.

§ 9. Potatoes.

1. Area.—The principal potato-growing State of the Commonwealth as regards area is Victoria, Tasmania prior to 1909-10 usually ranking second, and New South Wales third; the relative positions of the two latter States were, however, reversed during the five seasons ended 1913-14, while the position was again reversed in the seasons 1914-15 and 1915-16.

The area under potatoes in each State from 1890 onwards is given hereunder :—

COMMONWEALTH AREA UNDER POTATOES, 1890-1 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Fed. Terr. | C'wealth. |
|-------------|--------|-----------|---------|----------|----------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1890-1 ... | 19,406 | 53,818 | 6,270 | 6,626 | 511 | 20,133 | ... | 106,764 |
| 1895-6 ... | 24,722 | 43,895 | 9,240 | 6,448 | 668 | 19,247 | ... | 104,220 |
| 1900-1 ... | 29,408 | 38,477 | 11,060 | 6,628 | 1,794 | 23,068 | ... | 110,435 |
| 1905-6 ... | 26,374 | 44,670 | 7,170 | 9,540 | 2,145 | 28,634 | ... | 118,593 |
| 1910-11 ... | 44,452 | 62,904 | 8,326 | 7,812 | 1,791 | 26,230 | ... | 151,515 |
| 1911-12 ... | 43,079 | 47,692 | 7,688 | 7,412 | 2,705 | 21,818 | 69 | 130,463 |
| 1912-13 ... | 34,093 | 47,575 | 8,822 | 8,581 | 5,175 | 24,612 | 31 | 128,889 |
| 1913-14 ... | 38,695 | 74,574 | 10,085 | 10,809 | 5,229 | 30,811 | 30 | 170,233 |
| 1914-15 ... | 30,410 | 65,495 | 8,385 | 7,639 | 4,778 | 31,613 | 8 | 148,328 |
| 1915-16 ... | 19,582 | 56,910 | 5,796 | 4,341 | 4,866 | 29,491 | 7 | 120,993 |

2. Total Yield.—For the season 1915-16, Victoria's production represented about 52 per cent. of the total for the Commonwealth, Tasmania and New South Wales coming next in order with 24 and 13½ per cent. respectively. The total Commonwealth production for the season 1906-7, viz., 507,153 tons, was the highest ever attained, the yield which most nearly approached it being 449,383 tons in 1903-4. Details as to production in the several States during the period from 1890 onwards are as follows :—

COMMONWEALTH PRODUCTION OF POTATOES, 1890-1 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Fed. Terr. | C'wealth. |
|-------------|---------|-----------|---------|----------|----------|--------|------------|-----------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1890-1 ... | 52,791 | 204,155 | 13,112 | 23,963 | 1,900 | 73,158 | ... | 369,079 |
| 1895-6 ... | 56,179 | 117,238 | 19,027 | 18,412 | 2,290 | 81,423 | ... | 294,569 |
| 1900-1 ... | 63,253 | 123,126 | 20,014 | 14,566 | 4,836 | 93,862 | ... | 319,657 |
| 1905-6 ... | 50,386 | 115,352 | 11,308 | 20,328 | 6,297 | 64,606 | ... | 268,277 |
| 1910-11 ... | 121,033 | 163,312 | 15,632 | 23,920 | 5,864 | 70,090 | ... | 399,851 |
| 1911-12 ... | 75,040 | 119,092 | 13,087 | 22,668 | 9,312 | 62,164 | 126 | 301,489 |
| 1912-13 ... | 91,600 | 191,112 | 16,386 | 33,078 | 13,558 | 72,565 | 42 | 418,341 |
| 1913-14 ... | 106,805 | 176,602 | 16,548 | 32,950 | 17,803 | 80,389 | 44 | 431,141 |
| 1914-15 ... | 40,694 | 189,225 | 16,014 | 18,035 | 14,724 | 78,907 | 15 | 357,614 |
| 1915-16 ... | 44,420 | 173,821 | 7,439 | 12,991 | 14,118 | 79,890 | 25 | 332,704 |

3. Average Yield per Acre.—The suitability of the soil, climate, and general conditions of Tasmania for potato growing is evidenced by the high yields per acre which are almost invariably obtained in the island State, the average yield during the past ten seasons being 3½ tons per acre. The lowest average yield is that obtained in Queensland

with an average of a little under two tons for the same period. Particulars for each State for the seasons 1901-2 and 1911-12 to 1915-16, and also for the past decennium, are given hereunder:—

AVERAGE YIELD OF POTATOES, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Federal Terr. | C'wealth. |
|------------------------|--------|-----------|---------|----------|----------|-------|---------------|-----------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1901-2 | 1.50 | 3.13 | 2.25 | 2.41 | 3.14 | 4.51 | ... | 2.94 |
| 1911-12 | 1.74 | 2.50 | 1.70 | 3.06 | 3.44 | 2.85 | 1.83 | 2.31 |
| 1912-13 | 2.69 | 4.02 | 1.86 | 3.85 | 2.62 | 2.95 | 1.35 | 3.25 |
| 1913-14 | 2.76 | 2.87 | 1.64 | 3.05 | 3.40 | 2.61 | 1.47 | 2.53 |
| 1914-15 | 1.34 | 2.89 | 1.91 | 2.86 | 3.08 | 2.50 | 1.88 | 2.41 |
| 1915-16 | 2.27 | 3.05 | 1.98 | 2.99 | 2.90 | 2.71 | 3.57 | 2.75 |
| Average for 10 Seasons | 2.41 | 2.86 | 1.76 | 2.77 | 3.04 | 3.29 | 1.74 | 2.78 |

4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1915-16 is furnished in the following table, together with the value per acre:—

VALUE OF POTATO CROP, 1915-16.

| Particulars. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | Federal Terr. | C'wealth. |
|--------------------|----------|------------|---------|----------|----------|----------|---------------|------------|
| Tot. value | £338,563 | £1,112,454 | £89,268 | £97,265 | £129,777 | £509,299 | £267 | £2,276,893 |
| Value per acre ... | £17/5/10 | £19/11/0 | £15/8/0 | £22/8/1 | £26/13/5 | £17/5/5 | £38/2/10 | £18/16/4 |

5. **Relation to Population.**—The average production of potatoes per annum per head of the population of the Commonwealth for the past ten seasons has been approximately 190 lbs. In Tasmania, where this crop is of far greater importance in relation to population than is the case in any other State, the production per head in 1906-7 was nearly a ton, and in 1911-12 about 6½ cwt. Details for the seasons 1901-2 and 1911-12 to 1915-16 are as follows:—

POTATO PRODUCTION PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | Federal Terr. | C'wealth. |
|-------------|--------|-----------|---------|------------|----------|-------|---------------|-----------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1901-2 ... | 28 | 104 | 44 | 42 | 30 | 655 | ... | 84 |
| 1911-12 ... | 45 | 90 | 21 | 55 | 32 | 327 | 69 | 67 |
| 1912-13 ... | 52 | 138 | 26 | 77 | 44 | 368 | 22 | 88 |
| 1913-14 ... | 59 | 125 | 25 | 75 | 56 | 398 | 22 | 88 |
| 1914-15 ... | 22 | 132 | 24 | 41 | 46 | 392 | 8 | 72 |
| 1915-16 ... | 24 | 122 | 11 | 30 | 44 | 397 | 14 | 67 |

6. **Commonwealth Imports and Exports.**—Under normal conditions there is usually a fairly large export trade in potatoes carried on by the Commonwealth, principally with New Zealand, the Pacific Islands, and the Philippine Islands. Thus, during 1907, out of a total export of 17,842 tons, 13,346 tons went to New Zealand, 2,102 tons to the Pacific

Islands, and 2,112 tons to the Philippine Islands. On the other hand, when the droughts of 1902, 1903, 1912 and 1914, had brought about a shortage in some of the States, importations from New Zealand took place to the extent of 11,471 tons and 2,279 tons in the first two years, 17,732 tons in 1912, and 16,342 tons in 1915-16. The quantities and values of the Commonwealth oversea imports and exports of potatoes for 1901 and the past five years are shown in the following table:—

COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1901 and 1911 to 1915-16.

| Year. | Imports. | | Exports. | | Net Exports. | |
|-------------|-----------------|-------------|----------------|-------------|-------------------|---------------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| 1901 ... | Tons. 17,655 | £ 86,067 | Tons. 6,028 | £ 45,485 | Tons. — 11,627 | £ — 40,582 |
| 1911 ... | 245 | 1,881 | 1,834 | 12,241 | — 1,589 | — 10,360 |
| 1912 ... | 18,151 | 163,249 | 1,619 | 15,331 | — 16,532 | — 147,918 |
| 1913 ... | 996 | 5,537 | 1,689 | 12,012 | — 693 | — 6,475 |
| 1914-15 ... | 2,708 | 15,406 | 1,803 | 12,690 | — 905 | — 2,716 |
| 1915-16 ... | 17,596 | 149,488 | 1,208 | 13,110 | — 16,388 | — 136,378 |

Note. — signifies net imports.

7. Comparison with Other Countries.—The following table furnishes a comparison of the potato crop of Australia for 1914 with those of some of the leading potato-producing countries of the world for the same year:—

POTATO CROPS OF VARIOUS COUNTRIES, 1914.

| Country. | Yield. | Country. | Yield. |
|---------------------------|------------|-----------------------|-----------|
| | Tons. | | Tons. |
| Germany ... | 44,850,162 | Sweden* ... | 1,699,089 |
| Russia in Europe (1913)*† | 34,137,353 | Italy ... | 1,636,747 |
| France ... | 13,778,985 | Russia in Asia (1913) | 1,190,337 |
| Austria (1913) | 11,369,573 | Denmark ... | 930,734 |
| United States ... | 10,873,141 | Norway ... | 687,927 |
| United Kingdom* | 7,473,699 | Japan* | 669,695 |
| Hungary (1913) | 5,364,561 | Switzerland ... | 590,528 |
| Belgium (1913) | 3,150,400 | Australia ... | 357,614 |
| Netherlands* | 2,485,901 | Luxemburg* | 146,648 |
| Canada ... | 2,294,840 | New Zealand ... | 132,623 |
| Spain ... | 2,053,335 | | |

* Provisional. † Exclusive of Poland.

§ 10. Other Root and Tuber Crops.

1. Nature and Extent.—Root crops, other than potatoes, are not extensively grown in Australia, the total area devoted to them for the season 1915-16 being only 21,971 acres. The principal of these crops are onions, mangolds, turnips, and "sweet potatoes" (*Batatas edulis*). Of these, onions are most largely grown in Victoria, mangolds in Tasmania and Victoria, turnips in Tasmania, and sweet potatoes in Queensland. The total area under onions in the Commonwealth during the season 1915-16 was 10,189 acres, giving a yield of 41,550 tons, and averaging 4.1 tons per acre. The area devoted in 1915-16 to root crops other than potatoes and onions, viz., 11,782 acres, yielded 75,310 tons, and gave an average of 6.4 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," a reference to which will be made later.

2. **Commonwealth Imports and Exports.**—The only root crop, other than potatoes, in which any considerable overseas trade is carried on by the Commonwealth is that of onions. During the year 1915-16 overseas imports of onions amounted to 926 tons, obtained principally from the United States and New Zealand, of which total 720 tons went to New South Wales and 124 tons to Queensland. For the same year the exports of onions totalled 3881 tons, the principal countries to which they were exported being New Caledonia and other Pacific Islands. During 1914-15, 2091 tons were imported and 3372 tons exported, of which 752 tons were shipped to the United States and 666 tons to the Philippine Islands.

§ 11. Hay.

1. **Nature and Extent.**—As already stated, the most important crop of the Commonwealth is that of wheat grown for grain. Next to this in importance is the hay crop, which for the five seasons ended 1915-16 averaged nearly 20 per cent. of the area under crop in the Commonwealth, and for 1915-16, 19.4 per cent. In most European countries the hay crop consists almost entirely of meadow and other grasses, whilst in Australia a very large proportion of the area under hay comprises cereal crops, mainly wheat and oats. A considerable quantity of lucerne hay is also made, particularly in New South Wales and Queensland. The area under hay of all kinds in the several States from 1860 onwards is given hereunder:—

AREA UNDER HAY, 1860-1 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | N. T. | Fed. Terr. | C'wealth. |
|---------|-----------|-----------|---------|------------|----------|---------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1860-1 | 46,884 | 90,921 | 276 | 55,818 | 6,626 | 31,837 | ... | ... | 232,062 |
| 1865-6 | 61,909 | 97,902 | 1,449 | 101,996 | 8,824 | 30,244 | ... | ... | 302,324 |
| 1870-1 | 65,404 | 163,181 | 3,671 | 140,316 | 17,173 | 33,612 | ... | ... | 423,357 |
| 1875-6 | 77,125 | 155,274 | 8,531 | 161,429 | 17,319 | 34,758 | ... | ... | 454,436 |
| 1880-1 | 131,153 | 249,656 | 12,022 | 272,567 | 19,563 | 31,615 | ... | ... | 716,576 |
| 1885-6 | 219,886 | 421,036 | 28,881 | 312,672 | 19,677 | 41,693 | ... | ... | 1,043,845 |
| 1890-1 | 175,242 | 413,052 | 31,106 | 345,150 | 23,183 | 45,381 | ... | ... | 1,033,114 |
| 1895-6 | 319,296 | 464,482 | 28,609 | 362,972 | 63,804 | 54,748 | ... | ... | 1,293,911 |
| 1900-1 | 466,236 | 502,105 | 42,497 | 341,330 | 104,254 | 61,541 | ... | ... | 1,517,963 |
| 1905-6 | 438,036 | 591,771 | 37,425 | 317,924 | 124,906 | 64,350 | ... | ... | 1,574,412 |
| 1910-11 | 638,577 | 832,669 | 98,558 | 440,177 | 175,432 | 72,992 | ... | ... | 2,258,405 |
| 1911-12 | 651,866 | 860,205 | 61,299 | 521,182 | 344,032 | 77,466 | 18 | 2,220 | 2,518,288 |
| 1912-13 | 944,725 | 1,203,728 | 87,643 | 647,069 | 231,690 | 99,839 | 10 | 2,337 | 3,217,041 |
| 1913-14 | 798,978 | 977,684 | 76,469 | 568,550 | 246,640 | 84,138 | 61 | 2,152 | 2,754,672 |
| 1914-15 | 783,107 | 895,755 | 79,327 | 445,832 | 332,037 | 89,598 | 120 | 2,837 | 2,628,613 |
| 1915-16 | 1,107,228 | 1,330,455 | 55,174 | 709,831 | 290,036 | 103,216 | 140 | 1,691 | 3,597,771 |

It will be seen from this table that in all the States marked fluctuations occur in the area devoted to the hay crop from year to year. These fluctuations are due to various causes, the principal being the variations in the relative prices of grain and hay, and the favourableness or otherwise of the season for a grain crop. Thus, crops originally sown for grain are frequently cut for hay owing to the improved price of that commodity, or owing to the fact that the outlook for the due development of the grain is not a satisfactory one. On the other hand, improved grain prices or the prospect of a heavy yield will frequently cause crops originally intended for hay to be left for grain. The area under hay in the Commonwealth for the season 1915-16 was the highest on record, and that for 1912-13 the next.

2. **Kinds of Hay.**—Particulars concerning the kind of crop cut for hay are furnished in the returns prepared by five of the States. In the case of Tasmania the bulk consists of oaten hay; full particulars, however, are not available for that State.

