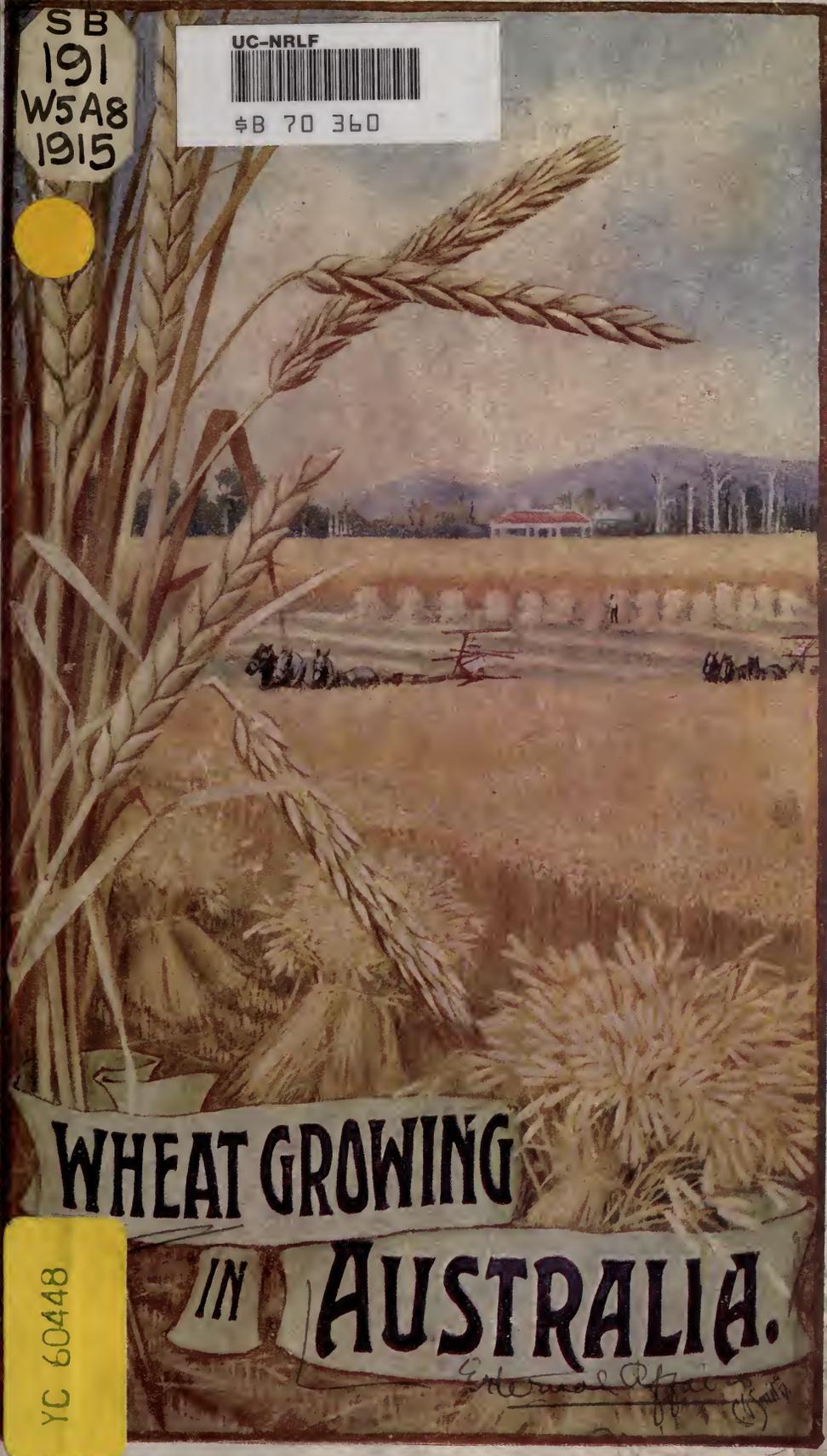


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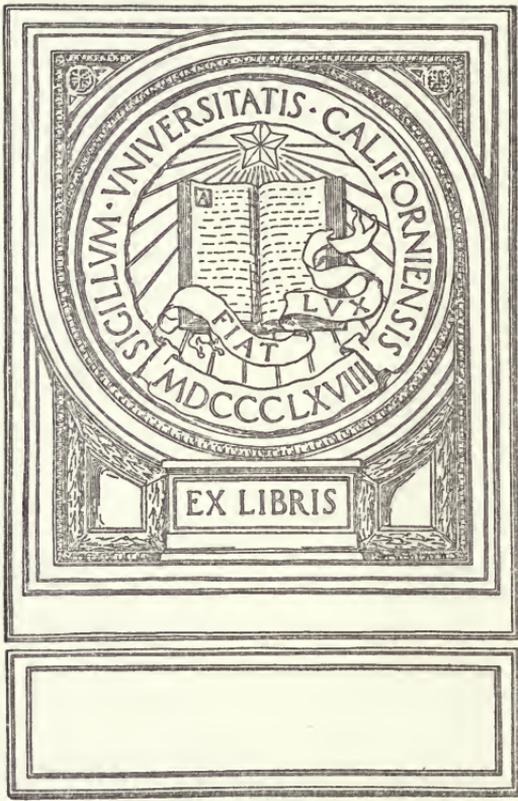
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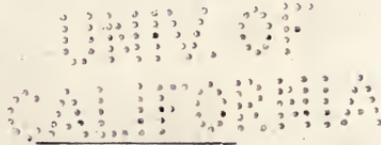


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COMMONWEALTH OF AUSTRALIA.

WHEAT GROWING
IN
AUSTRALIA.



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72 Victoria Street, Westminster.

IN AUSTRALIA:

The Secretary
DEPARTMENT OF EXTERNAL AFFAIRS,
Collins and Spring Streets, Melbourne.

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WHEATGROWING IN AUSTRALIA.

With the growing scarcity of foodstuffs that has become a world-wide feature of the last few years, the wheatgrower is one of the most important necessities in civilisation. He has prospered in the past, but the future holds still greater and richer prospects. And in no country in the world are those prospects brighter than in the Commonwealth of Australia. The world's surface is gradually filling up, and most of the older countries have reached sight of the limit of cultivation, so the world's millions have to look to newer lands to provide them with food. The great island continent in the southern seas possesses a vast area of proven wheat land, as yet untouched by the plough. It lies dormant, fertile, and responsive, awaiting the union of labour and land to yield abundance of food.



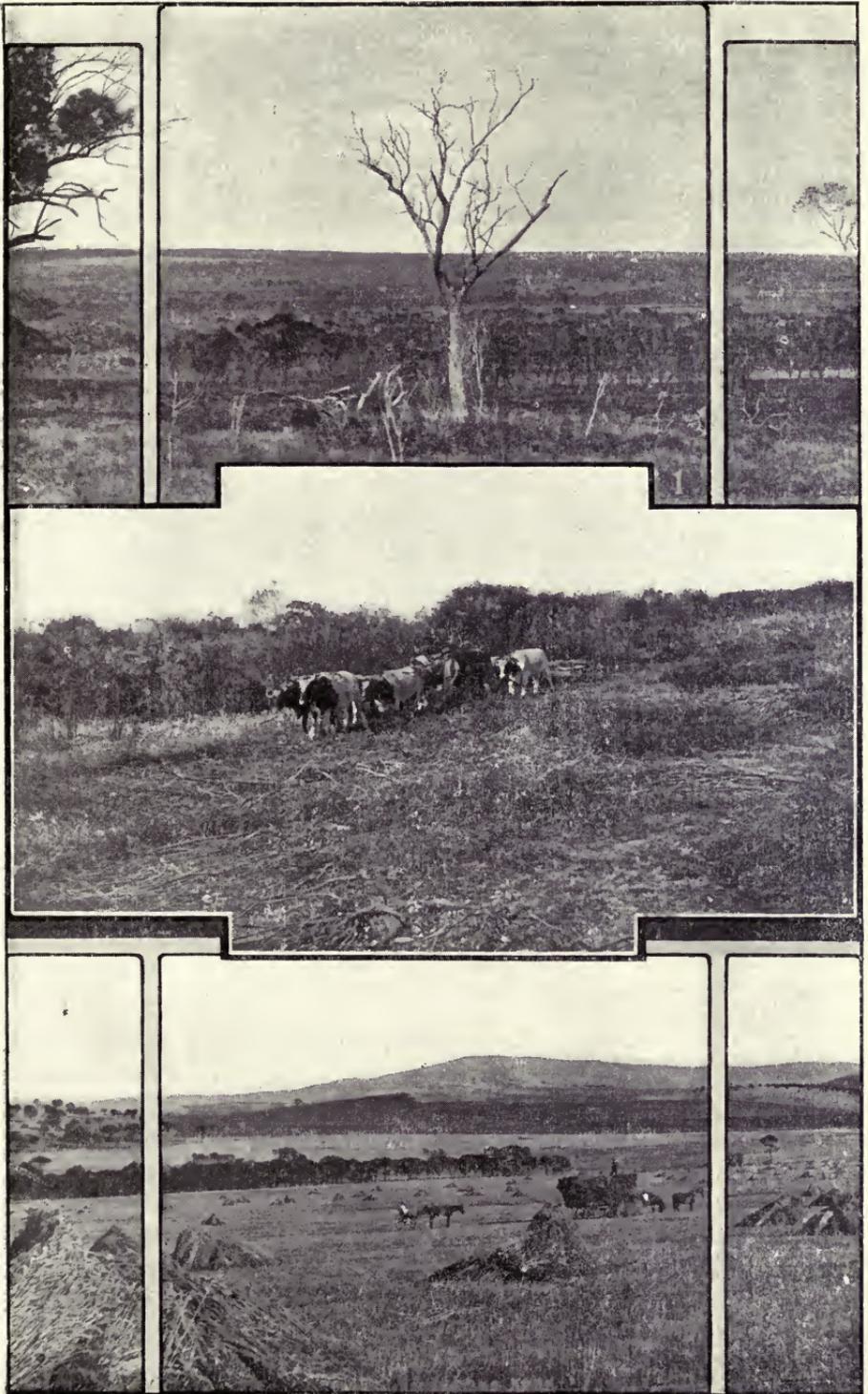
BREAKING UP NEW GROUND.

Australia has many rural industries, but of agriculture wheat is the most important, just as it is the most important of the world's crops. Wheat is the king of cereals—the prime essential of civilised life. Nearly half the inhabitants of the globe are wheat-eaters. And the number is growing, for the Eastern races are becoming consumers of wheat, which is significant of a higher standard of living. For as races rise in the human scale wheat becomes a more important part of their food. This alone shows the increasing importance of the cereal, and the importance of the men who grow it. Indeed, the food value of wheat, its ease of cultivation and preparation for human use, the fact that it will grow and flourish in so many different soils and climates, and can be made into so many and various products, combined with its quick and bountiful return, all go to enhance the value of wheat grain, and the prospects of the man who grows it.

Science is teaching how to produce more wheat from the same area, is improving the varieties of wheat and the methods of cultivating it, and teaching how to restore impoverished lands. And there is still an enormous area as yet untouched, while land is being utilised now that twenty years ago was deemed incapable of growing wheat. Who can tell what the future will find?

Australia alone has many millions of acres of wheat land as yet unused for that purpose. One of the youngest of nations, yet one of the oldest parts of the world geologically, it can house and feed millions more than its present population. There is room for the extension and continuation of the magnificent progress that wheatgrowing has already made. The story of wheat cultivation is the story of progress. In Australia, within the last decade, wheatgrowing has advanced rapidly. Railways have been built out into new districts, and freight is cheap. Towns have sprung into existence, and the whole aspect of the countryside in district after district being altered by increasing settlement, where wheatfields have taken the place of sheep paddocks. These towns are solvent and prosperous, and certain of a great future, for there is room for immensely greater settlement. The majority of the wheat farms are larger than necessary, and only a small percentage of the wheatland is cultivated. The urgent necessity is for more men to build homes and farm these lands. There are both private and public lands awaiting settlement.

The profitable nature of wheatgrowing in Australia is shown by the comfortable homesteads and the strong financial position of numerous families in the wheat districts. Many of these successful

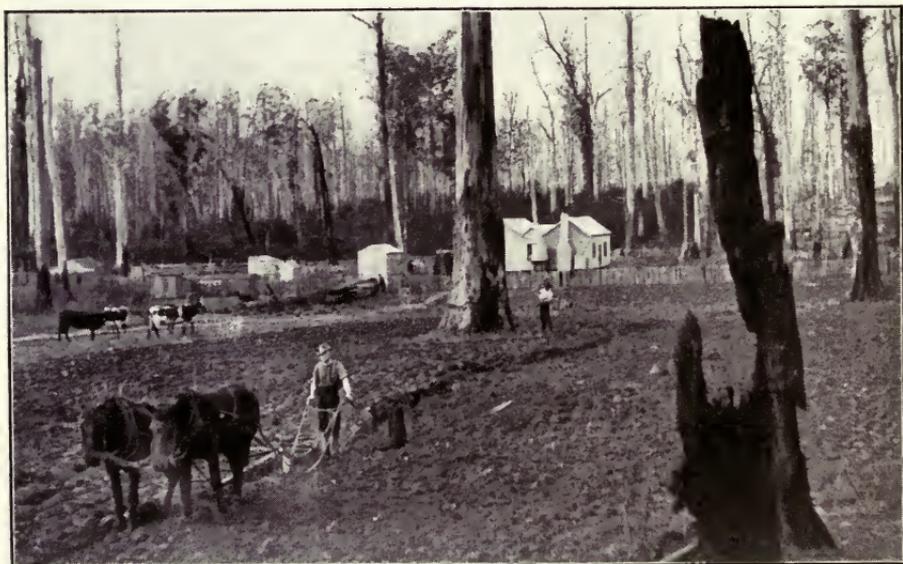


TYPICAL CLASSES OF FARMING LANDS.

WHEATGROWING IN AUSTRALIA

wheatgrowers, indeed most of them, are men who started with little or no capital in cash, but with plenty of energy and willingness to work. They have built homes for themselves in the "bush," and found prosperity, and there is room for thousands of other men to follow in their footsteps. In a favourable year a wheatfarmer will often receive as much, or more, for his crop than the capital value of his land.

In the early stages of wheatgrowing in Australia mistakes were made and progress was slow. Wheat was grown in the wrong soil and districts, and suitable varieties of the cereal were not available. Cultivation was confined to the moist coastal country,



FIRST STAGES OF CROPPING.

with its annual rainfall of 30 to 40 in., and wheat was not a success. The discovery that the drier districts inland were more suitable for wheatgrowing altered the position very happily. The bulk of the wheat is now grown in districts with a rainfall of 20 to 25 in. and under. This averaged rainfall is considered sufficient for wheatgrowing, and safer than a heavier rainfall. Wheatgrowing has been most profitable in districts with a rainfall below 20 in., and an average of 40 bushels per acre has been harvested from 600 acres. On well-worked fallowed land splendid money-making crops have been gathered, although the growing crop only had 2 or 3 in. of rain.

In Australian wheat districts the quantity of rain is not as important as the time of the year in which it falls. Rain is wanted

in the early autumn, so that ploughing can be done, and in the spring, when the wheat is heading and flowering. With rain in April and May, and again in September or October, the Australian wheatgrower is assured of a fine crop. In the wheat districts those are the seasonable times to get rain. The summer is usually dry and warm, and this is one of the main advantages from the wheatgrower's standpoint. This fine dry weather—which is exceptionally healthy for the human being—means the production of a high-class grain, for which there is an unlimited demand in the world's markets. Unless the common rule is broken, and the season is unduly wet, there is no fear of rust, and nothing to interfere with the haymaking. The main crop, which is kept for grain, can be left standing safely in the paddocks until it is thoroughly ripe, when it is taken off with a stripper or harvester and bagged. So the districts that have heavy summer rains are largely unsuitable for wheatgrowing, but those in which the rains fall during the autumn, winter, and spring, and have dry summers, are most suitable.

While the present average is low in the Australian wheatgrowing districts compared with other countries, the cost of production is also remarkably low. Furthermore, methods are improving generally, and a considerable increase in yield can be expected with confidence. The very richness of the soil and the kindliness of the climate has tempted growers to adopt speculative methods of growing wheat. The main idea has been to put a large area under crop on the chance of striking a good year, when a small fortune may be realised. But growers are being educated to the value of more careful methods as paying best in the long run. The average yield in Australia has been about 11 to 13 bushels per acre. The total area under wheat and the wheat yield in the different Australian States for the season 1913-14 was:—

State.	Area.—Acres.	Yield.—Bushels.	Average per Acre.
New South Wales ...	3,206,600	38,043,360	11.09
Victoria ...	2,786,421	32,936,245	12.84
South Australia ...	2,699,632	16,736,988	7.47
Western Australia ...	1,104,753	13,496,242	12.02
Queensland ...	132,655	1,769,432	13.34
Tasmania* ...	18,054	421,380	23.33
	9,948,115	103,403,647	10.39

* Estimated.

As stated, compared with some of the older countries, such averages seem small, yet in the dry districts of Australia they

mean a reasonable margin of profit. In such districts it is estimated that a 10-bushel crop per acre will pay \$0.60 per bushel. Of late years the price received by growers has averaged about \$0.84 per bushel.

The average return does not show what a district or country



DISC PLOUGHS ARE POPULAR IN AUSTRALIA.

is capable of producing, as it is reduced by the low yields of careless and unskilled farmers. The men are responsible, and not the soil or climate. There are thousands of farmers who never have a lower average than 20 to 25 bushels, while in some well-farmed districts a whole locality has averaged nearly 30 bushels to the acre. The whole tendency now is towards more careful methods and higher averages, and this will mean greater prosperity for the farmers. As it is, men have been wonderfully successful in growing wheat in Australia, and if this is the case with the careless, largely happy-go-lucky style of the past, the prospect is extremely promising for the future. In a way, new men coming into Australia, and taking up wheatgrowing, stand a better chance than many of the long-settled farmers who have got into a groove—even a profitable one—and who do not care to bother greatly with progressive ideas. The new comer has no preconceived notions, and comes with an open mind adaptable to the teachings of experience.