Details for the past five seasons are given in the following table:—

KINDS OF HAY GROWN, 1911-12 to 1915-16.

| Kind of Hay Crop. | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. |
|---------------------------|----------------|------------------|----------------|----------------|------------------|
| NEW SOUTH WALES— | Acres. | Acres. | Acres. | Acres. | Acres. |
| Wheaten | 439,591 | 703,509 | 533,890 | 568,982 | 878,881 |
| Oaten | 146,162 | 181,400 | 209,821 | 158,949 | 175,285 |
| Barley | 2,309 | 1,703 | 1,395 | 1,179 | 1,348 |
| Lucerne | 63,804 | 56,403 | 52,457 | 52,570 | 50,528 |
| Other | ... | 1,710 | 1,415 | 1,427 | 1,186 |
| Total | 651,866 | 944,725 | 798,978 | 783,107 | 1,107,228 |
| VICTORIA— | | | | | |
| Wheaten | 304,388 | 386,370 | 220,560 | 192,562 | 333,449 |
| Oaten | 535,146 | 790,268 | 729,678 | 677,895 | 964,318 |
| Other | 20,671 | 27,090 | 27,446 | 25,298 | 32,688 |
| Total | 860,205 | 1,203,728 | 977,684 | 895,755 | 1,330,455 |
| QUEENSLAND— | | | | | |
| Wheaten | 1,763 | 12,710 | 12,648 | 14,906 | 14,003 |
| Oaten | 5,403 | 19,539 | 16,020 | 12,573 | 6,377 |
| Lucerne | 51,059 | 50,814 | 44,270 | 47,785 | 32,288 |
| Other | 3,074 | 4,580 | 3,531 | 4,063 | 2,506 |
| Total | 61,299 | 87,643 | 76,469 | 79,327 | 55,174 |
| SOUTH AUSTRALIA— | | | | | |
| Wheaten | 401,648 | 492,980 | 411,101 | 318,586 | 476,423 |
| Oaten | 113,011 | 147,963 | 151,694 | 118,505 | 190,321 |
| Lucerne | 2,411 | 2,414 | 2,378 | 3,976 | 3,380 |
| Other | 4,112 | 3,712 | 3,377 | 4,765 | 39,707 |
| Total | 521,182 | 647,069 | 568,550 | 445,832 | 709,831 |
| WESTERN AUSTRALIA— | | | | | |
| Wheaten | 284,073 | 176,744 | 195,497 | 266,113 | 225,959 |
| Oaten | 58,393 | 52,904 | 49,801 | 64,037 | 62,622 |
| Lucerne | 167 | 205 | 264 | 328 | 258 |
| Other | 1,399 | 1,837 | 1,078 | 1,559 | 1,197 |
| Total | 344,032 | 231,690 | 246,640 | 332,037 | 290,036 |

It will be seen that wheat is the principal hay crop in New South Wales, South Australia, and Western Australia, oats in Victoria and Tasmania, and lucerne in Queensland.

3. **Total Yield.**—The Commonwealth hay crop for the season 1915-16 was the highest on record, and amounted to 5,633,988 tons, the second largest record being that of 3,955,311 tons for the season 1912-13. For many years past the State of Victoria has been the largest hay producer in the Commonwealth, and in the five seasons, 1911-12 to 1915-16 inclusive, accounted for 39 per cent. of the total production. The total yields of the several States from 1860 onwards are given hereunder:—

COMMONWEALTH HAY CROP, 1860 to 1915-16.

| Season. | New South Wales. | Victoria. | Queensland. | South Australia. | Western Australia. | Tasmania. | N. T. | Fed. Ter. | Commonwealth. |
|---------|------------------|-----------|-------------|------------------|--------------------|-----------|-------|-----------|---------------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1860-1 | 50,927 | 144,211 | 414 | 71,241 | 8,099 | 62,318 | ... | ... | 337,210 |
| 1865-6 | 54,230 | 96,101 | 2,173 | 88,731 | 7,901 | 34,751 | ... | ... | 283,887 |
| 1870-1 | 69,602 | 183,708 | 5,506 | 197,149 | 20,833 | 40,763 | ... | ... | 517,561 |
| 1875-6 | 88,968 | 206,613 | 12,796 | 194,794 | 17,319 | 49,217 | ... | ... | 569,707 |
| 1880-1 | 174,194 | 300,581 | 23,441 | 261,371 | 19,563 | 35,883 | ... | ... | 815,033 |
| 1885-6 | 191,371 | 442,118 | 30,670 | 307,855 | 19,677 | 51,872 | ... | ... | 1,043,563 |
| 1890-1 | 213,034 | 567,779 | 50,116 | 310,125 | 25,014 | 52,021 | ... | ... | 1,218,089 |
| 1895-6 | 229,671 | 390,861 | 50,881 | 225,462 | 53,758 | 62,345 | ... | ... | 1,012,978 |
| 1900-1 | 526,260 | 677,757 | 78,758 | 353,662 | 103,813 | 94,193 | ... | ... | 1,834,448 |
| 1905-6 | 459,182 | 864,177 | 56,829 | 435,546 | 139,380 | 90,077 | ... | ... | 2,045,191 |
| 1910-11 | 843,080 | 1,292,410 | 151,252 | 595,064 | 178,891 | 115,190 | ... | ... | 3,175,887 |
| 1911-12 | 727,054 | 1,032,288 | 94,553 | 605,239 | 299,695 | 107,684 | 40 | 1,420 | 2,867,973 |
| 1912-13 | 1,105,350 | 1,572,933 | 119,867 | 714,766 | 255,751 | 183,709 | 10 | 2,925 | 3,955,311 |
| 1913-14 | 952,489 | 1,350,374 | 103,935 | 571,616 | 278,585 | 112,958 | 81 | 2,558 | 3,372,596 |
| 1914-15 | 610,559 | 568,956 | 102,193 | 210,437 | 156,932 | 81,971 | 220 | 2,676 | 1,733,944 |
| 1915-16 | 1,570,941 | 2,342,094 | 53,858 | 1,100,127 | 395,172 | 168,449 | 350 | 2,997 | 5,633,988 |

4. Value of Hay Crop.—The following table furnishes particulars concerning the total value and the value per acre of the hay crop of the several States of the Commonwealth for the season 1915-16:—

VALUE OF HAY CROP, 1915-16.

| Particulars. | New South Wales. | Victoria. | Queensland. | South Aust. | Western Aust. | Tasmania. | N. T. | Fed. Ter. | Commonwealth. |
|----------------|------------------|------------|-------------|-------------|---------------|-----------|----------|-----------|---------------|
| Total value... | £4,734,278 | £4,801,293 | £419,553 | £2,269,012 | £1,305,961 | £1031,750 | £2,500 | £11,322 | £14,575,669 |
| Value per acre | £4/3/6 | £3/12/2 | £7/12/1 | £3/3/11 | £4/10/1 | £9/19/11 | £17/17/2 | £6/13/11 | £4/1/0 |

5. Average Yield per Acre.—The States of the Commonwealth in which the highest average yields per acre have been obtained during the last decennium are those of Tasmania and Queensland, these being also the States in which the smallest areas are devoted to this crop. For the same period the lowest yield for the Commonwealth as a whole was that of 13 cwt. per acre in 1914-15, the next lowest was in 1907-8 when the average yield was 19 cwt., and the highest that of 31 cwt. in 1915-16. The average for the decennium was 25 cwt. Particulars for the several States for the seasons 1901-2 and 1911-12 to 1915-16, and the average for the last ten years, are given hereunder:—

AVERAGE YIELD OF HAY PER ACRE, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Vic. | Q'land. | S. Aus. | W. Aus. | Tas. | N. T. | Fed. Terr. | Com'wealth. |
|------------------------|--------|------|---------|---------|---------|------|-------|------------|-------------|
| 1901-2 | 1.07 | 1.34 | 1.94 | 0.94 | 0.97 | 1.78 | ... | ... | 1.20 |
| 1911-12 | 1.12 | 1.20 | 1.54 | 1.16 | 0.87 | 1.39 | 2.22 | 0.72 | 1.14 |
| 1912-13 | 1.17 | 1.31 | 1.36 | 1.10 | 1.10 | 1.84 | 1.00 | 1.25 | 1.23 |
| 1913-14 | 1.19 | 1.38 | 1.36 | 1.01 | 1.13 | 1.34 | 1.33 | 1.19 | 1.22 |
| 1914-15 | 0.78 | 0.64 | 1.29 | 0.47 | 0.47 | 0.91 | 1.83 | 0.94 | 0.66 |
| 1915-16 | 1.42 | 1.76 | 0.98 | 1.55 | 1.36 | 1.63 | 2.50 | 1.77 | 1.57 |
| Average for 10 seasons | 1.17 | 1.34 | 1.38 | 1.19 | 0.98 | 1.48 | *2.01 | 1.12 | 1.24 |

* Average for 5 years.

6. **Relation to Population.**—During the past ten seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1914-15 and 22½ cwt. in 1915-16; averaging about 14½ cwt. per head for the period. The State in which the hay production per head of population is highest is South Australia. Details for the seasons 1901-2 and 1911-12 to 1915-16 are given hereunder:—

HAY PRODUCTION PER 1000 OF POPULATION.

| Season. | N.S.W. | Vict. | Q'Ind. | S. Aust. | W. Aust. | Tas. | N. T. | Fed. Ter. | C'with. |
|-------------|--------|-------|--------|----------|----------|-------|-------|-----------|---------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1901-2 ... | 339 | 231 | 241 | 964 | 463 | 624 | ... | ... | 529 |
| 1911-12 ... | 440 | 777 | 154 | 1,472 | 1,045 | 566 | 12 | 899 | 639 |
| 1912-13 ... | 622 | 1,139 | 188 | 1,662 | 835 | 932 | 3 | 1,508 | 836 |
| 1913-14 ... | 520 | 956 | 157 | 1,299 | 869 | 560 | 22 | 1,287 | 692 |
| 1914-15 ... | 328 | 398 | 151 | 476 | 486 | 407 | 55 | 1,366 | 351 |
| 1915-16 ... | 840 | 1,651 | 79 | 2,509 | 1,243 | 838 | 77 | 1,639 | 1,142 |

7. **Oversea Imports and Exports.**—Under normal conditions hay, whether whole or in the form of chaff, is somewhat bulky for oversea trade, and consequently does not in such circumstances figure largely amongst the imports and exports of the Commonwealth. In 1901 and 1902, however, the exceptional demand which was created by the South African war brought about a fairly large export of hay and chaff to Natal and Cape Colony. These colonies also took a considerable quantity of Australian compressed fodder. During the year 1904, when the war between Japan and Russia was being carried on, the exports of compressed fodder to Hong Kong were valued at £42,759 and those to Japan at £23,608. The total value of the hay and chaff exported during 1901 was £406,455, as compared with only £18,815 in 1915-16, while the exports of compressed and other fodder, which amounted in value to £142,472 in 1904, had shrunk to £11,863 in 1915-16.

During 1915-16 the principal purchases of the hay and chaff exported from the Commonwealth were made by India, the Straits Settlements, and Ceylon, while the bulk of the compressed fodder was exported to the Philippine Islands and Ceylon.

Imports of hay and chaff into the Commonwealth are usually unimportant; for the year 1915-16, however, they totalled 36,725 tons, valued at £227,133, obtained principally from New Zealand and the United States.

8. **Hay Production in Other Countries.**—As already noted, the hay crops of most European countries consist of grasses of various kinds, amongst which clover, lucerne, sainfoin and rye grass occupy prominent places. The statistics of hay production in these countries are not prepared on a uniform basis, and consequently any attempt to furnish extensive comparisons would be misleading. It may be noted, however, that in the United Kingdom the production of hay from clover, sainfoin, etc., for the year 1915, amounted to 4,526,192 tons from 2,837,030 acres, while from permanent grasses a yield of 7,922,591 tons of hay was obtained from 6,393,365 acres, giving a total of 12,448,783 tons from 9,230,395 acres, or about 27 cwt. per acre.

§ 12. Green Forage.

1. **Nature and Extent.**—In all the States of the Commonwealth a considerable area is devoted to the production of green forage, mainly in connection with the dairying industry. The total area so cropped during the season 1915-16 was 515,561 acres. Of the total, the Queensland area represented about 46 per cent., that in New South Wales 31½ per cent., while that in Victoria amounted to 11½ per cent. Under normal conditions the principal crops cut for green forage are maize, sorghum, oats, barley, rye, rape, and lucerne, while small quantities of sugar-cane also are so used. Particulars concerning the area under green forage in the several States from 1890 onwards are furnished in the following table:—

AREA UNDER GREEN FORAGE, 1890-1 to 1915-16.

| Season. | N.S.W. | Vic. | Q'land. | S. Aust. | W. Aust. | Tas. | N. T. | Fed. Terr. | C'wealth. |
|---------|-----------|---------|---------|----------|----------|--------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1890-1 | 37,473 | 10,091 | 9,546 | 7,349 | 161 | 1,497 | ... | ... | 66,117 |
| 1895-6 | 66,833 | 25,939 | 19,552 | 7,309 | 430 | 1,883 | ... | ... | 121,946 |
| 1900-1 | 78,144 | 18,975 | 41,445 | 13,136 | 1,024 | 3,749 | ... | ... | 156,473 |
| 1905-6 | 95,058 | 34,041 | 66,183 | 23,842 | 1,873 | 4,882 | ... | ... | 225,879 |
| 1910-11 | 179,382 | 71,826 | 89,667 | 20,728 | 4,545 | 8,695 | 19 | ... | 374,862 |
| 1911-12 | 211,693 | 75,177 | 93,049 | 33,673 | 5,021 | 5,627 | 19 | 181 | 424,440 |
| 1912-13 | 154,522 | 84,460 | 135,354 | 39,954 | 7,339 | 6,304 | 60 | 13 | 428,006 |
| 1913-14 | 146,093 | 98,963 | 171,290 | 49,948 | 13,126 | 7,037 | 21 | 26 | 486,504 |
| 1914-15 | * 949,539 | 139,654 | 184,239 | 52,656 | 19,098 | 6,809 | 83 | 80 | 1,352,158 |
| 1915-16 | 162,808 | 60,426 | 236,293 | 32,664 | 15,622 | 7,587 | 24 | 137 | 515,561 |

* Including area fed off.

2. **Value of Green Forage Crops.**—The value of these crops is variously estimated in the several States, and the Commonwealth total for the season 1913-14 may be taken approximately as £1,594,834, or about £3 5s. 7d. per acre, for 1914-15 as £2,019,365, or £1 9s. 10d. per acre, and for 1915-16 as £2,348,532, or £4 11s. 1d. per acre.

3. **Relation to Population.**—Particulars concerning the area under green forage per 1000 of the population of the Commonwealth and the several States for the seasons 1901-2 and 1911-12 to 1915-16 are given hereunder:—

AREA UNDER GREEN FORAGE PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N. T. | Fed. Terr. | C'wealth. |
|---------|--------|-----------|---------|----------|----------|--------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2 | 82 | 27 | 79 | 38 | 8 | 24 | ... | ... | 54 |
| 1911-12 | 128 | 57 | 151 | 82 | 18 | 30 | 6 | 102 | 95 |
| 1912-13 | 87 | 61 | 213 | 93 | 24 | 32 | 17 | 7 | 90 |
| 1913-14 | 80 | 70 | 259 | 114 | 41 | 35 | 6 | 13 | 100 |
| 1914-15 | * 510 | 98 | 272 | 119 | 59 | 34 | 21 | 41 | 274 |
| 1915-16 | 87 | 43 | 348 | 74 | 49 | 38 | 5 | 75 | 105 |

* Including area fed off.

§ 13. Sugar-Cane.

1. **Area.**—Sugar-cane is grown for sugar-making purposes in only two of the States of the Commonwealth, viz., Queensland and New South Wales, and much more extensively in the former than the latter. Thus, of the total area of 164,285 acres under sugar-cane in the Commonwealth for the season 1915-16 there were 153,027 acres, or about 93 per cent., in Queensland. Sugar-cane growing appears to have been started in the Commonwealth in or about 1862, as the earliest statistical record of sugar-cane as a crop is that which credits Queensland with an area of twenty acres for the season 1862-3. In the following season the New South Wales records shew that an area of two acres was devoted to the crop in the mother State. The area under cane in New South Wales reached its maximum in 1895-6 with a total of 32,927 acres. It then fell continuously to 1902-3, when it was lower than for any previous season since 1889-90. From 1902-3 to 1906-7 it remained practically stationary; from that time, with slight variations, it gradually fell to 11,258 acres in 1915-16, the lowest area under sugar-cane since 1882-3. In Queensland, on the other hand, although fluctuations in area are in evidence throughout, the general trend has been one of satisfactory increase, the area under cane for the season 1914-15 being the highest on record, that for 1915-16 being the next

highest and that for 1913-14 only a little short of it. The area under sugar-cane in the Commonwealth from 1865 is given in the following table:—

AREA UNDER SUGAR-CANE, 1865 to 1915-16.

| Season. | N.S.W. | Queensland. | C'wealth. | Season. | N.S.W. | Queensland. | C'wealth. |
|---------|--------|-------------|-----------|---------|--------|-------------|-----------|
| | Acres. | Acres. | Acres. | | Acres. | Acres. | Acres. |
| 1865-6 | 141 | 450 | 591 | 1905-6 | 21,805 | 134,107 | 155,912 |
| 1870-1 | 4,082 | 6,342 | 10,424 | 1910-11 | 13,763 | 141,779 | 155,542 |
| 1875-6 | 6,454 | 13,459 | 19,913 | 1911-12 | 13,907 | 130,376 | 144,283 |
| 1880-1 | 10,971 | 20,224 | 31,195 | 1912-13 | 13,914 | 141,652 | *155,567 |
| 1885-6 | 16,419 | 59,186 | 75,605 | 1913-14 | 13,232 | 147,743 | *160,976 |
| 1890-1 | 20,446 | 50,922 | 71,368 | 1914-15 | 11,421 | 161,195 | 172,616 |
| 1895-6 | 32,927 | 77,247 | 110,174 | 1915-16 | 11,258 | 153,027 | 164,285 |
| 1900-1 | 22,114 | 108,535 | 130,649 | | | | |

* Including 1 acre Northern Territory.

2. **Productive and Unproductive Cane.**—The areas given in the preceding table represent the total area on which sugar-cane was grown during the seasons specified for purposes other than green forage. The whole area, however, was not in any case cut for crushing during that season, there being always a considerable amount of "stand over" cane, as well as a small quantity required for plants. In the season 1915-16 the New South Wales total comprised 6,030 acres of productive and 5,228 acres of unproductive cane, while in the case of Queensland the productive cane amounted to 94,459 acres and the unproductive to 58,568 acres.

3. **Yield of Cane.**—Queensland statistics of the production of sugar-cane are not available for dates prior to the season 1897-8. In that season the total for the Commonwealth was 1,073,883 tons, as against 2,271,558 tons for the record season 1913-14. The average yield per acre of productive cane is much higher in New South Wales than in Queensland, the average during the last decade being 25.38 tons for the former and 16.53 for the latter State. During the nine seasons 1901-2 to 1909-10 the yield remained practically constant in New South Wales at about 21 tons per acre, except in 1907-8 when the average reached nearly 28 tons. For the past six years, however, the average yield per acre in this State has shown an upward tendency, reaching over 30 tons during 1913-14 and 1914-15. In Queensland the average yield per acre for 1910-11, viz., 19.45 tons, was by far the highest recorded for that State prior to 1913-14, when the average was over 20 tons to the acre. Particulars relative to the total and average yields of the Commonwealth sugar crops for the seasons 1901-2 and 1910-11 to 1915-16 are as follows:—

YIELD OF SUGAR-CANE, 1901-2 and 1910-11 to 1915-16.

| Season. | Total Yield of Cane. | | | Average Yield per Acre of Productive Cane. | | |
|-------------|----------------------|-------------|------------|--|-------------|-----------|
| | N.S.W. | Queensland. | C'wealth. | N.S.W. | Queensland. | C'wealth. |
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1901-2 ... | 187,711 | 1,180,091 | 1,367,802 | 21.36 | 15.10 | 15.73 |
| 1910-11 ... | 160,311 | 1,840,447 | 2,000,758 | 28.65 | 19.45 | 19.96 |
| 1911-12 ... | 147,799 | 1,534,451 | 1,682,250 | 28.18 | 16.02 | 16.65 |
| 1912-13 ... | 140,914 | 994,212 | *1,135,141 | 22.96 | 12.72 | 13.47 |
| 1913-14 ... | 185,970 | 2,085,588 | 2,271,558 | 30.05 | 20.29 | 20.84 |
| 1914-15 ... | 181,606 | 1,922,633 | 2,104,239 | 30.21 | 17.80 | 18.45 |
| 1915-16 ... | 157,748 | 1,152,516 | 1,310,264 | 26.16 | 12.20 | 13.04 |

* Including 15 tons Northern Territory.

An estimate for Queensland for the season 1916-17 gives the yield as 1,579,514 tons of cane, or an increase of 426,998 tons on the previous year's returns. The sugar production is expected to be about 176,973 tons of raw sugar, as compared with 140,496 tons for 1915-16 and 225,847 tons for 1914-15.

4. **Relation to Population.**—The sugar-cane production of the Commonwealth during the past five seasons has averaged about 7.1 cwt. per head of population. In Queensland, the principal sugar-producing State, the production of cane per head has ranged between $1\frac{1}{2}$ tons in 1912-13 and 3 tons in 1913-14. Details for the period 1911-12 to 1915-16 are as follows:—

SUGAR-CANE PRODUCTION PER 1000 OF POPULATION.

| State. | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. |
|------------------------|----------|----------|----------|----------|----------|
| | Tons. | Tons. | Tons. | Tons. | Tons. |
| New South Wales | 89 | 79 | 102 | 98 | 84 |
| Queensland | 2,498 | 1,562 | 3,159 | 2,841 | 1,698 |
| Commonwealth | 375 | 240 | 466 | 426 | 266 |

5. **Quality of Cane.**—The quantity of cane required to produce a ton of sugar varies considerably not only with the district in which the cane is grown but also with the season. In Queensland, for instance, during the seasons 1902-3 to 1906-7 the sugar content of the cane crushed continuously diminished, so that while in 1902-3 the quantity of cane used in producing a ton of sugar was 8.38 tons, in the season 1906-7 the quantity required was 9.38 tons, the production in the former case being approximately 12 per cent. and in the latter $10\frac{3}{4}$ per cent. of the weight of cane crushed. For the season 1907-8, the cane was of much better quality, and the quantity required to produce a ton of sugar was only 8.84 tons, the sugar content representing in this case somewhat more than $11\frac{1}{2}$ per cent. of the weight of cane crushed. In 1908-9, owing in large measure to the effect of frosts, the quantity of cane required to produce one ton of sugar was increased to 9.49 tons, the sugar thus representing only about $10\frac{1}{2}$ per cent. of the weight of cane crushed, while in 1909-10 only 8.65 tons of cane were required to each ton of sugar, the sugar representing about $11\frac{1}{2}$ per cent. of the weight of cane crushed. The especially favourable weather existing throughout 1910 resulted in a very high average quantity of cane per acre being obtained, while the moisture which caused this led to a slight diminution in the saccharine density as compared with the previous year. During 1910-11 and the five following seasons the quantity of cane required to produce one ton of sugar was 8.73, 8.85, 8.79, 8.59, 8.51, and 8.20 tons in the order named, the sugar produced representing about $11\frac{1}{2}$ per cent. of the weight of cane crushed in each of those years, while the average quantity of sugar obtained per acre crushed was 2.23 tons in 1910-11, 1.81 in 1911-12, 1.45 in 1912-13, 2.36 in 1913-14, 2.09 in 1914-15, and 1.49 in 1915-16. It should be noted that in 1901-2 no less than 9.76 tons of cane were needed to produce a ton of sugar. It may be remarked in this connection that the systematic study of beet culture in European countries shewed that by suitable methods the sugar content of the root could be greatly increased, and it is believed that a similar improvement can be effected in the yield from sugar-cane.

6. **Sugar Bounties.**—The provision of bounties or similar aids to the sugar-growers of the Commonwealth early occupied the attention of the Commonwealth Parliament, the object in view being that of assisting the industry, and at the same time diminishing the employment of coloured labour in connection therewith. An account of the various Acts in connection with sugar bounties and sugar excise tariffs will be found on pages 394 to 396 of the Year Book No. 6. In 1912 the Sugar Excise Repeal Act and the Sugar Bounty Abolition Act were passed by the Federal Parliament,

conditionally on the Queensland Parliament approving of legislation prohibiting the employment of coloured labour in connection with the industry. The State Sugar Cultivation Act, the Sugar Growers Act, and the Sugar Growers' Employees Act, of 1913, having been approved of, the 1912 Federal Acts, which repeal all previous enactments in regard to excise on sugar and bounty on cane, came into force by proclamation in July 1913.

7. **Beet Sugar.**—During the past few years an effort has been made to revive the sugar-beet industry in Victoria. During 1910-11 £554 was paid as bounty on 1,847 tons of beet, £2,244 on 7,481 tons during 1911-12, £1,667 on 6,207 tons during 1912-13, and £1,001 on 3,330 tons during 1913-14. For the 1913 crop the State Government paid £1 per ton for all topped clean roots delivered at the Maffra factory, for the 1914 crop £1 ls. was paid, and £1 5s. for the 1915 crop.

8. **Acreage and Yield of Sugar Beet.**—The following table shews the acreage under sugar beet, and quantity grown in Victoria during the past five seasons:—

AREA AND PRODUCTION OF SUGAR BEET IN VICTORIA, 1911-12 to 1915-16.

| Particulars. | | | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. |
|----------------------|-----|-------|----------|----------|----------|----------|----------|
| Area ... | ... | acres | 752 | 934 | 1,093 | 990 | 461 |
| Production ... | ... | tons | 3,974 | 6,207 | 7,431 | 10,343 | 4,928 |
| Average per acre ... | ... | „ | 5.28 | 6.65 | 6.80 | 10.45 | 10.69 |

9. **Imports and Exports of Sugar.**—Notwithstanding the increase in the production of sugar in the Commonwealth during recent years, Australia's over-sea import trade in cane sugar remained fairly extensive until 1906, the principal countries engaged in supplying this commodity being Java, Mauritius, and Fiji. In 1907 the exports of sugar exceeded the imports for the first time, the value of the net exports being £166,121. In 1908 and the following five years the imports exceeded the exports, in 1914-15 the exports were again the greater by 5,308 tons, representing a value of £138,474, in 1915-16, however, the imports again exceeded the exports by no less than 115,008 tons, valued at £1,847,310. The principal countries to which sugar is exported are the United Kingdom, the Pacific Islands, and Canada, but the bulk of the sugar exported from the Commonwealth is not of Australian origin, but merely a re-export of sugar produced elsewhere. Thus, of 18,433 tons exported during 1914-15, only 137 tons were of Australian origin. The sugar so re-exported comes mainly from Fiji, Java, and Mauritius. Particulars concerning the imports and exports of cane sugar for 1901 and the past five years are as follows:—

IMPORTS AND EXPORTS OF CANE SUGAR, 1901 and 1911 to 1915-16.

| Year. | Oversea Imports. | | Oversea Exports. | | Net Imports. | |
|-------------|------------------|----------------|------------------|-------------|-----------------|----------------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| 1901 ... | tons. 98,544 | £ 1,239,550 | tons. 4,738 | £ 68,876 | tons. 93,806 | £ 1,170,674 |
| 1911 ... | 33,276 | 404,474 | 7,331 | 120,956 | 25,945 | 283,518 |
| 1912 ... | 98,481 | 1,189,763 | 2,257 | 39,614 | 96,224 | 1,150,149 |
| 1913 ... | 74,861 | 864,768 | 3,419 | 54,322 | 71,442 | 810,446 |
| 1914-15 ... | 13,125 | 181,020 | 18,433 | 319,494 | — 5,308 | — 138,474 |
| 1915-16 ... | 116,111 | 1,869,768 | 1,103 | 22,458 | 115,008 | 1,847,310 |

Note.(—) signifies net exports.

§ 14. Vineyards.

1. **Nature and Extent.**—The introduction of the vine into Australia has been set down by different investigators as at various dates, the years 1815 and 1828 being principally favoured. It would seem, however, that the vine was really brought out with the First Fleet which initiated the colonisation of Australia in 1788, and that consequently the Australian vine is as old as Australian settlement. As already mentioned a report of Governor Hunter's gives the area under vines in 1797 as 8 acres. From New South Wales the vine spread to Victoria and South Australia, and these States have now far outstripped the mother State in the area which they have devoted to its cultivation. In Queensland and Western Australia also, vine-growing has been carried on for many years, but in neither State has the industry progressed with the rapidity attained in Victoria and South Australia. In Tasmania the climate is not favourable to the growth of grapes. The purposes for which grapes are grown in Australia are three in number, viz.—(i.) for wine-making, (ii.) for table use, (iii.) for drying. The total area under vines in the several States from 1860 onwards is given in the following table:—

COMMONWEALTH VINEYARDS, 1860-1 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tasmania. | C'wealth. |
|---------|--------|-----------|---------|----------|----------|-------------------------------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | | Acres. |
| 1860-1 | 1,584 | 1,198 | — | 3,180 | 335 | There are no vineyards in Tasmania. | 6,237 |
| 1865-6 | 2,126 | 4,078 | 110 | 6,629 | 634 | | 13,577 |
| 1870-1 | 4,504 | 5,466 | 416 | 6,131 | 710 | | 17,227 |
| 1875-6 | 4,459 | 5,081 | 376 | 4,972 | 675 | | 15,563 |
| 1880-1 | 4,800 | 4,980 | 789 | 4,337 | 659 | | 15,515 |
| 1885-6 | 5,247 | 9,775 | 1,483 | 5,142 | 624 | | 22,271 |
| 1890-1 | 8,044 | 20,686 | 1,981 | 9,535 | 1,024 | | 41,270 |
| 1895-6 | 7,519 | 30,275 | 2,021 | 17,604 | 2,217 | | 59,636 |
| 1900-1 | 8,441 | 30,634 | 2,019 | 20,158 | 3,325 | | 64,577 |
| 1905-6 | 8,754 | 26,402 | 2,044 | 23,603 | 3,541 | | 64,344 |
| 1910-11 | 8,321 | 23,412 | 1,634 | 22,952 | 2,795 | | 59,114 |
| 1911-12 | 8,231 | 24,193 | 1,371 | 23,986 | 2,321 | | 60,602 |
| 1912-13 | 8,163 | 24,579 | 1,428 | 25,208 | 3,010 | | 62,388 |
| 1913-14 | 8,153 | 22,435 | 1,537 | 26,208 | 2,864 | | 61,197 |
| 1914-15 | 7,985 | 21,801 | 1,415 | 26,864 | 2,920 | | 60,985 |
| 1915-16 | 7,883 | 22,353 | 1,373 | 27,764 | 2,751 | 62,124 | |

The area devoted to vines in the Commonwealth attained its maximum in the season 1904-5, when a total of 65,673 acres was reached. Each of the five following seasons shewed a decrease, the area in 1909-10 being only 58,151 acres. Since that year, however, the total has risen to 62,124 acres, but South Australia is the only State where a steady annual increase was recorded.