The new settler has his path made easy by the attention the Governments of the different States are giving to wheatgrowing. In all the States there is a Department of Agriculture, and all its accumulated knowledge is available to the farmer. In all the principal States there are Government Experiment Farms, where new wheats are tried, and also the best methods; the results are furnished to the public. In most of the wheat districts there are demonstration plots showing the best varieties to grow in the different localities. The new settler is advised what varieties to grow in his locality, and when to grow them, what amount of fertiliser to use, and the best methods of handling his land. In any difficulty the resources of the Department of Agriculture are at his service. At the Government farms crops of the best wheats are grown, and the seed distributed amongst the farmers, while inspectors are continually travelling through the country lecturing and visiting the growers, and advising them, whenever advice is asked for. With such facilities the future of the settler practically depends upon the use he makes of his opportunities, and the opportunities are unsurpassed in any other country.

In the wheat districts the summer is warm, and the thermometer often registers over 100 degs. Fahr., but it is a dry, healthy



PUTTING IN SEED.

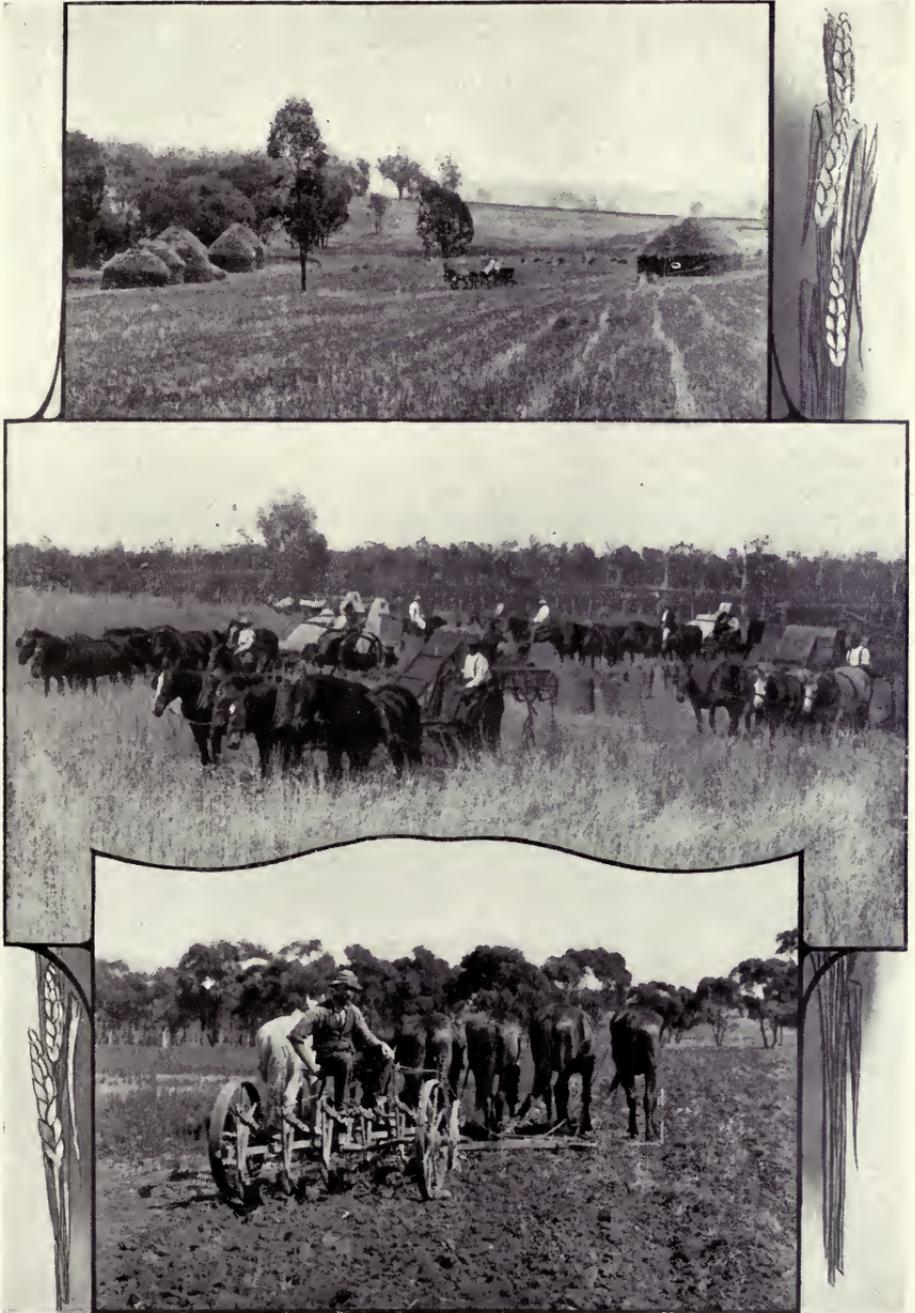
heat that is not as uncomfortable as the lower temperatures in moister climates. The warm weather holds for two or three months in midsummer, when the heat during the day is trying, but for the remainder of the year the climate is perfect. The winter is mild, so much so that live stock need no shelter, and often fatten on the natural pasture throughout the year. Farming operations can be conducted throughout the year. There is no snow or period when work is practically at a standstill.

AUSTRALIAN WHEAT AREA.

On the average of the past five years the wheat yield of Australia represents about 2 per cent. of the world's production. The return per acre is low, but as has been pointed out, the cost of production is likewise low, and it is doubtful if in any other country the business of growing wheat is more profitable. The area now cultivated is but a mere percentage of what could be put under wheat profitably. The exact area is almost impossible to arrive at, for the simple reason that with improved methods and better varieties of wheat, the extent of country in which the cereal can be successfully grown increases.

For practical purposes the area deemed suitable for wheat-growing is that which has sufficient rainfall to admit of ploughing being carried out at the right time of the year, as already stated, from March to June, to cover the growing period, and to fill the grain during September and October. In other words, it is not so much a matter of what the annual rainfall is as when the rain usually falls. The State of New South Wales for example. For a long time land with less than a rainfall of 20 in. has been excluded from the area considered safe for profitable wheatgrowing. Even then the area in that State suitable for wheat covers 25 million acres. In the State of South Australia farmers place the annual rainfall limit at 16 in., provided it is regular and the land is properly worked. If wheat can be grown on that rainfall in the latter State, and the evidence is that it certainly can, at least another 10,000,000 acres can be added to the wheat belt of the State. Although, therefore, the present area under wheat (1913-14) is only 3,206,600 acres, there are 35,000,000 acres on a moderate estimate in New South Wales alone that can grow wheat profitably. And experiments in the west show that a still greater extension of the wheat belt can be looked for, especially with

improvement in the breeding of varieties suitable for the dryer districts. At present, however, there is no necessity for settlers to go outside the area of "safe country."



(1) TYPICAL AUSTRALIAN FARM SCENE. (2) PREPARING WHEAT FOR HARVEST.
(3) PLOUGHING.

What can be achieved in dry districts with a limited and intermittent rainfall has been most forcibly proved by experience. At Messrs. Gagie Bros.' farm, Spy Hill, West Wyalong, New South Wales, a yield of 24 bushels of wheat was obtained in the 1911-12 season on a rainfall of 668 points—less than 7 in.! Of course, such a crop could not be grown on such a rainfall alone, as a much larger quantity of water would be required to produce that amount of wheat. The crop during the growing period only received 668 points of rain, but in the land on which it was grown, and which was fallowed and properly worked, a large quantity of moisture was stored from the previous year, and on this reserve the growing crop grew, and with the additional 668 points that fell during the growing period a yield of 24 bushels per acre was obtained.

Still more remarkable were the results obtained in the same season from experiment plots on the farm of Mr. Carew, Deniliquin, in the same State. The seed was sown on well-worked fallow land in which a good amount of the previous year's rainfall had been conserved. The rainfall during the growing period was 322 points, distributed as follows:—May, 210; June, 60; July, 12; August, nil; September, 37; October, 3 points. Under ordinary conditions such a rainfall would mean utter failure of a wheat crop, yet in this case a yield of 14 bushels per acre was obtained.



A FINE CROP OF WHEAT.

Again at Mr. G. Laidlaw's farm, "Elm Park," Jindera, Albury, New South Wales, 28 bushels 56 lbs. were obtained on fallowed land with a rainfall of 752 points.

With a seasonal distribution of rain wheat can be successfully grown with an average of 10 in. There are growers in country that ten years ago was considered outside the wheat belt, that is, the safe country, who for the last five years have never harvested less than an average of 25 bushels per acre. Yet an average of 12 to 15 bushels has proved profitable.

In Victoria, wheatgrowing can increase fivefold before the whole of the suitable land is brought under the plough. The wheat crop of that State should, if the settlers are forthcoming, within a few years reach 8,000,000 acres, provided that one-third of each farm is regularly cultivated. The area under wheat in 1913-14 was 2,786,421 acres, so there is room for thousands of growers yet.

In South Australia and in Western Australia there are immense areas, running into millions of acres, which yet remain to be brought under wheat. In Queensland wheatgrowing practically remains to be developed. At present stockraising proves most profitable, but there is no question that in the course of time that State will add immensely to the wheat belt of the Commonwealth. In all the States the usual course has been for wheat to follow stockraising, after the latter have sweetened and improved the soil, making it more compact and suitable for cultivation. In new lands, where the soil has been practically untrodden for ages, it is seldom immediately suitable for the cultivation of wheat, in what later on proved to be ideal wheat districts. Therefore, in such a vast country as Australia, which totals 2,974,581 square miles, it is beyond man's calculations to even estimate what proportion may ultimately come under the plough.