The wine-growing industry in Australia, more particularly in Victoria and New South Wales, received a severe check by various outbreaks of phylloxera. With a view to its eradication extensive uprooting of vineyards in the infested areas, was undertaken, while further planting within such areas, except with phylloxera-resistant vines, was prohibited.

2. **Wine Production.**—The production of wine in Australia has not increased as rapidly as the suitability of soil and climate would appear to warrant. The cause of this is probably twofold, being in the first place due to the fact that the Australians are not a wine-drinking people and consequently do not provide a local market for this product, and in the second to the fact that the new and comparatively unknown wines of Australia find it difficult to establish a footing in the markets of the old world, owing to the competition of well-known brands. Active steps are being taken in various ways to bring the Australian wines under notice, and it may be confidently expected that when their qualities are duly recognised the wine production of this country will exhibit a rapid development. Particulars concerning the quantity of wine produced in the several States during 1901-2 and the past five seasons are contained in the table given hereunder:—

AUSTRALIAN WINE PRODUCTION, 1901-2 and 1911-12 to 1915-16.

| Season. | New South Wales. | Victoria. | Queensland. | South Australia. | Western Australia. | Tasmania. | Commonwealth. |
|-------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|------------------------------------|-----------------------|
| 1901-2 ... | Gallons. 868,479 | Gallons. 1,981,475 | Gallons. 148,835 | Gallons. 2,631,563 | Gallons. 185,735 | No production of wine in Tasmania. | Gallons. 5,816,087 |
| 1911-12 ... | 850,210 | 983,423 | 57,358 | 2,921,597 | 162,559 | | 4,975,147 |
| 1912-13 ... | 719,100 | 1,206,111 | 54,627 | 3,974,838 | 149,132 | | 6,103,808 |
| 1913-14 ... | 561,100 | 1,121,491 | 58,897 | 2,759,665 | 208,738 | | 4,709,891 |
| 1914-15 ... | 549,140 | 605,636 | 51,164 | 1,507,196 | 162,190 | | 2,875,326 |
| 1915-16 ... | 571,000 | 1,380,367 | 59,008 | 3,709,878 | 166,820 | | 5,887,073 |

3. **Relation to Population.**—In relation to population the area of the vineyards of the several States exhibits a well-marked decline from 1901 to 1908, the Commonwealth total having fallen during the period from 17 to 13 acres per 1000 of the population. During the following seven seasons, however, the relation remained stationary, with the exception of a slight decline in the 1914-15 season. Details for the period are furnished in the succeeding table:—

AREA OF VINEYARDS PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | C'wealth. |
|-------------|--------|-----------|---------|------------|----------|--------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2 ... | 6 | 24 | 4 | 58 | 19 | ... | 17 |
| 1911-12 ... | 5 | 18 | 2 | 57 | 10 | ... | 13 |
| 1912-13 ... | 5 | 18 | 2 | 59 | 10 | ... | 13 |
| 1913-14 ... | 4 | 16 | 2 | 60 | 9 | ... | 13 |
| 1914-15 ... | 4 | 15 | 2 | 61 | 9 | ... | 12 |
| 1915-16 ... | 4 | 16 | 2 | 63 | 9 | ... | 13 |

4. **Imports and Exports.**—The principal countries of origin of wine imported into Australia are France, Spain, and Portugal, the greater portion of the sparkling wines coming from France and of still wines from Spain and Portugal. Particulars relative to the importations of wine into the Commonwealth during 1901 and the past five years are given hereunder:—

COMMONWEALTH IMPORTS OF WINE, 1901 and 1911 to 1915-16.

| Year. | Quantity. | | | Value. | | |
|---------|------------|----------|----------|------------|--------|---------|
| | Sparkling. | Other. | Total. | Sparkling. | Other. | Total. |
| | Gallons. | Gallons. | Gallons. | £ | £ | £ |
| 1901 | 55,341 | 165,472 | 220,813 | 104,700 | 57,245 | 161,945 |
| 1911 | 78,115 | 75,446 | 153,561 | 153,561 | 31,363 | 184,924 |
| 1912 | 67,851 | 85,874 | 153,725 | 132,830 | 36,377 | 169,207 |
| 1913 | 68,907 | 81,006 | 149,913 | 138,563 | 34,797 | 173,360 |
| 1914-15 | 28,179 | 71,633 | 99,812 | 56,998 | 32,953 | 89,951 |
| 1915-16 | 26,744 | 62,357 | 89,101 | 55,573 | 27,494 | 83,067 |

The principal countries to which wine is exported from Australia are the United Kingdom and New Zealand, a small but fairly regular export trade being also carried on with India, Ceylon, Fiji, and the South Sea Islands. Details concerning the exports of wine from Australia during 1901 and the past five years are given in the following table:—

COMMONWEALTH EXPORTS OF WINE, 1901 and 1911 to 1915-16.

| Year. | Quantity. | | | Value. | | |
|---------|------------|-----------|-----------|------------|---------|---------|
| | Sparkling. | Other. | Total. | Sparkling. | Other. | Total. |
| | Gallons. | Gallons. | Gallons. | £ | £ | £ |
| 1901 | 2,936 | 863,147 | 866,083 | 6,972 | 122,751 | 129,723 |
| 1911 | 2,343 | 1,097,624 | 1,099,967 | 4,126 | 147,608 | 151,734 |
| 1912 | 2,467 | 784,371 | 786,838 | 4,803 | 116,327 | 121,130 |
| 1913 | 1,768 | 701,872 | 703,640 | 3,767 | 102,263 | 106,030 |
| 1914-15 | 2,325 | 635,579 | 637,904 | 4,106 | 97,337 | 101,443 |
| 1915-16 | 3,688 | 726,113 | 729,751 | 7,001 | 113,593 | 120,599 |

The sparkling wine included in the foregoing table consists mainly of foreign wine re-exported.

5. Other Viticultural Products.—In addition to grapes for wine-making purposes, large quantities are grown in all the States for table use, while, particularly in Victoria and South Australia, the drying of raisins and currants is also carried on. The quantities of table grapes grown in the several States during 1901-2 and the past five seasons are as follows:—

TABLE GRAPES, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tasmania. | C'wealth. |
|---------|--------|-----------|---------|----------|----------|-----------|-----------|
| | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. | Tons. |
| 1901-2 | 3,475 | 5,110 | 750* | 2,800* | 1,100* | ... | 13,235 |
| 1911-12 | 4,223 | 3,102 | 973 | 2,123 | 3,506 | ... | 13,927 |
| 1912-13 | 3,893 | 2,624 | 1,046 | 2,194 | 1,891 | ... | 11,648 |
| 1913-14 | 3,883 | 2,849 | 1,306 | 2,067 | 2,690 | ... | 12,795 |
| 1914-15 | 2,667 | 3,083 | 1,191 | 1,283 | 1,348 | ... | 9,572 |
| 1915-16 | 2,940 | 3,524 | 932 | 1,608 | 2,027 | ... | 11,031 |

* Estimated.

Statistics of the quantities of raisins and currants dried are available for a series of years for Victoria and South Australia, and are as follows for 1901-2 and the past five seasons :—

RAISINS AND CURRANTS DRIED, 1901-2 and 1911-12 to 1915-16.

| Season. | Raisins. | | Currants. | |
|----------------|------------|-----------------|-----------|-----------------|
| | Victoria. | Sth. Australia. | Victoria. | Sth. Australia. |
| | lbs. | lbs. | lbs. | lbs. |
| 1901-2 | 3,083,665 | 822,080 | 235,157 | 382,256 |
| 1911-12 | 11,527,488 | 3,880,912 | 5,240,368 | 5,229,840 |
| 1912-13 | 12,283,824 | 3,947,776 | 5,413,744 | 5,847,296 |
| 1913-14 | 13,473,936 | 3,981,376 | 6,954,976 | 5,507,040 |
| 1914-15 | 12,432,672 | 3,954,160 | 3,195,024 | 2,774,688 |
| 1915-16 | 20,171,648 | 6,712,048 | 7,902,272 | 7,450,016 |

In New South Wales, Queensland, and Western Australia small quantities of raisins and currants are dried, but until recently no statistics were collected. The quantity so produced in New South Wales amounted to 100,912 lbs. in 1907-8, 160,720 lbs. in 1908-9, 165,984 lbs. in 1909-10, 297,472 lbs. in 1910-11, 429,968 lbs. in 1911-12, 494,704 lbs. in 1912-13, 545,888 lbs. in 1913-14, 403,416 lbs. in 1914-15, and 890,848 lbs. in 1915-16. In Western Australia 176,400 lbs. were dried during 1912-13, 199,024 lbs. during 1913-14, 239,792 lbs. in 1914-15, and 293,888 lbs. in 1915-16. For Queensland there are no particulars available.

§ 15. Orchards and Fruit Gardens.

1. **Nature and Extent.**—Fruit-growing has made rapid progress in the Commonwealth during recent years, the area devoted thereto having increased in the past ten years by no less than 85,864 acres. The States in which the increase is most marked are:—Victoria, 27,846 acres; Tasmania, 20,832 acres; New South Wales, 10,900 acres; and Western Australia, 10,779 acres. During the same period the South Australian fruit-growing area increased 8,256 acres, while that in Queensland exhibited an increase of 7,226 acres. The increased areas in Tasmania and Western Australia are mainly due to extensive plantings of apple trees with a view to the possibilities of the London market for fresh fruit. The total area devoted to orchards and fruit gardens in the several States is given hereunder:—

COMMONWEALTH ORCHARDS AND FRUIT GARDENS, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N.T. | Fed. Terr. | C'wealth. |
|-----------|--------|-----------|---------|----------|----------|--------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2... | 48,448 | 50,055 | 14,396 | 16,315 | 6,076 | 11,485 | ... | ... | 146,775 |
| 1911-12 | 48,385 | 59,985 | 16,817 | 23,214 | 18,194 | 27,868 | 13 | 48 | 194,524 |
| 1912-13 | 49,329 | 63,209 | 18,556 | 23,905 | 19,540 | 30,575 | ... | 60 | 205,174 |
| 1913-14 | 51,457 | 67,183 | 20,072 | 24,425 | 20,575 | 32,200 | 50 | 59 | 216,021 |
| 1914-15 | 53,905 | 74,302 | 22,212 | 25,811 | 21,378 | 35,007 | 50 | 46 | 232,711 |
| 1915-16 | 57,515 | 80,120 | 22,616 | 27,576 | 21,805 | 37,351 | ... | 25 | 247,008 |

The varieties of fruit grown differ materially in various parts of the several States, and range between such fruits as the pineapple, paw-paw, mango, and guava of the tropics, and the strawberry, the raspberry, and the currant of the colder parts of the

temperate zone. The principal varieties grown in Victoria are the apple, plum, peach, apricot, cherry, and pear. In New South Wales, citrus fruits (orange, lemon, etc.), occupy the leading position, although apples, pears, peaches, plums, and apricots are also extensively grown. In Queensland the banana, the orange, the pineapple, the apple, the peach, the mango, and the plum are the varieties most largely grown. In South Australia, in addition to the apple, pear, peach, apricot, plum, orange, and lemon, the almond and the olive are also largely grown. In Western Australia, the apple, orange, peach, pear, plum, fig, and apricot are the sorts chiefly grown, while in Tasmania, although the apple represents over four-fifths of the area in that State devoted to fruit-growing, small fruits, such as the currant, raspberry, and gooseberry, are very extensively grown, and the balance of the area is mainly occupied with the pear, plum, apricot, peach, and cherry. The following table gives the acreage under the principal kinds of fruit grown, and the quantity and value of fruit produced. The acreages shewn are exclusive of young trees not yet bearing. The acreages for each kind of fruit in Victoria are not available:—

PARTICULARS OF THE PRINCIPAL KINDS OF FRUIT GROWN IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1915-16.

| Fruit. | N.S.W. (a) | Victoria. | Q'land. | S. Aust. | W. Aust. | Tasmania. | C'wealth. | |
|--------------------------|---------------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
| Apples ... acres | 6,797 | ... | 995 | 7,727 | 6,410 | 19,076 | ... | |
| | bushels | 499,087 | 2,953,968 | 29,815 | 832,872 | 292,530 | 1,985,767 | 6,594,039 |
| | £ 118,500 | 430,787 | 8,572 | 111,021 | 147,484 | 372,331 | 1,188,695 | |
| Apricots ... acres | 1,003 | ... | 88 | 1,984 | 391 | 795 | ... | |
| | bushels | 75,518 | 256,229 | 1,550 | 159,077 | 23,563 | 100,405 | 616,342 |
| | £ 30,208 | 76,869 | 853 | 64,709 | 19,832 | 28,428 | 220,899 | |
| Bananas ... acres | 668 | ... | 8,166 | ... | 115 | ... | ... | |
| | bunches | 681,726 | ... | 1,210,941 | ... | (c) 1,911 | ... | |
| | £ 40,860 | ... | 151,368 | ... | 1,911 | ... | 194,139 | |
| Lemons ... acres | 2,510 | ... | 159 | 394 | 150 | ... | ... | |
| | bushels | 190,548 | 56,569 | 10,721 | 17,859 | 24,304 | ... | 300,001 |
| | £ 71,400 | 26,870 | 2,680 | 8,037 | 7,899 | ... | 116,886 | |
| Nectarines and peaches { | acres | 6,035 | ... | 1,559 | 1,774 | 1,145 | 78 | ... |
| | bshls. | 428,669 | 310,312 | 42,638 | 79,395 | 38,927 | 8,620 | 908,561 |
| | £ 150,000 | 93,173 | 6,542 | 31,481 | 26,520 | 2,155 | 309,871 | |
| Oranges ... acres | 10,303 | ... | 2,272 | 2,076 | 1,625 | ... | ... | |
| | bushels | 801,144 | 63,434 | 299,701 | 73,455 | 148,461 | ... | 1,386,195 |
| | £ 280,400 | 28,545 | 59,940 | 34,891 | 74,231 | ... | 478,007 | |
| Pineapples ... acres | 19 | ... | 3,709 | ... | ... | ... | ... | |
| | dozen | 3,992 | ... | 921,833 | ... | ... | ... | 925,825 |
| | £ 640 | ... | 99,865 | ... | ... | ... | 100,505 | |
| Pears ... acres | 1,685 | ... | 201 | 1,109 | 760 | 1,114 | ... | |
| | bushels | 120,364 | 601,357 | 3,022 | 118,268 | 53,123 | 141,773 | 1,037,907 |
| | £ 30,100 | 112,754 | 944 | 23,896 | 20,585 | 42,532 | 230,811 | |
| Other fruits ... acres | 8,242 | ... | 2,676 | 4,260 | 1,398 | 2,584 | ... | |
| | £ 265,282 | 197,390 | 51,920 | 86,375 | 44,429 | 77,335 | 722,731 | |
| Total ... acres | 37,262 | 53,873 | 19,825 | 19,324 | 11,994 | 23,647 | 165,925 | |
| | £ 987,390 | 966,388 | 382,684 | 360,410 | 342,891 | 522,781 | 3,562,544 | |

(a) Including Federal Territory, 24 acres, value £570. (b) Cases. (c) Bushels.

2. **Relation to Population.**—In relation to population the acreage of orchards and fruit gardens of the Commonwealth has increased during the last ten years, more than compensating for the decline which was experienced in the case of vineyards. Taking the two in conjunction, the relative area under vineyards and orchards has, during the period, considerably increased, averaging 55 acres per 1000 of population in 1901-2, and 63 in 1915-16. Details for orchards and fruit gardens for 1901-2 and the past five seasons are as follows:—

AREA OF ORCHARDS AND FRUIT GARDENS PER 1000 OF POPULATION.

| Season. | N.S.W. | Victoria. | Q'land. | Sth. Aust. | W. Aust. | Tas. | N.T. | Fed. Terr. | C'wealth. |
|-----------|--------|-----------|---------|------------|----------|--------|--------|------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2... | 35 | 41 | 28 | 45 | 31 | 66 | ... | ... | 38 |
| 1911-12 | 29 | 44 | 27 | 56 | 62 | 144 | 4 | 25 | 43 |
| 1912-13 | 28 | 46 | 29 | 56 | 64 | 155 | ... | 31 | 43 |
| 1913-14 | 28 | 48 | 30 | 56 | 64 | 160 | 14 | 30 | 44 |
| 1914-15 | 29 | 52 | 33 | 58 | 66 | 174 | 13 | 23 | 47 |
| 1915-16 | 31 | 57 | 33 | 63 | 69 | 186 | ... | 14 | 50 |

3. **Commonwealth Imports and Exports.**—A considerable fruit trade, both import and export, is carried on by the Commonwealth with oversea countries, the major portion of the importations consisting of dried fruits, while the bulk of the exports is made up of fresh fruits. Amongst the imports, the principal dried fruits are currants, dates, sultanas, and raisins, and the principal fresh fruits bananas, oranges, lemons, and apples. The currants imported are mainly from Greece, the dates from Arabia, Asia Minor and Persia, the raisins mainly from Spain. Of the fresh fruits imported during 1915-16, the bananas were chiefly from Fiji, the oranges and lemons from the United States and Italy, and the apples from the United States and Canada. In 1907 a considerable increase in the trade in Australian dried fruits took place, the total export for the year being valued at £76,872, of which £71,506 represented Australian fruits and £5,366 re-exports of foreign fruits. In 1908 the export declined to £35,359, of which £33,111 represented Australian fruits, and £2,248 re-exports of foreign fruits. There was a further decline in 1909, when the total value was only £13,013, made up of £11,826 of Australian produce, and £1,187 of re-exports. There was a small increase in the exports in 1910 and 1911, the total for the latter year amounting to £23,900, in 1912 there was a further and more substantial increase, the value of dried fruits exported being £48,012. In 1913 the export value was £32,099, and in 1914-15 £35,691. In 1915-16 the value of dried fruits exported was the largest on record, viz., £244,069; of this sum £241,632 represented Australian produce, and the balance of £2,437 re-exports of foreign fruits. The principal consignees of Australian dried fruits exported were United Kingdom and New Zealand. The fresh fruits exported during the year were valued at £415,305, and consisted mainly of apples. These were all of Australian origin with the exception of re-exports valued at £580. The principal countries to which these were sent were the United Kingdom, New Zealand and the East Indies.

Particulars concerning the oversea imports and exports of dried fruits for 1901 and the last five years are as follows:—

**COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF DRIED FRUITS,
1901 AND 1911 TO 1915-16.**

| Year. | Oversea Imports. | | Oversea Exports. | | Net Imports. | |
|----------|------------------|---------|------------------|---------|--------------|---------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | lbs. | £ | lbs. | £ | lbs. | £ |
| 1901 ... | 14,265,731 | 179,305 | 831,996 | 14,206 | 13,433,735 | 165,099 |
| 1911 ... | 6,526,498 | 68,942 | 1,291,795 | 23,900 | 5,234,703 | 45,042 |
| 1912 ... | 7,484,432 | 81,913 | 2,545,779 | 48,012 | 4,938,653 | 33,901 |
| 1913 ... | 10,551,877 | 112,439 | 2,478,585 | 32,099 | 8,073,292 | 80,340 |
| 1914-15 | 4,071,250 | 58,451 | 2,313,768 | 35,691 | 1,757,482 | 22,760 |
| 1915-16 | 11,857,787 | 159,398 | 8,254,878 | 244,069 | 3,602,909 | -84,671 |

Similar information with regard to the Commonwealth oversea trade in fresh fruits for the same period is contained in the table given hereunder :—

**COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF FRESH FRUITS,
1901 AND 1911 TO 1915-16.**

| Year. | Oversea Imports. | | Oversea Exports. | | Net Exports. | |
|----------|------------------|---------|------------------|---------|--------------|----------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | Centals. | £ | Centals. | £ | Centals. | £ |
| 1901 ... | * | 45,955 | * | 167,926 | * | 121,971 |
| 1911 ... | 338,749 | 197,924 | 651,837 | 420,780 | 313,088 | 222,856 |
| 1912 ... | 306,079 | 217,796 | 674,695 | 468,306 | 368,616 | 250,510 |
| 1913 ... | 472,331 | 356,060 | 584,914 | 399,800 | 112,583 | 43,740 |
| 1914-15 | 369,996 | 344,466 | 260,314 | 176,024 | 109,682 | -168,442 |
| 1915-16 | 432,817 | 374,174 | 645,548 | 415,305 | 212,731 | 41,131 |

* Not available. (—) Signifies net imports.

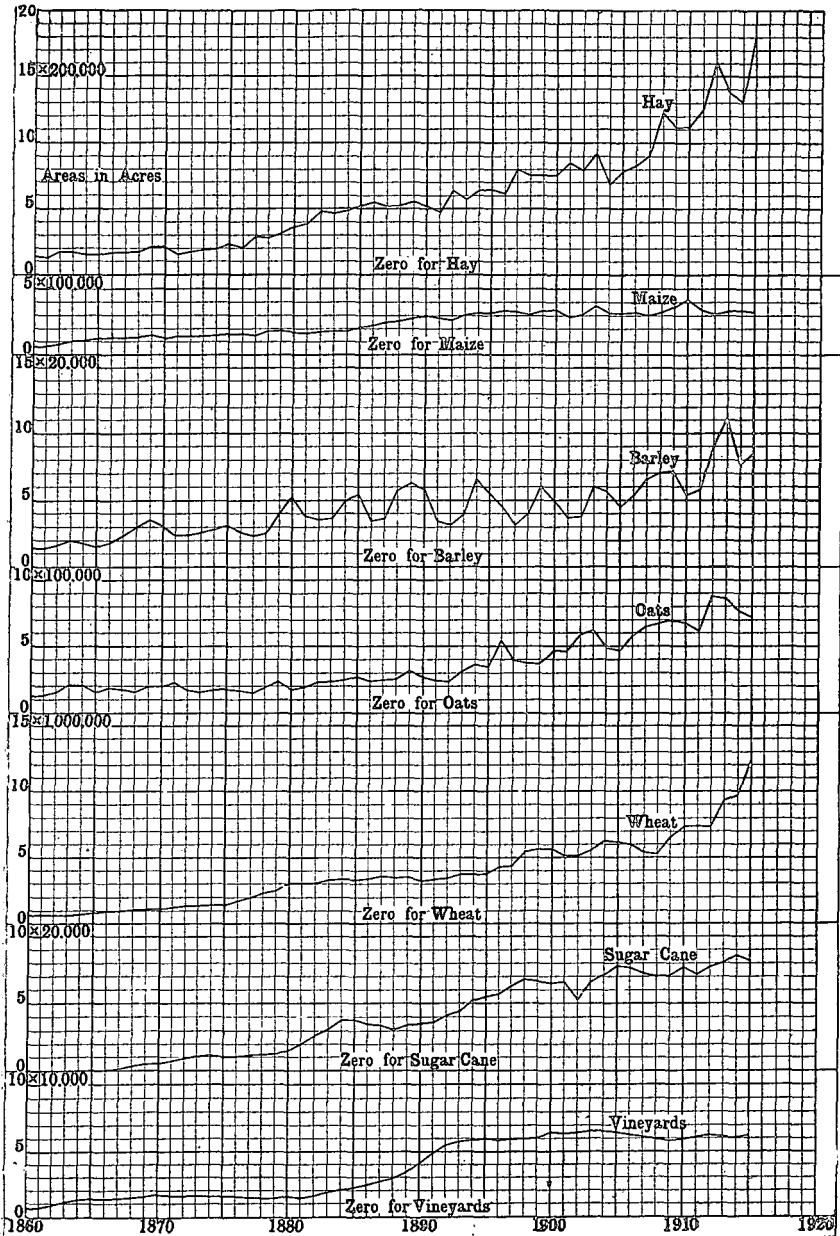
4. Jams and Jellies.—A considerable oversea trade in jams and jellies is now carried on by the Commonwealth, the value of the import for the year 1915-16 amounting to £9,087, and of the exports to £437,144. The country of origin of the bulk of the importations is the United Kingdom, while the destinations of the exports are principally the United Kingdom and Pacific Islands. Particulars relative to imports and exports for 1901 and the last five years are as follow:—

**COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES,
1901 AND 1911 TO 1915-16.**

| Year. | Oversea Imports. | | Oversea Exports. | | Net Exports. | |
|----------|------------------|--------|------------------|---------|--------------|---------|
| | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| | lbs. | £ | lbs. | £ | lbs. | £ |
| 1901 ... | 1,312,377 | 23,358 | 4,140,072 | 64,389 | 2,827,695 | 41,031 |
| 1911 ... | 322,487 | 8,304 | 1,288,729 | 20,896 | 966,242 | 12,592 |
| 1912 ... | 476,504 | 13,081 | 1,429,338 | 23,089 | 952,834 | -10,008 |
| 1913 ... | 453,951 | 12,213 | 1,858,231 | 29,402 | 1,404,280 | 17,189 |
| 1914-15 | 438,756 | 11,824 | 4,770,117 | 90,909 | 4,331,361 | 79,085 |
| 1915-16 | 288,165 | 9,087 | 22,849,553 | 437,144 | 22,561,388 | 428,057 |

5. Preserved Fruit.—Details concerning the quantities and values of preserved fruit imported into and exported from the Commonwealth cannot readily be obtained, owing to the fact that in the Customs returns particulars concerning fruit and vegetables are in certain cases combined. The total value of fruit and vegetables, other than fresh fruits, dried fruits, potatoes, and onions, imported into Australia during 1915-16 was £62,044, and the corresponding value of exports was £31,415.

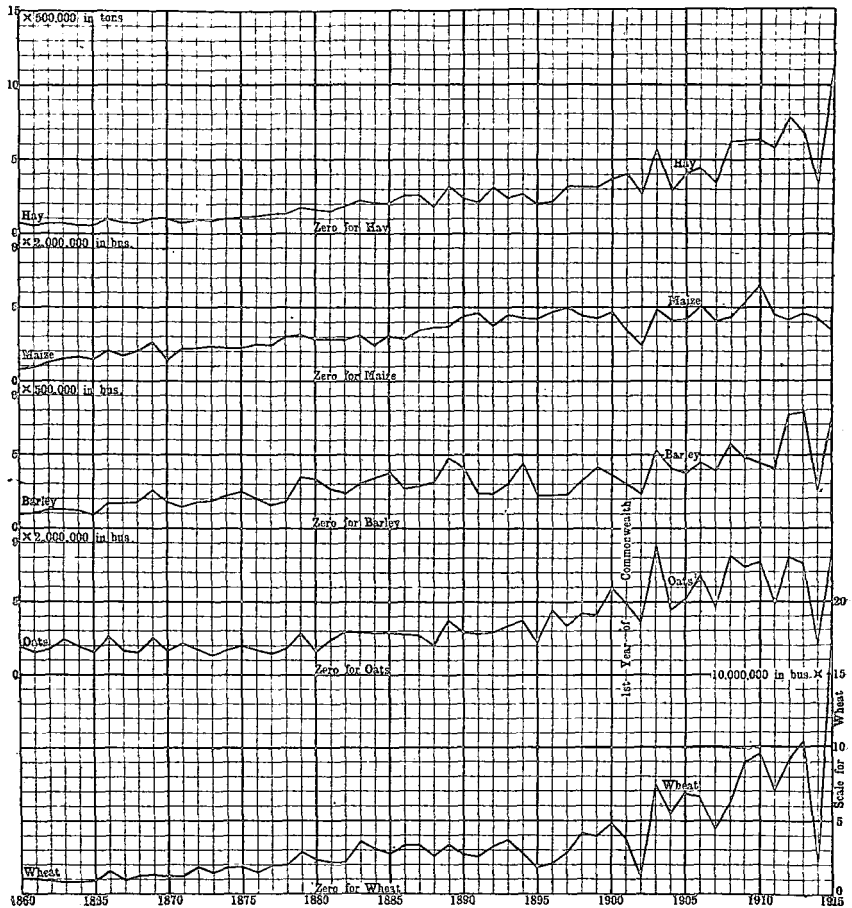
GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1860-1 TO 1915-16.



(See pages—for wheat, 325; oats, 335; maize, 339; barley, 343; hay, 350; sugar-cane, 355; and vineyards, 358.)

EXPLANATION OF GRAPHS.—The of base each small square represents an interval of one year, while the vertical height represents a number of acres, varying with the nature of the crop in accordance with the scale given on the left-hand of the diagram. The height of each graph above the base line denotes, for the crop to which it relates, the total area under cultivation in the Commonwealth during the successive seasons.

GRAPHS SHEWING THE PRODUCTION OF THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1850-1 TO 1915-16.



(See pages—for wheat, 326; oats, 336; maize, 340; barley, 343; and hay, 352.)

EXPLANATION OF GRAPHS.—In this diagram a separate base line is provided for each of the crops dealt with. In each instance the base of a small square represents an interval of one year; the vertical height of such square representing in the case of the wheat graph, 10,000,000 bushels; oats, 2,000,000 bushels; barley, 500,000 bushels; maize, 2,000,000 bushels; and hay, 500,000 tons. The height of each graph above its base line denotes the aggregate yield in the Commonwealth of that particular crop during the successive seasons.

§ 16. Minor Crops.

1. **Nature and Extent.**—In addition to the leading crops which in the foregoing pages have been dealt with in some detail, there are many others which, owing either to their nature, or to the fact that their cultivation has advanced but little beyond the experimental stage, do not occupy so prominent a position. Some of the more important of these are included under the headings—Market Gardens, Pumpkins and Melons, Turnips, Mangolds, Nurseries, Grass Seed, Tobacco, Hops, and Millet. Cotton-growing has in recent years received some attention in the tropical portions of the Commonwealth, although the industry cannot yet be said to be beyond the experimental stage. The total area in the Commonwealth during the season 1915-16 devoted to minor crops was 78,553 acres, of which market gardens accounted for 29,610 acres.

2. **Market Gardens.**—Under this head are included all-areas on which mixed vegetables are grown. Where considerable areas are devoted to the production of one vegetable, such for instance as the potato, the onion, the melon, the tomato, etc., the figures are usually not included with market gardens, but are shewn either under some specific head, or under some general head as "Other Root Crops," or "All other Crops." The area under market gardens in the several States of the Commonwealth during 1901-2 and each of the last five seasons is given in the table hereunder:—

COMMONWEALTH MARKET GARDENS, 1901-2 and 1911-12 to 1915-16.

| Season. | N.S.W. | Victoria. | Q'land. | S. Aust. | W. Aust. | Tas. | N.T. | Federal Terr. | C'wealth. |
|-------------|--------|-----------|---------|----------|----------|--------|--------|---------------|-----------|
| | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. | Acres. |
| 1901-2 ... | 7,834 | 8,752 | 2,328 | 9,005 | 2,142 | 1,746 | ... | ... | 31,807 |
| 1911-12 ... | 9,488 | 10,331 | 2,293 | 2,848 | 3,120 | 2,144 | *58 | 10 | 30,292 |
| 1912-13 ... | 9,836 | 10,414 | 2,386 | 2,857 | 3,664 | 1,458 | 50 | 11 | 30,676 |
| 1913-14 ... | 10,585 | 10,777 | 2,611 | 2,265 | 2,851 | † 769 | 60 | 22 | 29,940 |
| 1914-15 ... | 10,475 | 12,935 | 2,648 | 1,830 | 2,785 | 628 | 60 | 27 | 31,388 |
| 1915-16 ... | 10,940 | 11,379 | 2,330 | 1,712 | 2,787 | 435 | ... | 27 | 29,610 |

* Included with South Australia prior to 1910-11. † Other than Market Gardens included in previous years.