At the present time, however, it is far from extravagant to say that while Australia is now, roughly, producing 100,000,000 bushels of wheat on 10,000,000 acres, it is capable, without improving the average yield, of producing 1,000,000,000 bushels of wheat from 100,000,000 acres. And as the experience of good farms has conclusively demonstrated that the average yield could be much greater than it is at present, with good farming methods, the general use of more suitable varieties of wheat, not to mention the still greater improvement in the breeding of suitable wheats, that yield should certainly be half as much again. Australia therefore stands out as promising to be one of the greatest wheat-producing countries in the world.



AUSTRALIA'S AVERAGE WHEAT YIELD IS FROM 11 TO 13 BUSHELS PER ACRE, BUT THOUSANDS OF FARMS YIELD FROM 20 TO 25 BUSHELS PER ACRE.

Australia has the land and climate; she wants the men.

There is a large area of country in Victoria, South Australia, and New South Wales known as the Mallee, the name being derived from a dense dwarf eucalyptus scrub which covers the land in its natural state. For a long period this land was deemed unfit for wheatgrowing on account mainly of the low rainfall, and, away from the River Murray, absence of water supply. Experience has long since proved that it is very profitable wheat land when properly worked, while the discovery of a sub-artesian water supply and good water-holding country has overcome most of the difficulty that first faced settlement. There is a large area of this land available for share farming, and a great area is also being opened up for settlement, particularly in South Australia. There is thus a sound prospect fronting the new settler, as he might start on the Mallee country share farming, and on what he has earned establish himself on a holding of his own, with all the advantage of a practical experience of that particular type of land and the climate. The Mallee soil is mostly sandy loam, but red and black loams, varying from sand to clay, are found. It is a low elevation above sea level, but the country is undulating. The vegetation is reckoned a sound guide to the quality of the soil for wheatgrowing; indeed, this same

principle can be accepted in all parts of the wheat belt. On the Mallee the richest parts are denoted by the pines and bull oak trees, while the large and small Mallee marks good and medium loams and clays.

The Mallee land is suitable for handling by the man with small means, either on a farm of his own or as a share farmer, as in the first case the clearing is cheap, while in the second he can handle a large area. The scrub is broken down by rollers, and is comparatively easily eradicated. For a time young suckers come up amongst the wheat crop, but they are burnt off when the standing stubble is burnt after the crop has been taken off, and in time quite cleaned out. The soil is naturally rich in potash, nitrogen, and lime, but requires superphosphate, as the percentage of phosphoric acid is low. Although the average yield is lower than other parts of the wheat belt, wheatgrowing has proved very profitable in the Mallee country, and there is plenty of evidence of that fact.

In Victoria the Mallee country is an important part of the wheat belt of that State, there being over 800,000 acres under wheat last season (1913-14) out of a total area for that State of 2,786,421 acres. Yet it is only within the last ten years that it has had any reputation for farming, being mostly looked upon as useless. Most of the first settlers were share farmers with little



CARTING STOOKS.

capital, but with brains and energy, and many of them are now worth from \$50,000.00 to \$100,000.00. There were failures in the early days, because there was want of knowledge of the proper methods of working low-rainfall country for growing wheat, and also proper methods and lack of proper implements for that class of country. Suitable implements, especially "stump-jump" implements, have been evolved, and there is a solid guide for the new settlers to follow. One of the leading farmers in the Mallee country in Victoria, Mr. R. Blackwood, at Hopetoun, where the soil is of average quality and the rainfall less than 14 in., started on the share system in 1892. It was seven years before he adopted the "bare fallow" method, an essential in such country, and since doing so he has averaged 16 bushels per acre. In the record dry year (1902) his crop went 8 bushels to the acre, and paid working expenses. By 1913 he was the owner of 5000 acres. He crops about 650 acres each year, and fallows about the same area, working on a three-year rotation of fallow, wheat, grazing.

FACTORS GOVERNING WHEATGROWING.

The principal factors governing wheatgrowing in Australia are:—

Conservation of soil moisture by fallowing the land.

Sowing of varieties of wheat most suitable for the different districts.

Judicious use of fertilisers.

The settler has not to find these things out for himself. He has the assistance of well-organised and progressive departments of agriculture in the different States to tell him what to do, how and when to do it. The working of his land is a matter upon which he will be fully informed. He will have the scientific experience of the departmental experts, the examples of local experimental plots, and the experience of working farmers to guide him in regard to the best method of working his soil. Methods vary somewhat in different soils and districts, as has been previously stated.

He is informed as to the best varieties to sow in his district and the proper time to sow them. The completeness of that information can be gathered from the following particulars which are supplied by the Department of Agriculture in New South Wales every season. Similar information is furnished in other States. In New South Wales a classification of varieties of wheat is made by

the department, and a table published for the information of wheat-growers. The following is the classification for the season 1913-14:—

With regard to time of maturity varieties of wheat recommended were classified as follows:—

Very Early.—Bunyip, Florence, Firkbank.

Early.—Comeback, Thew, Steinwedel.

Mid-season.—Bobs, John Brown, Cedar, Warren, Federation, Bayah, Rymer.

Late.—Jonathan, Marshall's No. 3, Zealand, Yandilla King, Cleveland, Huguenot.

Very Late.—Hayne's Blue Stem.

In respect of time of sowing the varieties mentioned above were recommended in inverse order.

Just as the farmer is advised as to the most suitable varieties of wheat for his district, so experiments are conducted to ascertain the most useful quantity of manure, and full particulars made available in the agricultural gazettes or journals which are published in the different States, as well as being made available in bulletin form. The question of manuring is a very important one to the wheatgrower, as it influences the yield greatly in most of the principal areas, if not all. As Australian wheat soils possess abundance of nitrogen and sufficient potash, but are mostly deficient in phosphoric acid, the manure chiefly used on the wheatfields is superphosphates. There are some localities where further experiment is required to definitely ascertain the most suitable fertiliser, but in the main superphosphate is the requirement, and practically the only manure used. This has been the course proved most satisfactory by practical experience in wheatgrowing, and careful experiment also with nitrogenous, pathonic, and phosphate manures, singly and combined. Superphosphate has proved superior to bone-dust or basic slag; sulphate of potash has not increased the yield, while nitrogenous fertilisers, such as dried blood or sulphate of ammonia, have proved either useless or harmful. In New South Wales the quantity of superphosphate usually used is 56 lbs. per acre, and the same quantity is generally applied in Victoria, but in South Australia the dressings are much heavier, running from 1 cwt. to 2 cwts. per acre. In New South Wales experiments carried out clearly prove that larger quantities, say, 84-112 lbs. to the acre, do not result in bigger yields being obtained, while the

still heavier quantities, $1\frac{1}{2}$ to 2 cwt., have actually resulted in poorer yields.

In Victoria about 56 lbs. of superphosphate to the acre is also the usual thing, but the amount used averages probably from 56 to 84 lbs.; the drier districts require less, and the wetter districts more, than these amounts. Remarkable results are obtained from such small dressings as 30 lbs. of superphosphate.

In South Australia heavier dressings of superphosphate are used than in the other States. Wheatgrowing in South Australia was, in fact, revolutionised and changed into a most profitable business through the introduction and general practice of using this artificial fertiliser.



WITH AUSTRALIAN STRIPPER HARVESTERS WHEAT IS HARVESTED, THRESHED AND PUT INTO THE BAG FOR 8 TO 10 CENTS. PER BUSHEL.

Commercial fertilisers are analysed by the Departments of Agriculture, and official lists are published showing their content.

The Australian wheatgrower is practically not troubled with wheat diseases. Thirty years ago rust was a trouble, but the breeding of rust-resistant varieties of wheat has effectually overcome that drawback, and rust is seldom, if ever, heard of now. In addition, wheatgrowing is now carried on in districts where the conditions are seldom favourable to rust, which is only liable to cause serious loss when there is hot, moist weather late in the spring. This weather is very rarely experienced in the Australian

wheat belt, and certainly little has been heard of rust for many years.

Smut is the only other important parasitic disease, but as the practice of "pickling" seed before sowing is extending, this trouble has practically disappeared. Bunt or stinking smut is so called because it has an objectionable smell, which makes its presence known in the grain and deteriorates its value. As stated, it can be readily prevented by treating the seed. Smut belongs to a low form of plant life, and the plant is produced from a seed, which in its turn matures and produces other seed, which are microscopic and are known as spores. These spores are found when matured in masses occupying the place of the wheat kernels, and these masses are called bunt-balls. The chief and almost only cause of smut is sowing wheat seed which has healthy smut spores attached to it. By destroying the vitality of these spores the grain crop will be clean.