The area for 1911-12 was in excess of that for 1901-2 in New South Wales, Victoria, and Western Australia. In South Australia the falling-off is more apparent than real, being in large part due to a change in the classification of crops introduced in connection with the new system of collection which came into force for 1907-8. It is believed that the figures given for the earlier years are considerably in excess of the reality. During the past five seasons there has been very little variation in the total area of market gardens in the Commonwealth as a whole; New South Wales and Victoria shew the largest increase, viz., 1,452 and 1,048 acres respectively, while South Australia and Western Australia shew a decrease of 1,136 and 333 acres respectively.

3. **Grass Seed.**—The total area under this crop during 1915-16, exclusive of New South Wales, for which State no figures are available, was 4,851 acres, of which 2,434 acres were in Victoria, 1,848 acres in Tasmania, and 568 acres in Queensland. The total yield for 1915-16, excluding New South Wales, was 50,251 bushels.

4. **Tobacco.**—The tobacco-growing industry is one which has experienced marked fluctuations, although it at one time promised to occupy an important place amongst the agricultural industries of the Commonwealth. Thus, as early as the season 1888-9 the area under this crop amounted to as much as 6,641 acres, of which 4,833 were in New South Wales, 1,685 in Victoria, and 123 in Queensland. This promise of importance was, however, not fulfilled, and after numerous fluctuations, in the course of which the Victorian area rose in 1895 to over 2000 acres, and that in Queensland to

over 1,000 acres, the total area for the season 1915-16 had declined to 1906 acres, distributed as follows:—New South Wales, 1277 acres; Victoria, 160 acres; and Queensland, 469 acres. This decline in production appears to have been due to the comparatively small demand which existed in Australia for the locally-produced leaf, and to the fact that the cost of production and preparation in the Commonwealth prevented the Australian leaf from obtaining a footing in the outside markets. Probably under more favourable circumstances, and with greater attention given to the production of leaf of the best quality only, the industry is one which will eventually assume considerable proportions. In all the States in which its cultivation has been tried, the soil and climate appear to be very suitable for the growth of the plant, and the enormous importations of tobacco in its various forms into the Commonwealth furnish an indication of the extensive local market which exists for an article grown and prepared in such a manner as to meet with the requirements of consumers. The value of the net importations of tobacco into the Commonwealth during the year 1915-16 amounted to £736,893, comprising unmanufactured tobacco £685,178, cigars £84,521, cigarettes £23,982, and snuff £1,015. Manufactured tobacco during 1915-16 shewed a balance in favour of exports amounting to £57,803.

5. Pumpkins and Melons.—The total area under this crop in the Commonwealth during 1915-16 was 11,572 acres, of which 3,907 acres were in New South Wales, 2,440 acres in Victoria, 4,539 acres in Queensland, 643 acres in Western Australia, and 203 in South Australia. The production amounted to 12,972, 18,380, 9,800, 1,980, and 1,670 tons respectively.

6. Hops.—Hop-growing in the Commonwealth is practically confined to Tasmania and some of the cooler districts of Victoria, the total area for the season 1915-16 being 1515 acres, of which 1405 acres were in Tasmania, and 107 acres in Victoria; a small area of 3 acres was also grown in South Australia. The Tasmanian area, though still small, has increased rapidly during the past fourteen years, the total for the season 1901-2 being only 599 acres. On the other hand, the Victorian area, which in 1901-2, was 307 acres, had diminished to 107 acres in 1915-16. The cultivation of hops was much more extensive in Victoria some thirty years ago than at present, the area devoted to this crop in 1883-4 being no less than 1758 acres. During the year 1915-16 the net importations of hops into the Commonwealth represented a weight of 958,205 lbs. and a value of £49,678. The total value of the net importations into Australia during the past ten years amounted to £571,844, thus indicating the existence of a regular and extensive local demand.

7. Millet.—Millet appears in the statistical records of three of the Commonwealth States. The total area devoted thereto in 1915-16 was 3,580 acres, of which 2,422 acres were in New South Wales, 715 in Victoria, 438 in Queensland and 5 in the Northern Territory. The particulars here given relate to millet grown for grain and fibre. That grown for green forage is dealt with in the section relating thereto.

8. Nurseries.—In all the States somewhat extensive areas are devoted to nurseries for raising plants, trees, etc., but statistics concerning the area so occupied for flowers, fruit trees, etc., are not available, and so far as they relate to forestry are given elsewhere.

9. Cotton.—Cotton-growing on a small scale has been tried in Queensland, but so far without very marked success; 72 acres were devoted to this crop in 1915-16, giving a yield of 12,238 lbs. of unginced cotton, valued at £306. Hopes are entertained that with the invention of a mechanical device for the picking of the cotton the industry will become firmly established, since the soil and conditions appear eminently suitable for the growth of this crop. Small areas in the Northern Territory have also been planted with

cotton. The tropical portions of Western Australia have also long been regarded as suitable for its cultivation.

10. **Coffee.**—Queensland is the only State of the Commonwealth in which coffee-growing has been at all extensively tried, and here the results have up to the present time been far from satisfactory. The total area devoted to this crop reached its highest point in the season 1901-2, when an area of 547 acres was recorded. Since then the area continuously declined to 1906-7, when it was as low as 256 acres. During the season 1907-8 the area increased to 304 acres, declining to 285 acres in 1908-9, 200 acres in 1910-11, 198 acres in 1911-12, 196 acres in 1912-13, 165 acres in 1913-14, 150 acres in 1914-15, and 91 acres in 1915-16. In the last-mentioned season the yield amounted to 53,470 lbs., valued at £2,006.

11. **Other Crops.**—Miscellaneous small crops are grown in the several States, amongst which may be mentioned tomatoes, rhubarb, artichokes, arrowroot, chicory, and flowers.

§ 17. Bounties on Agricultural Products.

1. **General.**—The Bounties Act of 1907 passed by the Federal Parliament in order to encourage the manufacture and production of certain articles in the Commonwealth, includes among the number of items on which bonuses are payable, several agricultural products. Products of the soil on which these bounties are payable are as follows:—

AGRICULTURAL PRODUCTS ON WHICH BOUNTIES ARE PAYABLE.

| Article. | Period dating from 1st July, 1907, during or in respect of which Bounty may be paid. | Rates of Bounty. | Maximum amounts which may be assigned in any one year. |
|---|--|----------------------|--|
| Cotton, ginned... .. | 8 years | 10 % on market value | £ 6,000 |
| Fibres— | | | |
| New Zealand flax | 10 " | 10 " " | 3,000 |
| Flax and hemp | 5 " | 10 " " | 8,000 |
| Jute | 5 " | 20 " " | 9,000 |
| Sisal hemp | 10 " | 10 " " | 3,000 |
| Oil materials supplied to an oil factory for the manufacture of oil— | | | |
| Cottonseed | 8 " | 10 " " | 1,000 |
| Linseed (flax seed) | 5 " | 10 " " | 5,000 |
| Rice, uncleaned | 5 " | 20s. per ton | 1,000 |
| Coffee, raw, as prescribed | 8 " | 1d. per lb. | 1,500 |
| Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed | 5 " | 2d. " | 4,000 |
| Fruits— | | | |
| Dates (dried)... .. | 15 " | 1d. " | 1,000 |
| Dried (except currants and raisins) or candied, and exported | 5 " | 10 % on market value | 6,000 |

* Any unexpended amount assigned in any year is available for the years following.

Although the rate of bonus on the several articles, is, as shewn above, fairly liberal, the bounties have not been availed of to any great extent, as will be seen from the following table, which gives particulars as to the quantity of the articles raised and the amounts paid as bounties in respect thereof for the five financial years ended 1915-16:—

PARTICULARS OF BOUNTIES PAID ON AGRICULTURAL PRODUCTS (OTHER THAN SUGAR), 1911-12 to 1915-16.

| Article. | Quantity produced on which Bounties were paid. | | | | | Amount paid as Bounties. | | | | |
|---|--|----------|----------|----------|----------|--------------------------|----------|----------|----------|----------|
| | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. | 1911-12. | 1912-13. | 1913-14. | 1914-15. | 1915-16. |
| Cotton, ginned ...lbs. | 60,443 | 46,043 | 9,642 | ... | 13,751 | £ 116 | £ 95 | £ 21 | £ ... | £ 22 |
| Fibres— | | | | | | | | | | |
| Flax and hemp tons | 137 | 101 | 137 | 34 | 238 | 480 | 215 | 313 | 77 | 634 |
| Sisal hemp ... " | 8 | ... | ... | ... | 2,250 | 18 | ... | ... | ... | 2 |
| Oil materials supplied to an oil factory for the manufacture of oil— | | | | | | | | | | |
| Cottonseed ... lbs. | 99,209 | 84,479 | 6,306 | ... | 22,400 | 21 | 13 | 1 | ... | 10 |
| Linseed (flax seed) cwt. | ... | 100 | ... | ... | ... | ... | 9 | ... | ... | ... |
| Coffee, raw, as prescribed ... lbs. | 16,269 | 30,053 | 17,540 | 17,022 | 732 | 68 | 125 | 73 | 71 | 3 |
| Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed. lbs. | 9,258 | 25,820 | 41,263 | 41,891 | 17,423 | 78 | 215 | 344 | 349 | 145 |
| Fruits— | | | | | | | | | | |
| Dried (except currants and raisins) or candied, & exported. lbs. | 636,452 | 196,837 | 142,928 | 41,312 | 6,000 | 1,734 | 587 | 433 | 98 | 16 |

During the year 1915-16 the total amount paid in respect of coffee was claimed by the State of Queensland. Tasmania collected the fruit bonus, while the bounty paid for tobacco leaf was paid to Victoria and Queensland, the amounts being £24 and £71 respectively. Victoria claimed the total amount paid for flax and hemp.

No bounties have yet been paid on New Zealand flax, jute, uncleaned rice or dates.

§ 18. Fertilisers.

1. **General.**—In the early days of settlement and cultivation in the Commonwealth, scientific cultivation was in a much less developed state than it is to-day. The early farmers were neither under the necessity, nor in fact, aware of the necessity, of supplying the constituents to the soil demanded by each class of crop. The widely divergent character of the soils in the Commonwealth, their degeneration by repeated cropping, the limitations of climatic conditions, the difficulties of following any desired order of rotation of crops, all rendered it essential to give attention to artificial manuring. The introduction of the modern seed-drill, acting also as a fertiliser distributor, has greatly facilitated the use of artificial manures, and much land formerly regarded as useless for cultivation has now been made productive. There is reason to believe that this feature will be even more strikingly characteristic of the future.

2. **Fertilisers Acts.**—In order to protect the interests of users of artificial manures legislation has been passed in each of the States, regulating the sale and preventing the adulteration of fertilisers. A list of these Acts and their main features will be found in Year Book No. 6. (pages 406 and 407).

3. **Imports.**—The local production of artificial manures has assumed large proportions during the last few years, though considerable quantities are still imported. The importation of fertilisers has increased over 200 per cent. since 1901. The chief items, as regards both quantity and value, are those relating to phosphates, a fertiliser which has proved itself to be very suitable for the growing of cereals in Australian

soils. With the exception of very small quantities from the United Kingdom and New Zealand, the whole of the manufactured superphosphates imported during 1915-16 was obtained from Japan. Ocean Island, with 50 per cent., was the principal contributor of rock phosphates; Pleasant Island contributed 25 per cent., and the balance, about 25 per cent. was obtained from other South Sea Islands. Guano was imported from the United Kingdom.

The import of artificial manures during the last five years is given in the following table. It will be noticed that the quantity of rock phosphates imported since 1911 shews an increase amounting to 122 per cent. The imports were particularly large during the last three years. The manufactured superphosphates shewed an increase of about 50 per cent. during 1910, for 1911 there was a further increase of some 5 per cent., but during 1912 and the three following years there was a decrease, the falling off in 1915-16 being particularly heavy.

COMMONWEALTH IMPORTS OF FERTILISERS, 1911 to 1915-16.

| Fertiliser. | | 1911. | 1912. | 1913. | 1914-15. | 1915-16. |
|---------------------|--------|-----------|-----------|-----------|-----------|-----------|
| Bonedust | Cwt. | 4,164 | 8,769 | 15,341 | 10,901 | ... |
| " | £ | 1,086 | 2,309 | 4,378 | 3,136 | ... |
| Guano | Cwt. | 484,008 | 541,873 | 26,819 | 2,053 | 1,800 |
| " | £ | 52,447 | 64,833 | 5,733 | 814 | 792 |
| Superphosphates ... | Cwt. | 1,254,892 | 967,480 | 534,198 | 509,382 | 57,790 |
| " | £ | 183,832 | 155,643 | 89,474 | 79,889 | 10,308 |
| Rock Phosphates ... | Cwt. | 1,721,140 | 1,963,640 | 3,200,648 | 3,464,547 | 3,813,788 |
| " | £ | 228,292 | 259,994 | 397,634 | 397,284 | 440,434 |
| Other | Cwt. | 161,121 | 247,026 | 279,308 | 175,795 | 117,312 |
| " | £ | 47,479 | 82,769 | 90,202 | 65,703 | 52,972 |
| Total | { Cwt. | 3,625,320 | 3,728,788 | 4,056,314 | 4,155,682 | 3,990,690 |
| | £ | 513,136 | 565,548 | 687,421 | 546,826 | 504,506 |

4. Exports.—The subjoined table shews the exports of artificial manures for the years 1911 to 1915-16. Practically the whole of the fertiliser is manufactured locally, and is shipped mainly to New Zealand, Java, Japan and the Pacific Islands:—

COMMONWEALTH EXPORTS OF FERTILISERS, 1911 to 1915-16.

| Fertiliser. | | 1911. | 1912. | 1913. | 1914-15. | 1915-16. |
|----------------------|--------|---------|---------|---------|----------|-----------|
| Bonedust | Cwt. | 122,456 | 125,546 | 86,295 | 148,229 | 71,795 |
| " | £ | 34,787 | 38,188 | 26,023 | 45,707 | 22,563 |
| Guano | Cwt. | 2,719 | 500 | 6,242 | 2,800 | ... |
| " | £ | 603 | 100 | 848 | 470 | ... |
| Superphosphates ... | Cwt. | 300,925 | 182,377 | 257,629 | 311,067 | 823,361 |
| " | £ | 38,007 | 34,400 | 47,596 | 64,224 | 156,862 |
| Rock Phosphates ... | Cwt. | 2,106 | ... | 18,555 | 22,340 | 75,839 |
| " | £ | 353 | ... | 3,050 | 3,429 | 10,695 |
| Soda Nitrate | Cwt. | 6,107 | 5,523 | 10,154 | 1,500 | 2,619 |
| " | £ | 3,098 | 2,660 | 5,386 | 897 | 1,835 |
| Ammonia Sulphate ... | Cwt. | 56,630 | 73,193 | 46,067 | 113,801 | 129,651 |
| " | £ | 37,141 | 51,022 | 31,577 | 75,379 | 102,821 |
| Other | Cwt. | 215,382 | 146,348 | 237,734 | 224,309 | 86,964 |
| " | £ | 53,510 | 49,316 | 63,154 | 38,972 | 28,059 |
| Total | { Cwt. | 606,325 | 533,487 | 662,676 | 824,046 | 1,190,229 |
| | £ | 167,499 | 175,686 | 177,434 | 229,078 | 322,835 |

5. **Statistics of Use of Fertilisers.**—The statistics available in connection with the use of manures in the Commonwealth for a series of years refer to all the States with the exception of Queensland; those for that State were collected for the first time for 1915-16. Particulars concerning New South Wales are given hereunder:—

FERTILISERS USED IN NEW SOUTH WALES, 1911-12 to 1915-16.

| Season. | Total Area of Crops. | Area Manured. | | Manure Used. | |
|----------------|----------------------|---------------|-----------------------------------|------------------------------|-------------|
| | | Aggregate. | Percentage to Total Area of Crop. | Natural (Stable-yard, etc.). | Artificial. |
| | Acres. | Acres. | % | Loads. | Tons. |
| 1911-12 | 3,628,513 | 1,407,453 | 38.80 | 178,689 | 33,820 |
| 1912-13 | 3,737,085 | 1,642,078 | 43.94 | 170,312 | 38,918 |
| 1913-14 | 4,567,592 | 2,224,623 | 48.71 | 166,503 | 50,476 |
| 1914-15 | 4,807,001 | 2,329,819 | 48.47 | 168,450 | 55,169 |
| 1915-16 | 5,796,376 | 2,753,301 | 47.50 | 177,788 | 56,621 |

Particulars for Victoria for 1901-2 and the past five seasons are as follows:—

FERTILISERS USED IN VICTORIA, 1901-2 and 1911-12 to 1915-16.

| Season. | Total Area of Crops. | Farmers Using Manure. | Area Manured. | | Manure Used. | |
|----------------|----------------------|-----------------------|---------------|-----------------------------------|------------------------------|-------------|
| | | | Aggregate. | Percentage to Total Area of Crop. | Natural (Stable-yard, etc.). | Artificial. |
| | Acres. | No. | Acres. | % | Tons. | Tons. |
| 1901-2 | 2,965,681 | 11,439 | 556,777 | 18.77 | 153,611 | 23,535 |
| 1911-12 | 3,640,241 | 26,159 | 2,676,403 | 73.52 | 205,739 | 82,581 |
| 1912-13 | 4,079,356 | 29,524 | 3,029,418 | 74.26 | 222,253 | 94,010 |
| 1913-14 | 4,391,321 | 30,610 | 3,401,013 | 77.45 | 219,423 | 105,612 |
| 1914-15 | 4,622,759 | 31,874 | 3,728,279 | 80.65 | 209,534 | 117,935 |
| 1915-16 | 5,711,265 | 33,373 | 4,336,252 | 75.92 | 187,602 | 128,667 |

During 1915-16, 23,166 acres were manured in Queensland, 43,483 loads of natural, and 7,608 tons of artificial manure being used.

The figures relating to the use of fertilisers in South Australia are shown in the table below:—

FERTILISERS USED IN SOUTH AUSTRALIA, 1911-12 to 1915-16.

| Season. | Total Area of Crops. | Area Manured. | | Manure Used. | |
|----------------|----------------------|---------------|-----------------------------------|------------------------------|-------------|
| | | Aggregate. | Percentage to Total Area of Crop. | Natural (Stable-yard, etc.). | Artificial. |
| | Acres. | Acres. | % | Loads. | Tons. |
| 1911-12 | 2,965,338 | 2,511,130 | 84.68 | 134,503 | 87,475 |
| 1912-13 | 3,062,998 | 2,603,136 | 84.99 | 111,434 | 91,607 |
| 1913-14 | 3,169,559 | 2,584,814 | 81.55 | 100,435 | 97,023 |
| 1914-15 | 3,282,364 | 2,722,349 | 82.94 | 103,537 | 96,812 |
| 1915-16 | 3,763,570 | 3,112,462 | 82.70 | 90,142 | 102,685 |

Corresponding particulars relative to Western Australia for the seasons 1911-12 to 1915-16 are given in the following table, and furnish interesting evidence of the rapid extension of the use of manures in that State:—

FERTILISERS USED IN WESTERN AUSTRALIA, 1911-12 to 1915-16.

| Season. | Total Area of Crops. | Area Manured. | | Manure Used. | |
|------------|----------------------|---------------|------------------------------------|------------------------------|-------------|
| | | Aggregate. | Percentage to Total Area of Crops. | Natural (Stable-yard, etc.). | Artificial. |
| | Acres. | Acres. | % | Loads. | Tons. |
| 1911-12... | 1,072,653 | 992,463 | 92.52 | 51,600 | 43,843 |
| 1912-13... | 1,199,991 | 1,120,334 | 93.36 | 55,085 | 47,563 |
| 1913-14... | 1,537,923 | 1,459,218 | 94.88 | 58,390 | 53,962 |
| 1914-15... | 1,867,547 | 1,808,504 | 96.84 | 54,245 | 67,839 |
| 1915-16... | 2,189,456 | 2,117,166 | 96.70 | 53,257 | 70,523 |

Statistics relating to the use of manures in Tasmania for the past five seasons are as follows:—

FERTILISERS USED IN TASMANIA, 1911-12 to 1915-16.

| Season. | Total Area of Crops. | Area Manured. | | Manure Used. | |
|------------|----------------------|---------------|------------------------------------|------------------------------|-------------|
| | | Aggregate. | Percentage to Total Area of Crops. | Natural (Stable-yard, etc.). | Artificial. |
| | Acres. | Acres. | % | Tons. | Tons. |
| 1911-12... | 270,000 | 129,914 | 48.12 | 25,792 | 8,750 |
| 1912-13... | 286,065 | 137,653 | 48.12 | 27,328 | 9,272 |
| 1913-14... | 264,140 | 136,764 | 51.78 | 30,530 | 14,398 |
| 1914-15... | 274,474 | 144,782 | 52.73 | 31,572 | 13,065 |
| 1915-16... | 333,334 | 182,374 | 54.71 | 30,486 | 15,232 |

A marked increase in the proportion of cropped land treated with manure is in evidence in all of the States for which returns are available. Thus, in New South Wales the area of manured land represented in 1908-9 only 18½ per cent. of the area under crop, as against nearly 47½ per cent. in 1915-16. Similarly, in Victoria the percentage increased from 18½ per cent. in 1901-2 to 59½ per cent. in 1908-9 and to 76 per cent. in 1915-16, in South Australia from 73½ per cent. in 1908-9 to nearly 83 per cent. in 1915-16, and in Western Australia from 64 per cent. in 1904-5 to nearly 97 per cent. in 1915-16. During the past four years the proportion in Tasmania increased from 48 to 54½ per cent.

6. Local Production of Fertilisers.—Statistics relative to the local production of fertilisers are incomplete, and detailed returns for fertiliser factories other than bone mills are not available. The number of firms engaged in the manufacture of artificial manures in the Commonwealth at latest available date was 86, made up as follows:—New South Wales, 18; Victoria, 32; Queensland, 15; South Australia, 13; Western Australia, 6; and Tasmania, 2. Approximately complete returns of the quantities of fertilisers used in the various States being now available, a comparison with the imports and exports gives valuable information, but, as already mentioned, such particulars are only available for five of the States prior to 1915-16, and even then do not furnish the whole of the information necessary.

7. Benefits Derived from the Use of Fertilisers.—There is little doubt that the increasing use throughout the Commonwealth of fertilisers, natural and artificial, combined with the greater attention being devoted to following and to the combination of sheep-farming with agriculture, is having the effect of improving the

prospects of those dependent for a livelihood on the products of the soil. Reference has previously been made to the loss to the soil of phosphoric acid which the Commonwealth export of wheat and its milled products involves, and the necessity which thus arises for returning this ingredient in some form. Similarly, other staple products exported impose their respective tolls upon the soil of the Commonwealth, and the increased use of fertilisers furnishes evidence that producers are alive to the necessity for making good the deficiency so arising.

§ 19. Ensilage.

1. Value to Stockowners.—The use of ensilage as a substitute for green fodder during periods of drought or spells of dry weather, or for winter use, is less extensive in Australia than the circumstances would appear to warrant. There is, however, a growing disposition on the part of dairy farmers to make silos on their holdings, as they find that dairy cattle eat ensilage greedily, and that by its means the output of milk, both in regard to quantity and quality, may be kept up long after the supply of ordinary green food is exhausted. Sheepbreeders are also recognising the fact that during protracted periods of dry weather the silo enables them to keep their stock in good condition, and that lambing can take place satisfactorily. Ensilage thus obviates the expense of travelling or trucking sheep for hundreds of miles to get beyond the drought area, or the equally costly and even ruinous alternative of providing chaff for food at high prices and costly freight. In the rearing of lambs for the London market, ensilage appears to be destined to play an important part, as the lambs thrive upon it much better than upon dry food. By the judicious economising of the surplus growth of green food with the use of the silo, farmers and squatters can carry more stock on their holdings than they otherwise would be justified in doing. Not only is the great waste of superabundant food thus avoided, but it becomes possible to change into a succulent and nutritious food much growth that in any other state would not be eaten by stock. Thus such vegetation as marsh mallows, thistles, weeds of all sorts, and even the swamp reed *Arundo phragmites*, which grows in great quantities in lagoons, billabongs, and swamps, are all eaten with avidity when offered to stock in the form of ensilage. The pit and stack silos are rapidly being superseded by those built of red gum and hardwood or concrete. This is found to a great extent to obviate the loss sustained by mould, at the same time reducing the risk of fire. The silos vary in capacity from 40 to 130 tons. A portable silo made of iron has been devised in sections of such size and weight as to admit of ready handling. These silos can be increased in diameter or height by the addition of further sections.

2. Government Assistance in the Production of Ensilage.—The Government of Victoria, recognising that defective methods of making ensilage have often been adopted, have for some years been making special efforts to educate the farming community, so that mistakes may be avoided, and the conditions essential for the production of good ensilage may be better appreciated. These conditions vary with the climate and with the locality. The Government also undertakes the erection of silos on very liberal terms, repayment extending over a series of years. Experts supervise the erection of the silos, and give practical lessons as to packing them, etc. The New South Wales Government has, by giving advice in the "Agriculture Gazette," and by the issue of special bulletins, taken steps towards the education of the farmers. Silos also have been erected on the various experimental farms with a view to demonstrating the value of ensilage. No financial assistance is, however, given in New South Wales in this connection.

3. Quantity Made.—Particulars concerning the number of silos and the quantity of ensilage made in the several States of the Commonwealth in the seasons 1911-12 to 1915-16, are furnished in the following table:—

COMMONWEALTH ENSILAGE-MAKING, 1911-12 to 1915-16.

| State or Territory. | 1911-12. | | 1912-13. | | 1913-14. | | 1914-15. | | 1915-16. | |
|--------------------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
| | *Holdings. | Ensilage Made. | *Holdings. | Ensilage Made. | *Holdings. | Ensilage Made. | *Holdings. | Ensilage Made. | *Holdings. | Ensilage Made. |
| | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. | No. | Tons. |
| New South Wales | 158 | 20,477 | 144 | 18,509 | 129 | 18,358 | 83 | 10,963 | 130 | 18,511 |
| Victoria | 371 | 20,888 | 287 | 17,877 | 270 | 19,505 | 161 | 9,055 | 269 | 16,356 |
| Queensland | 61 | 4,379 | 58 | 4,156 | 75 | 4,273 | 52 | 3,363 | 37 | 9,012 |
| South Australia | 39 | 1,250 | 28 | 2,200 | 16 | 778 | 6 | 681 | 43 | 1,688 |
| Western Australia | 9 | 307 | 23 | 479 | 22 | 658 | 11 | 403 | 12 | 518 |
| Tasmania | 34 | 280 | 20 | 424 | 17 | 662 | 10 | 231 | 17 | 649 |
| Federal Territory | ... | ... | 1 | 10 | 1 | 8 | ... | ... | ... | ... |
| Commonwealth | 672 | 47,581 | 561 | 43,655 | 530 | 44,242 | 323 | 24,696 | 508 | 40,934 |

* No. of holdings on which ensilage was made.

Following the drought of 1902-3 greater attention was paid to ensilage than was previously the case, and during the four seasons ended 1909-10 a continuous and fairly rapid increase was in evidence in all the States, both in the number of holdings on which ensilage was made, and in the quantity produced. The following five seasons, however, shew a falling-off, but the reduction cannot be accepted as an indication of a lessening of appreciation of the benefits of ensilage, but rather of the fact that stocks had not been drawn upon to any great extent during the previous seasons. The accumulated stocks proved of very great value during the recent 1914 drought, though far below what would have been the case if more attention had been paid to ensilage-making during the previous years of surplus green food. A very substantial increase took place in 1915-16 both in the holdings in which ensilage was made and in the quantity produced.

§ 20. Agricultural Colleges and Experimental Farms.

1. Introduction.—In most of the States, agricultural colleges and experimental farms have been established with a view to promoting agriculture and to establishing improved and more scientific systems of stock-breeding and dairying. In these colleges, and on some of the farms, provision is made for the accommodation of pupils, to whom both practical and theoretical instruction is given by experts in various branches of agriculture. Analyses of soils and fertilisers are made, manures are tested, and elementary veterinary science, etc., is taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of shewing that it is practicable to produce certain crops in a given place, but also to shew how it is possible to make farming pay best in that locality. Opportunities are afforded for practice in general agricultural work, and instruction is given in the conservation of fodder; in cheese and butter making; in the management, breeding, and preparation for the market of live stock; in the eradication of pests and weeds; and in carpenters', blacksmiths', and other trades.

Travelling expert lecturers are sent to the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins on matters of importance at special seasons.

2. Particulars of Agricultural Colleges and Experimental Farms.—In the tables given herewith, particulars of agricultural colleges and experimental farms in the several States of the Commonwealth in 1915-16 are shewn.