The most common solutions for pickling wheat seed are bluestone (copper sulphate) $1\frac{1}{2}$ lb. to 10 gallons of water, and formalin 1 lb. to 45 gallons of water. Bunt balls are lighter than wheat, and float in water, so if the wheat to be treated is poured slowly into the pickle, and in such a way that the bunt balls will not be carried down by the grain, they will float on top, and can be skimmed off and destroyed. The details of pickling vary on different farms, but a common method is to place the wheat about 2 bushels at a time in loosely-tied butts or bags, and then by means of a lever it is lowered into the solution for two or three minutes, when it is raised on to a sloping trough, where the superfluous solution can drain back into the cask. Another method is to place the seed wheat, either loose or in bags, in elevated casks or troughs made out of hollow logs, and pour the bluestone solution over it. After it has remained on the wheat the necessary time it is run off into another cask or trough placed in a lower position. After the seed has been treated it requires some time drying before it can be sown through the drill. All that is necessary is to place the butts where they can drain freely, and the seed will be ready to sow after a few hours.

The fullest particulars as to the best way of combating this disease or any minor trouble is always obtainable from the Departments of Agriculture in the various States.

"Take-all" occasionally affects wheat crops growing under any disadvantageous set of conditions, but good farming is a remedy for that trouble, which is a minor one.

SECURING A WHEAT FARM.

Wheat land may be secured through public or private channels, but the area of available Government lands is greater in some States than others. The landseeker having decided in which State he is going to reside, will adopt the means of securing a wheat farm best suited to his capital. Not only are Crown lands being opened up, principally by railway construction, but in some States the Government purchases private estates, which are subdivided and sold in small areas to farmers on exceptionally easy terms. Estates are also being constantly so subdivided by private owners, and sold on terms extending over ten, fifteen, and twenty years. With ordinary good fortune the farmer going on such estates is in a sound and safe position after three or four seasons. If he has the misfortune to experience a dry season at the start, it will, of course, take him longer to work to independence, as can easily be understood. On the other hand a normal year will see him well started and safe for another two or three seasons, while a really good year will place him in a position which means that only carelessness and improvidence can prevent him from attaining comfortable and practically independent circumstances.

In the different States information can be obtained from the Government Information Bureau or Departments of Lands as to what Government lands are available for settlement.



HARVESTER AS USED IN AUSTRALIA.

The particulars of private lands for sale may be obtained from city and country agents. They vary considerably in price according to the locality, nature of improvements and proximity to railways. They may be said to range from \$16.80 to \$38.40 per acre for improved land. In the majority of cases such lands are either cleared or partly cleared, and the settler is able to put in a crop right away, providing he obtains possession at a seasonable time. The ploughing and sowing period is mainly in April and May, and running to June, harvesting taking place in November and December. The almost invariable practice in Australia is to combine wheatgrowing and sheepfarming. Sheep are especially profitable in Australia. This is an excellent combination, as the busy periods do not clash, and the sheep help to fertilise the land, clear the stubble paddocks, and are also often useful for the purpose of eating down a crop in the early stages where it may be making an unduly rapid growth.

In most districts 250 acres of wheat is as much as one man can manage without outside help, except at harvest time, although some energetic farmers manage 300 acres. In the more settled districts wheat farms usually range from 300 to 600 acres, but larger farms, up to four and five thousand acres, are common. They are either worked on shares (see p. 38), or with hired labour, and are usually owned by men who have started on a small area, and increased it by subsequent purchase with money made from wheatgrowing. On many large properties hitherto devoted to sheepraising the practice is growing of putting down a large area under wheat.

It is not practical to definitely state the amount of capital required to purchase and prepare an area of land for a wheat farm. Much will depend upon the capacity and experience, business acumen, and resourcefulness of the settler, as is the case in all callings, but the detailed information given in these pages should enable the intending settler to work out the amount approximately required by his condition and the lines he intends adopting.

WORKING PLANT REQUIRED.

The intending settler has to consider not only the capital required to secure his farm, whatever its nature, but also the expenditure necessary in obtaining a working farm plant. Prices of machinery cover a wide range, according to size, &c. In work-

ing 200 to 250 acres of wheat crop, the following plant would be required, and the prices given are approximately correct:—

Five horses (good selected mares, if possible, that will give an annual return of, say, four foals), at \$144 per head	\$720.00
Five sets of harness	72.00
One dray and set harness	86.00
One four-furrow plough	144.00
One set of harrows	33.00
One seed drill	182.00
One cultivator	96.00
<hr/>	
Implements for putting in and working growing crop	\$1333.00
One reaper and binder	142.00
One stripper-harvester	430.00
<hr/>	
Total	\$1905.00



STEAM THRESHER AT WORK.

A chaffcutter (\$67.00) might be added to the above list, and in some localities a roller, costing about \$19.00, is required. The price of horses varies. In the above list they have been placed at \$144.00, but suitable animals may be secured for \$96.00 to \$120.00 per head. As soon as he can manage it the new farmer will want to get a waggon (\$168.00). He will soon want a vehicle to move about in, a sulky (\$72.00 to \$96.00), a light horse and harness,

saddle, &c. Minor implements and tools for fencing, carpentering, building, and so on will be wanted, and altogether it would be well to reckon that working plant generally will cost about \$2400.00. To work a large area would not cost more proportionately by any means; it is reckoned that an area of 600 acres of cultivation costs about \$3360.00 for working plant.

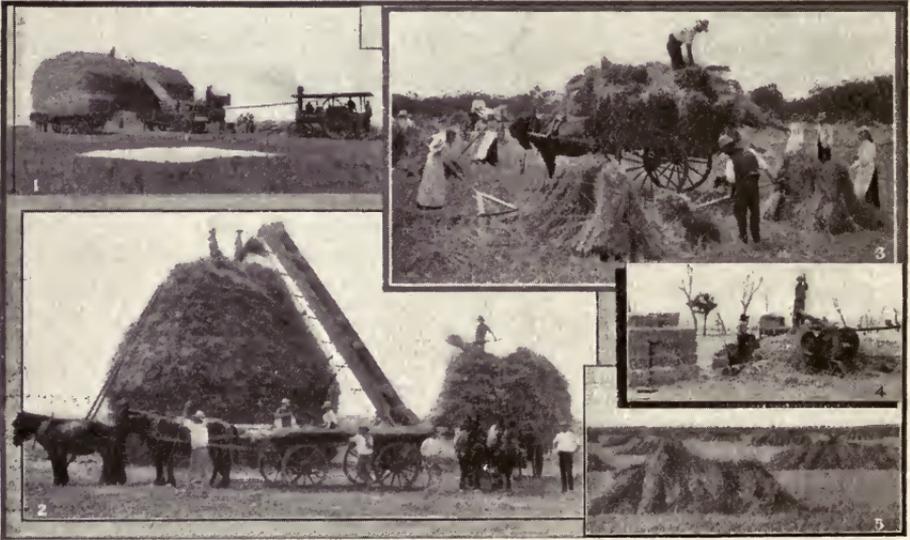
All the above parts of the plant would not be required at once, and the above amounts can be greatly reduced by obtaining smaller implements, lighter horses, and so on. Furthermore, it is not necessary that the full amount should be paid down for the plant. Cash would have to be paid for the horses, but machinery and most of the balance of the plant can be acquired on terms, part payment being in cash, while the balance runs over till after harvest, or even over two seasons. Usually one-third is paid in cash, and the balance about February or March, after the farmer has received the money for his crop. It is to the interest of the machinery firms, store-keepers, and others who do business with the wheatfarmer to help him as far as possible, especially in the early years, and in Australia, when a man shows he is honest and hard-working, he will receive every consideration in this direction.

The wheatgrower has also to allow for the keep of himself and his family while waiting for his crop to ripen.

In the above plant a stripper-harvester has been allowed for, but if a stripper and winnower be used instead, the cost for implements would be about \$120.00 less. On the other hand, more labour would be required to work them. The utilisation of the stripper-harvester is the most popular method of taking off a wheat crop.

The stripper is an Australian invention. It is a machine drawn through the ripe standing crop by three or four horses attached to its side. The horses walk in the stubble of the harvested portion. The ripe ears coming within reach of the machine, which has a 5-ft. cut, are gathered by a comb, and directed to a cutting plate, where the beater drum cuts them from the straw and threshes the grain out. At the same time the grain, with the chaff and some straw, is thrown into a receptacle at the back of the machine. When this is full the stripper is driven to a picked place in the paddock and emptied. Here a winnower has been placed, and the mixture of grain and rubbish out of the stripper is put through this winnower, which cleans and bags the wheat ready for market. In fair crops one winnower, with four men to work it, will keep two strippers going.

The stripper-harvester is another Australian invention. It is an improvement on the stripper, and is now in more general use. It is really a combined stripper and winnower. It takes off the heads of wheat, and also threshes and cleans them as it goes along, and delivers the grain into bags at the side of the machine. This reduces the cost of harvesting, as less labour is required. Two men can work a harvester, one driving the machine while the other removes and sews up the bags. The machines cut 5 to 6 ft., but



(1) STEAM THRESHER. (2) STOOK-BUILDING. (3) HARVEST PICNIC. (4) BALING FOR EXPORT. (5) STOOKS READY FOR CARTING.

8-ft. machines have proved successful of late, and with them a good area can be handled in a day. The smaller machine will strip about ro acres of a fair crop in a working day.

WORKING THE WHEAT FARM.

The settler having acquired his land, he will require to fence in his holding, and also subdivide it into convenient paddocks or fields. All Australian farms are fenced, and in districts in which the rabbit is a menace the boundary fences are wire-netted. Unless timber is very plentiful wire fences are almost universal. Posts, which are obtained from timber on the farm that is fallen, and split into the necessary lengths, are erected 9 or 11 ft. apart, with six or seven wires running through them. Sometimes the posts are put at a greater distance apart, and "droppers" placed between them at distances of 7 or 8 ft. Some of these droppers are of split

timber, but patent droppers, made of wire and iron, can be obtained. Where timber is scarce such fences are cheaper. The droppers hold the wires to which they are attached in their place, but are not sunk into the ground. Fencing costs about \$144.00 to \$168.00 per mile. Netting the fences to keep out the rabbit costs an additional \$192.00 to \$240.00 per mile. If the new farm consists of improved, that is, cleared or partly cleared land, the settler will probably get his crop in before he does his fencing. It would be better for him to do that than leave his sowing till unduly late.

Where green timber has to be cleared off the land it is ring-barked first, and the trees allowed to die before they are grubbed out. Ringbarking consists of cutting a small strip of bark from around the trunk of the tree to prevent the flow of sap keeping it alive. After ringbarking, the trees usually throw out young shoots or "suckers," which have to be broken off. Usually this has to be done twice, and is called suckering. The deeper the trees are ring-barked, the bigger the piece of bark removed, the sooner it will die, but there is then a greater tendency to throw out suckers. The trees take two or three years to die, then they are grubbed and burnt. It is very seldom that the green trees are cut out at once, as this is very much more expensive, and for some time after removal the ground is too sour to be good for wheat or other crops. When the country is ringbarked the ground sweetens, and by the time the tree is dead is ready for cropping. While the trees are dying the country is usually used for grazing sheep and other stock, as it will be carrying good pasture. Of recent years a system has been tried, with considerable success, of poisoning the green timber with a mixture of arsenic and soda and water. A ring is chopped round the tree, and the bark thus makes a rough cup, into which the mixture is poured. This treatment has proved very effective.

The cost of ringbarking and all similar operations, of course, depends upon the amount of timber on the country, but it usually costs from 24 cents to 30 cents per acre, while suckering costs 8 cents to 12 cents per acre. After the trees are dead they are grubbed or burnt out, all roots to 12 or 18 in. depth being removed, and this work costs from \$2.80 to \$3.60 per acre. In some cases the country is what is known as "Yankee-grubbed," in which case the trees are cut off level with the ground, and roots allowed to remain in below the surface. When the country was used for grazing only, this was found a cheap and efficient method, but nevertheless only a small proportion of Australian wheat country has been so treated. To cultivate "Yankee-grubbed" country what

are known as stump-jump implements, ploughs and cultivators are used. These are available on the market, and as "Yankee-grubbing" is certainly cheaper than the usual method of grubbing, it has some attraction to the man with limited capital. The more careful farmers, however, do not advocate this method.

It must be remembered that the above prices for clearing are where labour has to be employed. It must also be remembered that the amount of timber on different classes of wheat country in the different States varies very much, so while it is usually estimated that clearing land for wheat costs about \$4.30 per acre, it does not mean that it will always cost that, or, in any case, that the settler



THRESHING BY HORSE POWER.

has to pay that amount out in cash. After the timber is grubbed and pulled down it is usually piled together and burnt. It burns well, and the burning enriches the soil. The settler starting in to clear his farm has ever the future picture in mind of when the work is done, and he has a beautifully-cleared, improved property on which to spend the latter years of his life. And there is no finer picture than an improved wheat farm, with its alternation of park-like paddocks, paddocks carrying a flock of sheep, paddocks of growing crops, and paddocks of fallowing ploughed land ready for the crop next season, or perhaps carrying a rotation crop of oats, rape, or cowpea. The homestead, surrounded by its orchard, stables, hayshed, and machinery sheds, and poultry run, will stand upon a

rise, from which the whole property can be surveyed. And to none is the picture finer than to the man who by his own toil and energy has cleared and improved most of those paddocks. Such wheat farms are to be found in thousands throughout Australia.

One of the first things the settler has to do is to provide a water supply. It is the exception to find wheat farms with a natural permanent water supply, such as a creek or river. In most cases the settler depends upon tanks or dams for watering his stock. A suitable low-lying site is picked, and the earth is scooped out and banked up at the end and sides, so there is a hole into which the rainwater runs, following the natural lay of the country, and assisted and directed by drains and gutters. These tanks, as they are called, usually range from 1000 to 2000 cubic yards, and cost up to 24 cents or 30 cents per yard to excavate. In most districts the country holds water splendidly, and when the tank is filled by the autumn and winter rains it will carry through the summer. For domestic use galvanised tanks are depended upon, being placed to catch the rainwater off the roofs of the homestead buildings. In some districts water is obtained by sinking shallow wells. In parts of the wheat country sub-artesian wells are also common, good water being obtained by boring 200 to 300 ft., when an unfailing supply of good water for stock is secured. The real artesian country, where deep bores are sunk for water, is outside the present wheat belt.

In the season ploughing usually starts at 7.30 a.m. and goes on until 5.30 p.m., with a break of a couple of hours during the day for dinner; that is, where labour is employed. The settler himself handling his own land usually works from dawn till dark, using changes of horses during the day. Both mouldboard and disc ploughs are in use, some soils suiting one and some the other, while use for both will often be found on the one farm. The four-furrow plough, drawn by five or six horses, is most favoured, and with it four to six acres will be done in a day. Harrowing is done with a set of three to six sections of tines, covering from 12 to 20 ft. in width, and doing 15 to 20 acres a day. The bulk of the sowing is done with a combined drill, which plants the seed and distributes artificial fertiliser at the same time. The amount of seed sown per acre varies from 25 to 45 lbs., and even up to 100 lbs. in some parts of the Commonwealth, while usually about the same amount of superphosphate is distributed, 45 to 60 lbs. being the most common quantity. Both hoes and disc drills are in use, ranging from twelve to fifteen tubes, the tubes being 7 in. apart. These particulars apply mostly to the man cultivating 200 to 300 acres himself.

It is often found beneficial to harrow the growing crop until it is 3 or 4 in. high. While the crop is growing the settler will find plenty to do in clearing and improving his property, attending to his sheep, and so on. If he is on shares he will find work for his team and himself on other properties, at contract work, or on the local roads.

Harvest time comes well on in the summer, and for several weeks everyone is busy on the farm. It is usual when putting in a wheat crop to sow a portion for hay. Either a separate crop is sown or a special variety suitable for hay is sown around the main grain crop. This is cut with the reaper and binder just after the wheat plant has flowered. The sheaves, which are tied by the machine, are stooked in the paddock for ten or fourteen days until dry enough to be carted in and stacked. The climate—as a rule fine weather prevails—is favourable to haymaking, and a bright-coloured nutritious hay is produced. The average yield is a ton to one ton and a-half to the acre, but three, four, and even five ton crops are taken off, but that is usually in a crop sown and cultivated specially for hay with the intention of supplying the chaff market, which is an industry in itself. The wheatfarmer, properly speaking, only cuts what he will require for his own horses. A reaper and binder is drawn by three horses, and will cut from 10 to 12 acres per day. One man is required to drive the machine, and one or two men to pick up and stook the sheaves. Some farmers cut their own hay for chaff, working the machine either by hand or with horse-works for turning the cutting wheel, but the majority have the hay cut by contractors, who travel through the country with a special plant for the purpose, charging \$2.16 per ton for cutting. After a portion round the edges of the crops has been cut for hay a strip of land is ploughed around the crop in the stubble for the purpose of making a break in case of fire, and thus enabling a fire that might approach the crop being controlled on the bare ploughed ground.