**PARTICULARS OF AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS IN
THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1915-16.**

| Particulars. | Unit of Quantity. | New South Wales. (a) | Vic. | Q'land. | South Aust. | West. Aust. | Tasmania. | Northern Terr. | C'wth. |
|------------------------------------|-------------------|----------------------|---------------|---------------|---------------|----------------|--------------|----------------|----------------|
| No. of agricultural colleges | No. | 1 | 2 | 1 | 1 | ... | ... | ... | 5 |
| " experimental farms ... | " | 18 | 5 | 6 | 7 | 6 | 1 | 2 | 45 |
| " students ... | " | 460 | 177 | 29 | 32 | 10 | 12 | ... | 790 |
| " hands employed ... | " | 317 | 165 | 78 | 87 | 45 | 13 | 5 | 710 |
| Value of plant & machinery | £ | 28,839 | 10,443 | 11,324 | 9,720 | 5,183 | 1,507 | 1,200 | 68,706 |
| " produce for year ... | " | 33,691 | 22,800 | 4,996 | 10,425 | 4,374 | 1,070 | 1,850 | 79,206 |
| Receipts— | | | | | | | | | |
| Government grant ... | " | 78,554 | 21,230 | 16,470 | 20,140 | 22,598 | 1,657 | 3,065 | 163,714 |
| Fees ... | " | 4,645 | 9,106 | 714 | 1,090 | 230 | ... | ... | 8,785 |
| Sales of produce, &c. ... | " | 24,360 | 13,945 | 6,643 | 6,115 | 17,315 | 900 | 150 | 73,708 |
| Other ... | " | 1,271 | 140 | ... | 1,351 | 120 | 1,353 | 45 | ... |
| Total receipts ... | " | 108,830 | 37,421 | 23,827 | 28,696 | 40,263 | 3,910 | 3,260 | 246,207 |
| Expenditure— | | | | | | | | | |
| Salaries, professional ... | " | 10,229 | 5,077 | 3,683 | 3,672 | 305 | 480 | 650 | 24,096 |
| " general ... | " | 31,442 | 10,536 | 6,206 | 6,959 | 6,945 | 1,347 | 1,080 | 64,515 |
| Buildings & maintenance | " | 67,159 | 3,703 | 13,938 | 9,319 | 4,589 | 159 | 1,530 | 167,596 |
| Other ... | " | ... | 18,105 | ... | 8,674 | 28,424 | 1,924 | ... | ... |
| Total expenditure ... | " | 108,830 | 37,421 | 23,827 | 28,696 | 40,263 | 3,910 | 3,260 | 246,207 |
| Agriculture, &c.— | | | | | | | | | |
| Area under cereals for grain | Acre | 1,642 | 2,522 | 433 | 1,731 | 6,492 | 72 | 70 | 12,962 |
| " hay ... | " | 1,252 | 876 | 674 | 1,080 | 515 | 41 | 90 | 4,478 |
| " fruit trees, &c. ... | " | 296 | 72 | 17 | 61 | 8 | 38 | 45 | 537 |
| " vines ... | " | 143 | 32 | 7 | 62 | ... | ... | ... | 304 |
| " green fodder ... | " | 1,541 | 416 | 219 | 254 | 538 | ... | 40 | 3,008 |
| " root crops ... | " | 53 | ... | 29 | ... | 2 | 9 | 8 | 101 |
| " other crops ... | " | 51 | 170 | 112 | 37 | 10 | ... | 35 | 415 |
| Total under crop ... | " | 4,978 | 4,148 | 1,491 | 3,175 | 7,565 | 160 | 288 | 21,805 |
| Area of land in fallow | " | 520 | 1,026 | 160 | 1,761 | 1,368 | ... | 150 | 4,985 |
| " under artificially-sown grasses | " | 1,412 | 59 | 352 | 10 | ... | ... | 50 | 1,883 |
| New ground broken up during season | " | 1,131 | 145 | 111 | 92 | 1,120 | ... | 130 | 2,729 |
| Previously cropped land lying idle | " | 1,145 | 1,957 | 82 | 1,857 | 2,737 | ... | 35 | 7,813 |
| Total area of arable land | " | 9,186 | 7,335 | 2,196 | 6,895 | 12,780 | 160 | 653 | 39,215 |
| Balance of area ... | " | 26,878 | 5,085 | 14,271 | 7,445 | 114,297 | 518 | 5,142 | 173,636 |
| Total area ... | " | 36,064 | 12,420 | 16,467 | 14,340 | 127,087 | 678 | 5,795 | 212,851 |
| Live stock— | | | | | | | | | |
| Horses ... | No. | 509 | 278 | 223 | 244 | 185 | 11 | 165 | 1,615 |
| Dairy cows ... | " | 573 | 192 | 141 | 60 | 95 | 23 | 90 | 1,174 |
| All other cattle | " | 344 | 164 | 638 | 60 | 949 | 52 | 210 | 2,417 |
| Sheep ... | " | 5,517 | 3,382 | 3,412 | 2,603 | 6,936 | 597 | 50 | 22,497 |
| Pigs ... | " | 821 | 205 | 261 | 187 | 307 | 160 | 101 | 2,042 |
| Capacity of tanks or dams | Gal. | 17,834,000 | 485,000 | 284,500 | 825,700 | 620,000 | 20,000 | 8,400 | 23,842,000 |

(a) Year ended 30th June, 1915.

(b) Incomplete.

3. New South Wales.—In order to meet the demand for agricultural training, and for the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and seventeen experimental farms have been established by the New South Wales Government. Theoretical instruction in agriculture, with practical illustrations, forms part of the

curriculum of the Sydney Technical College. The School of Agriculture in the Sydney University, which has been established for six years, is doing very satisfactory work. At the Hurlstone Continuation College there is a special course in both theoretical and practical agriculture for teachers. Instruction in "nature knowledge" is given in the State primary schools, many of which have their own experimental plots. As a means of further encouraging the study of agriculture, the Department of Public Instruction has a travelling inspector in agriculture, whose duty it is to visit the country and metropolitan schools, lecturing on the value, necessity, and advantages of agricultural knowledge, and giving practical demonstrations wherever practicable.

4. **Victoria.**—In 1884, the Agricultural Colleges Act, passed to make provision for the establishment of agricultural colleges and experimental farms in Victoria, provided for the permanent reservation from sale of 150,000 acres of Crown lands by way of endowment of agricultural colleges and experimental farms, which, together with other lands reserved as sites for such institutions prior to the passing of the Act, are vested in three trustees appointed by the Governor. Provision was made for the appointment of a Council of Agricultural Education, consisting of eleven members, five of whom are elected by the members of the Agricultural Societies of the State, five are nominated by the Governor, whilst the Secretary for Agriculture is also a member of the Council and its Treasurer. Two agricultural colleges and five experimental farms, orchards and vineyards were in existence in different parts of the State during 1915-16. There are five Agricultural High Schools under the control of the Education Department, while elementary experimental agriculture is taught at many of the State primary schools. Instruction in agriculture is also given at the technical schools at Melbourne and Bairnsdale.

5. **Queensland.**—Organised experimental agriculture in Queensland dates from the establishment of the Department of Agriculture and Stock, but such work as has been done in connection with stock-breeding, other than that carried on by private individuals, has been of later birth, and has been confined to dairy stock and draught horses. Agriculture in Queensland in the early nineties was upon the well-defined lines of the other States, so that the knowledge to be gained as to what could be profitably adapted to Queensland, with its varied climate and rainfall, covered a wide field. Instructors were appointed conversant with the different lines of agriculture, of which grain cultivation, dairying, fruit-growing, tobacco cultivation, and tropical agriculture, such as sugar, rubber and spices, are the most important. This has been followed by the establishment of an agricultural college, of farms in the temperate parts of the State, and of nurseries in the tropical parts. With wheaten grain, a system of experiments has been carried out for some years with the distinctive object of evolving a type of wheat adapted for Queensland, and as far as possible resistant to the attacks of rust. In dairying, a commencement was made by despatching to the different farming centres properly equipped travelling dairies with the latest appliances. The export of Queensland dairy produce has arisen through this effort. No travelling dairies are, however, now employed. A fruit farm has been established, at which fruits suitable for or likely to adapt themselves to the Queensland climate and conditions have been experimented with during a series of years. To cope with the insect and fungus pests to which such fruits are peculiarly susceptible, careful inspection is made of fruits in the markets and for export, and every effort is put forth to prevent the introduction of fresh diseases and to exterminate those which are already within the State.

6. **South Australia.**—To this State belongs the honour of starting the first experimental farm in the Commonwealth. As far back as the year 1879 a resolution was passed by the local Parliament in favour of the establishment of a School of Agriculture, with an experimental farm, under the charge of a professor of agriculture. Active operations in this connection were commenced in 1882, when the first series of plots of wheat were sown at Roseworthy. Experimental work, chiefly directed towards improving

the wheat yield, has been developed along three main lines, viz.: (a) the improvement of varieties of wheat, (b) the improvement of methods of cultivation, and (c) the use of manures. The Central Agricultural Bureau, established at Adelaide under the control of an Advisory Board, has an extensive membership distributed throughout the agricultural districts of the State. It assists farmers by the dissemination of knowledge; by helping to introduce new economic plants; by improving the breed of stock; and it acts as a means of keeping the Agricultural Department in touch with the producers. The branches of the bureau hold meetings at regular intervals in their several districts, ideas and methods as regards practical subjects are interchanged, and discussions are held on matters of general interest to agriculturists.

7. **Western Australia.**—A considerable amount of developmental work has been done of late years towards the promulgation of agricultural knowledge on the State farms at Chapman and Narrogin, and, more recently still, on the experimental farms at Brunswick, Merredin, Denmark and Yandanooka.

8. **Tasmania.**—In Tasmania there is a Council of Agriculture consisting of eleven members, whose duties are to collect and publish information of every kind calculated to prove beneficial to agriculturists, such as suitability of various districts for growth or production of animal and vegetable products, information respecting plants, methods of cultivation, breeding and feeding animals, and how best to improve the same: to prevent as far as possible the introduction and spread of diseases and pests, and to publish bulletins, abstracts, and reports containing all such information as may be desirable. Other matters embrace the employment of experts in any branch of agricultural science, distribution of plants and seeds for experiment, and the establishment of local boards of agriculture in different parts of the State. Lectures are given by the experts from time to time, and useful information and knowledge is diffused by means of the monthly gazette published by the Council, and also by means of special bulletins. There are no agricultural colleges, but a State farm consisting of 678 acres commenced operations during 1914. Practically no agricultural teaching is given in the elementary schools.

§ 21. Government Loans to Farmers.

1. **Introduction.**—All the Australian States have established systems under which financial aid is rendered to agriculturists by the Government. The principle upon which such aid is founded was probably first practically applied in Germany, viz., in the year 1770, when the *Landschaften Bank* was created. The establishment of the *Crédit Foncier* nearly a century later in France was a creation of a similar character. This latter institution was designed to enable house and land owners to raise money on mortgage at a low rate of interest, with facility for repayment by an annuity including redemption of the capital. It dates from 1852, but the mortgage bank known as the *Caisse Hypothécaire*, which, after a struggling existence, was finally liquidated in 1864, was based essentially on the same principle. Over the operations of the *Crédit Foncier*, created under governmental patronage and invested with such special privileges as to virtually constitute it a monopoly, the Government exercised a direct control, viz., by appointing its governor and its two deputy-governors. The *Crédit Foncier* was empowered to lend money only on a first mortgage, and to the amount of one-half of the estimated value of houses and farms, and one-third that of vineyards, woods, and other plantations, and the commission charged could not exceed six-tenths per cent. The system developed and adopted in the Commonwealth, with the object of assisting farmers to make improvements or to develop or utilise the agricultural or pastoral resources of the land, is analogous. Particulars of advances made under the Closer Settlement and similar Acts are dealt with in the section on Closer Settlement. (See pages 258 *et seq.*)

2. **Aggregate of Transactions in each State, 1912 to 1916.**—The subjoined table gives aggregates of transactions in reference to advances to farmers in each State during the past five years :—

STATE GOVERNMENT ADVANCES DEPARTMENTS—AGGREGATE OF LOANS TO FARMERS, 1912 to 1916 (a).

| State. | TOTAL ADVANCED TO 30TH JUNE. | | | | | BALANCE DUE AT 30TH JUNE. | | | | |
|----------------|-----------------------------------|------------|------------|------------|------------|-----------------------------------|-----------|-----------|-----------|-----------|
| | 1912. | 1913. | 1914. | 1915. | 1916. | 1912. | 1913. | 1914. | 1915. | 1916. |
| | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| N.S.W.(b)... | 1,948,885 | 2,423,955 | 3,531,263 | 3,918,978 | 4,119,842 | 1,074,358 | 1,396,336 | 2,297,981 | 2,514,078 | 2,513,332 |
| Victoria ... | 2,954,618 | 3,208,903 | 3,491,008 | 3,714,733 | 3,866,952 | 1,343,834 | 1,511,798 | 1,676,432 | 1,783,043 | 1,833,988 |
| Q'nsland ... | 430,403 | 623,498 | 851,600 | 1,147,996 | 1,517,040 | 305,652 | 470,795 | 636,790 | 880,204 | 1,186,895 |
| S. Aust.(d)... | 2,064,583 | 2,370,076 | 2,601,450 | 2,769,609 | 2,831,631 | 966,670 | 1,150,020 | 1,264,417 | 1,330,026 | 1,300,877 |
| W. Aust. ... | 1,946,184 | 2,582,937 | 3,089,575 | 3,361,158 | 3,533,493 | 1,280,732 | 1,883,957 | 2,331,959 | 2,561,679 | 2,695,550 |
| Tasmania | 18,636 | 23,915 | 41,004 | 72,252 | 97,776 | 16,592 | 21,089 | 36,965 | 66,572 | 87,106 |
| C'wealth ... | 9,363,309 | 11,233,284 | 13,605,900 | 14,984,726 | 15,966,734 | 4,987,838 | 6,433,995 | 8,244,544 | 9,135,602 | 9,617,748 |
| | PROFITS FOR YEAR ENDED 30TH JUNE. | | | | | ACCUMULATED PROFITS AT 30TH JUNE. | | | | |
| | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| N.S.W.(b)... | 9,743 | 10,335 | (c)20,946 | 15,111 | 16,633 | 25,349 | 35,684 | 56,630 | 71,741 | 88,374 |
| Victoria ... | 3,070 | 5,203 | 9,100 | 10,102 | 14,000 | 88,006e | 93,209e | 102,309e | 112,411 | 126,411 |
| Q'nsland ... | 3,318 | 3,354 | 2,983 | 4,448 | 6,674 | 11,869 | 15,223 | 18,206 | 22,654 | 29,328 |
| S. Aust.(d)... | 6,289 | 8,218 | 9,376 | 10,668 | 11,670 | 51,137 | 59,355 | 68,731 | 79,399 | 91,069 |
| W. Aust. ... | 8,061 | 9,783 | 9,367 | 9,363 | 7,706 | 45,892 | 55,675 | 65,282 | 74,645 | 82,351 |
| Tasmania | 81 | 472 | 295 | 712 | 1,278 | 31 | 503 | 798 | 1,509 | 2,787 |
| C'wealth ... | 30,562 | 37,365 | 52,307 | 50,403 | 57,961 | 222,284 | 259,649 | 311,956 | 362,359 | 420,320 |

(a) Compiled from figures furnished by the Government Savings Bank of Victoria. (b) Previous to 1914 for years ended 31st December prior. (c) For 18 months ended 30th June, 1914. (d) Includes loans to farmers and other producers and to local bodies on the security of their own rates. (e) Including profits in connection with House and Shop loans.

3. **Legislation in each State.**—An account of the initial legislation in each State in reference to advances to settlers ; subsequent legislation ; security on which, and objects for which, advances were made ; amount of advances and repayments up to the end of 1911-12, etc., will be found in previous issues of the Year Book (see No. 6, pages 417-25).

4. **Particulars Respecting Agricultural and Stock Departments.**—In Year Book No. 7, 1901-1913, on pages 364 to 369, will be found particulars respecting agricultural and stock departments of the several States of the Commonwealth as on 30th June, 1913. The main features of organisation are set out under their respective headings, and will be found to embrace such items as the number on staffs, expenditure, facilities for agricultural education and work undertaken in agricultural colleges, technical schools, experimental farms and orchards and vineyards. The nature of lectures and other forms of agricultural instruction by experts is dealt with, as well as the extent of distribution of plants, and the special steps taken by the departments to disseminate information amongst agriculturists, and also to facilitate placing the products of the State on the market.

§ 22. Graphical Representation of Crops.

1. **Areas of Principal Crops.**—A graphical representation of the areas devoted to each of the principal crops in the Commonwealth for the period 1860-1915 will be found on page 365. The crops so represented are as follows :—Wheat, hay, oats, maize, sugarcane, barley, and vines.

2. **Production.**—On page 366 will be found a graphical representation of the aggregate yields in the Commonwealth since 1860 of wheat, oats, barley, maize, and hay.