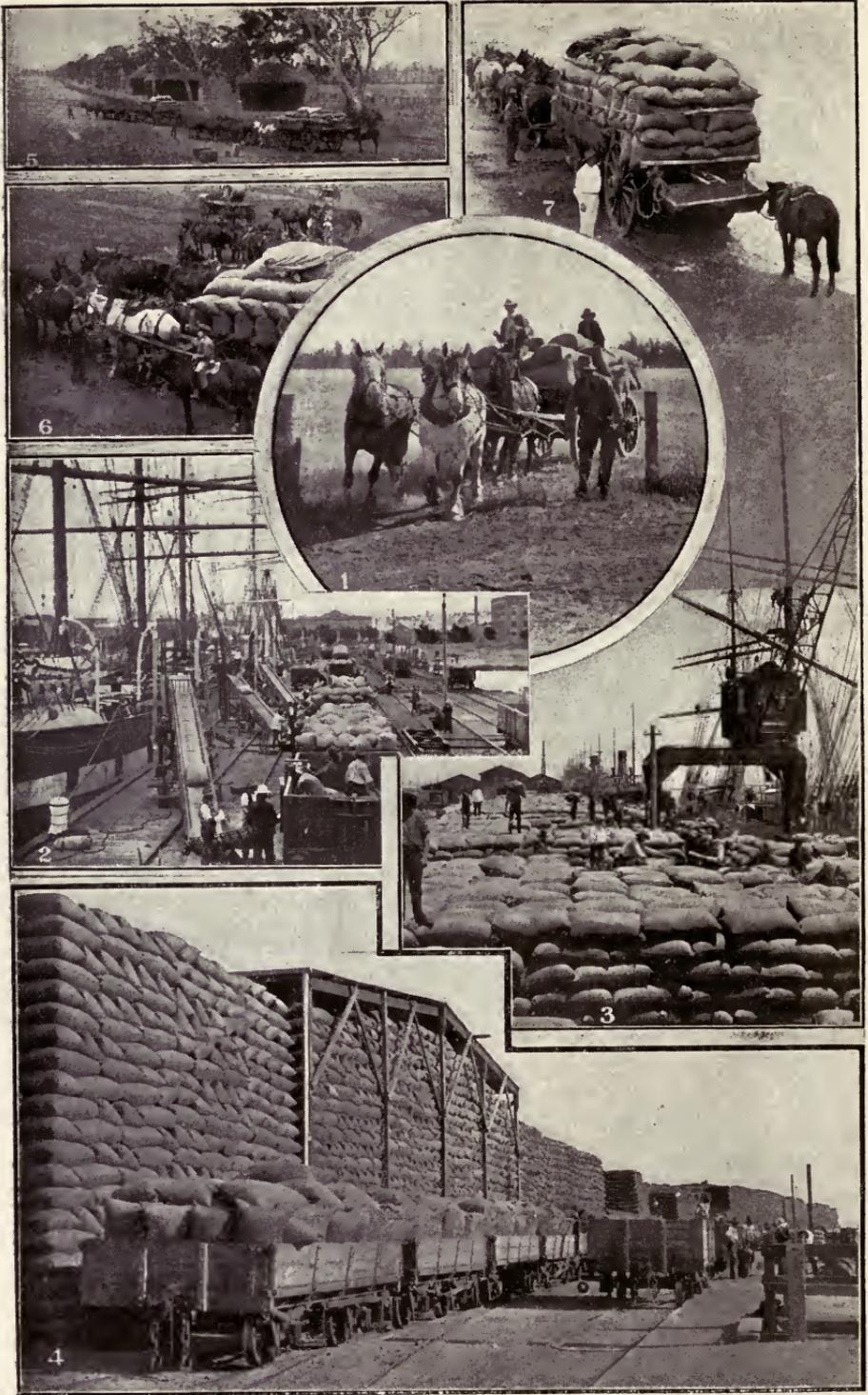
The wheat crop is allowed to become dead ripe in the paddock, as for stripping the ears must be dry and quite ripe. Once it is ready to strip every effort is made to take the crop off as quickly as possible, as it does not improve standing, for some of the grain is likely to be shaken out by winds. The more modern wheats, however, hold the grain wonderfully against wind or hail. Varieties of wheat are sown so they will mature at different times, which extends the harvesting period, as one crop will be ready to harvest before the other is quite ripe, and there is thus a useful rotation. At harvesting time work usually starts in the paddock about 8 a.m.,

as the wheat does not strip well until the hot sun gets on it, as it toughens during the night. The work goes on until 7 or 7.30 p.m., with a break of two hours at mid-day, and spells of twenty minutes in the morning and afternoon. Where labour is employed one man drives the harvester, but his horses are looked after, fed, groomed, and harnessed for him. This saves time, and enables the crop to be taken off the more quickly. Of course, the farmer in a small way will do his own work, requiring only a little assistance at harvest time, someone to sew up and stack the bags. As there is always a rush at harvest time, the bags of grain are often left lying in the paddocks in small heaps until the crop is all off, when they are carted to the railway or mill. Some farmers do their own carting, but the majority pay the regular carriers to do this work, the cost varying according to distance, but is generally done for 24 cents per ton per mile. About $12\frac{1}{2}$ bags of wheat go to the ton.



CARTING WHEAT TO RAILWAY STATION.

At present in Australia wheat is all handled in bags which contain about 3 bushels of grain. The price of empty bags varies from \$1.50 to \$2.00 per doz. Very few second-hand bags are used. The different State Governments in Australia are now considering the wisdom of introducing the American system of handling wheat in bulk. The Governments of New South Wales and of Western Australia have definitely announced their intention of establishing that system, while it is being favourably considered in Victoria. Once the system was introduced in any of the States it would probably be only a short time before it was adopted throughout the



AUSTRALIAN WHEAT FOR EXPORT FROM FARM TO WHARF.

Commonwealth. At present, however, bags are in universal use, the grain being thus carried both for local and export trade.

The settler finds no difficulty in selling his wheat, as grain merchants and millers compete for it. Often sales are made before the crop is ripe. The large wheat merchants and shippers have their agents in every town, and these men visit the farms, inspect the grain, and make an offer according to the ruling market price. The local millers are also competing for what grain they want for local consumption. The grower is paid on delivery at the mill or the nearest railway station. If he prefers to do so he can store it with the buying firms, giving them the right to purchase when he is prepared to sell, or he can store on the farm. The export values of wheat per bushel for the last six years have been:—

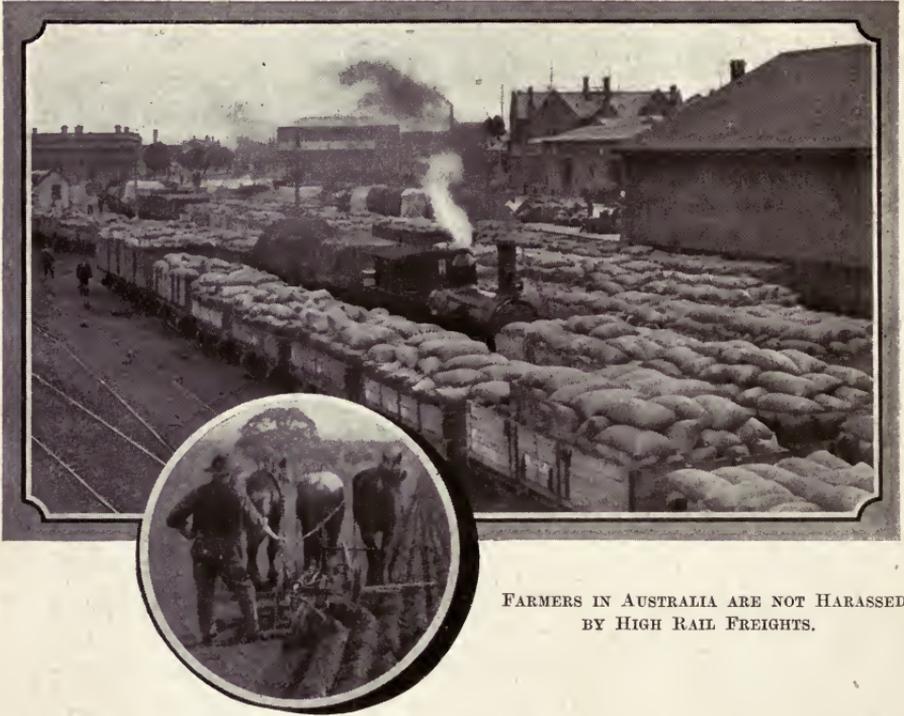
1909	..	..	..	..	..	\$1.00
1910	..	..	..	..	..	1.00
1911	..	..	..	..	..	0.84
1912	..	..	..	..	..	0.95
1913	..	..	..	..	..	0.84
1914	..	..	..	..	..	0.82

Wheat is bought and sold on what is known as the f.a.q. (fair average quality) system. Samples of wheat are taken from the various districts by the different Chambers of Commerce, and each State fixes its own f.a.q. standard. These samples are mixed together, and by careful testing on a patent scale it is ascertained what an Imperial bushel of weight actually weighs. The idea is to ascertain as equitably as possible what a fair average sample of the season's wheat should weigh. The standard varies a little in different years; it may be 61, 62, 64, or as low as 58 lbs. to the bushel. Whatever it is fixed at for the season that is the basis upon which all sales are made. If the market price for wheat, for instance, is \$1.20 per bushel, it is for wheat up to the f.a.q. standard. Say the latter has been fixed at 62 lbs., the wheat must show that weight. Agents have what is called a chondrometer for the purpose of testing the wheat. If it is below the f.a.q. standard, a lower price is given. This system has been devised to suit the export trade. Samples of the standard wheat are sent to markets abroad, and all cargoes are sold on that basis. When they arrive at the market abroad they must test up to the f.a.q. standard. This system has been in force in Australia for nearly half a century.

It must be understood that this standard f.a.q. weight has nothing to do with the quantity for which the grower is paid. He is always paid on the Imperial bushel basis, 60 lbs. Whatever the

standard may be, every 60 lbs. of wheat is a bushel. The f.a.q. weight is a standard for quality, not quantity.

There is always a market for Australian wheat, and the price is always equal to what wheat is bringing in the world's main



FARMERS IN AUSTRALIA ARE NOT HARASSED BY HIGH RAIL FREIGHTS.

markets. Australian wheat has a character of its own, and a character that is improving. British millers want it on account of the large amount of flour it produces, and the colour and bloom it gives to their product. The grain is usually bright and clear in texture and rich in gluten, having fine milling qualities. Of late years Australian wheats have been considerably improved in strength, and this factor is continuing, and they undoubtedly promise to more than equal any wheat produced, possessing not only colour and bloom, but also strength, and giving the miller what he wants to produce an ideal article.

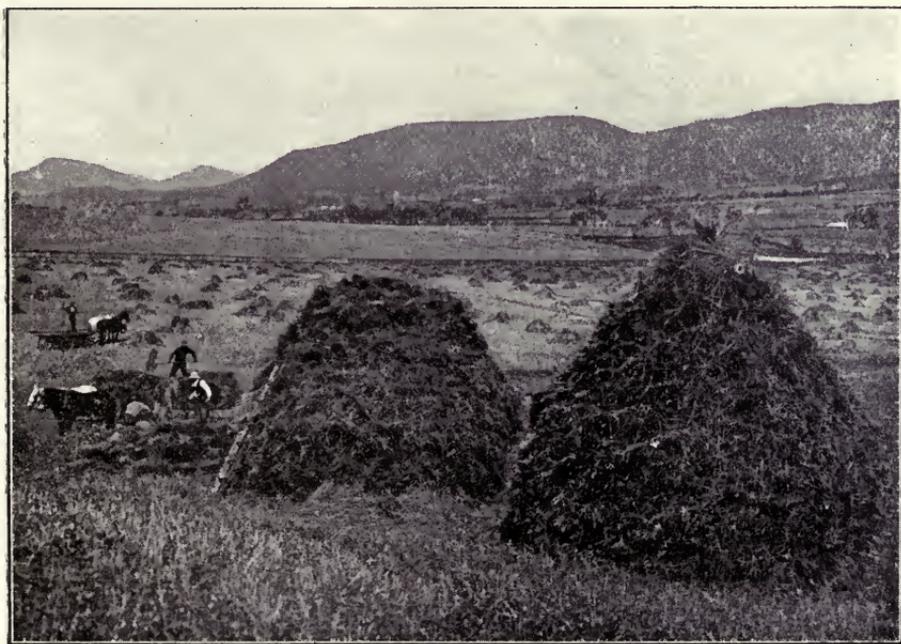
COST OF PRODUCING WHEAT.

The cost of production of wheat is a most important matter to the grower. As already stated, the comparatively low yields in Australia are amply compensated for by the low cost of producing wheat.

In regard to the work on the farm, the following figures are approximately the prices for different classes of work when it is done by contract:—Ploughing new ground, \$1.68 per acre; old or fallowed ground, \$1.45 per acre; harrowing, 18 cents to 24 cents per acre; cultivating, \$0.50 per acre; drilling, 36 cents per acre; harvesting with stripper-harvester, 72 cents per acre; cutting with binder, 84 cents per acre; stooking, 24 cents per acre; carting and stacking hay, \$1.35 per acre.

Superphosphate is the main fertiliser used. Australian wheat soils are naturally strong in nitrogen and potash, but in many cases are deficient in available phosphoric acid. Superphosphate costs about \$1.20 per cwt., and may be reckoned at 48 cents to 60 cents per acre. Seed wheat runs from 96 cents to \$1.20 per bushel; sowing 45 lbs. to the acre represents 72 cents to 84 cents per acre.

It is reckoned that if the same work is done by weekly-paid labour the cost is reduced by fully 30 per cent. all round.



HARVESTING SCENE, DARLING DOWNS, QUEENSLAND

In common practice it is considered that it costs \$4.80 to \$6.00 per acre to put in and take off an acre of wheat. The following figures are reliable estimates of the actual cost of production by official experts, and also actual figures supplied by working farmers.

In the following estimate of the cost of producing wheat it is assumed that the land is fallowed, and the estimate is based on a yield of 20 bushels per acre:—

Ploughing once at \$1.45 per acre	\$1.45
Harrowing three times at 18 cents per acre ..	0.54
Cultivating once at \$0.60 per acre	0.60
Drilling at 36 cents per acre	0.36
Seed, 45 lbs., at 80 cents per bushel	0.72
Pickling seed	0.06
Superphosphate, ½ cwt. at \$1.20	0.60
Harvesting with harvester at 72 cents per acre	0.72
Seven bags at \$1.60 per dozen	0.84
	<hr/>
	\$4.89



THE STRIPPER AT WORK.

If the land is not fallowed and the seed sown immediately after ploughing, the cost is correspondingly less. The above figures are the cost if the work is done on contract. If it is done by weekly hired labour the work comes out about 30 per cent. cheaper, as will be seen by the following figures:—

Ploughing: Wages, one man at \$6.00 per week; man's rations, \$2.40 per week; feed for four horses for week, \$9.60; total,

\$18.00. One man with four horses in a three-furrow plough will do 22 acres in six days at a cost of less than \$0.84 per acre. Drilling: Man's wages, \$6.00; rations, \$2.40; horsefeed, three horses, \$7.20; total, \$7.80. He will drill 90 acres in six days at that cost, or less than \$0.18 per acre. Other operations cost similarly less, but in all cases wear and depreciation of plant and interest on capital invested in plant should be allowed for.

These figures, however, concern cases where labour is employed. The following figures show the outlay where a man is doing the work himself. He could plough, cultivate, and sow 250 acres, which would take him twenty-two weeks. The first year he has to purchase his seed wheat and feed for his horses:—

190 bushels seed wheat at \$0.80 per bushel ..	\$153.60
10 tons chaff at \$19.20 per ton	192.00
	<hr/>
	\$345.60

Approximately \$1.38 per acre.

At harvest time he would first reap portion of his crop to secure a supply of horse feed for the following year, say, 10 acres:—

Reaping and haymaking, 2 men's wages for three days at \$1.92, food \$0.48 per day ..	\$14.40
Twine (for binding the sheaves)	6.00
Harvesting the wheat crop: One man's wages \$1.92, food \$0.48 per day for forty days ..	96.00
One hundred dozen bags at \$1.68 per dozen	168.00
Horsefeed, 5 tons chaff at \$19.20 per ton ..	96.00
Cartage, 1000 bags wheat at \$0.18 per bag ..	180.00
	<hr/>
	\$560.40

This is reckoning the crop as averaging 15 bushels per acre, when the returns would be:—

15 tons of chaff (a low estimate) at \$19.20 per ton	\$288.00
1200 bags of wheat, 3600 bushels at \$0.80 per bushel	2880.00
	<hr/>
	\$3168.00
Less expenditure (\$345.60, \$560.40) ..	906.00
	<hr/>
Balance	\$2262.00

To be thoroughly correct we should allow for:—

Interest on plant, costing, say, \$1920.00 at	
5 per cent.	\$96.00
Depreciation of plant, 10 per cent.	192.00
Rent on 250 acres at \$1.20 per acre	<u>300.00</u>
Total	\$588.00

And in addition allow for the value of the farmer's own labour:—

Twenty-two weeks putting in crop at \$12.00	
per week	\$264.00
Ten weeks harvesting at \$14.40 per week	<u>144.00</u>
	\$408.00

We still have a satisfactory result, viz.:—

Returns	\$3168.00
Outlay	\$570.00
Interest, &c.	588.00
Farmer's labour	<u>408.00</u>
	1902.00
Net clear return	<u>\$1266.00</u>

From this it can be seen that very handsome returns can be obtained where the farmer is working his land properly, and growing a good portion, if not all, of his crop on fallowed land. Then his average would be nearer 25 bushels than 15, and his net return nearly as much again. In the above example, after making full allowance for all legitimate charges, the cost of producing a 15-bushel crop from 250 acres comes out at about \$7.44 per acre.

SHARE FARMING.

One of the most prominent and, in a sense, unique features of wheatgrowing in Australia is the share-farming system. In New South Wales, for instance, something like one-sixth of the wheat crop is put in on shares. Under this system the landowner and the worker with limited means co-operate to their mutual benefit. One provides the land and the other the labour, and, under certain conditions, they share the produce. Since it was introduced many years ago, share farming has become popular because it has proved a boon to both parties and to the different States, while providing an exceptionally safe means of giving men the opportunity to ultimately acquire farms of their own.

The conditions upon which land is worked on shares differs slightly in different districts, but usually they are somewhat on the following lines. The landowner provides the land ready for the plough, fenced and cleared; the seed wheat, and bluestone for pickling same; bags and twine for his share of the crop. The share farmer usually provides machinery and horses to work the land, put in and take off the crop, all labour and bags and twine for his share of the crop. In the majority of cases the landowner and the share farmer each take half the proceeds, or "bag for bag," each reserving the right to dispose of his share when and where he deems fit. In some cases the agreement is more liberal to the share farmer, and a fixed amount—perhaps 16 to 18 bushels—is agreed upon, which is shared equally, any balance being taken by the



WHEAT AT COUNTRY RAILWAY SIDING.

farmer. This is sometimes adopted as an incentive to good farming, and in cases as an inducement to attract the share farmer into new districts some distance from the railway. There have been cases where farmers have secured very good crops, 30 to 36 bushels to the acre, which meant that they received 22 and 28 bushels per acre for their share, while the landowner only received 8 bushels. These are exceptional conditions. As stated, the usual practice is to share equally. The following are sample specimens of the different agreements worked under:—

The landowner finds the land, all seed, and half manure; the farmer finds plant, labour, and half manure. Each takes half the crop.

The landowner provides land, all seed and all manure; the farmer plant and labour, and takes one-third of the crop, the landowner taking two-thirds.

The landowner provides land only, and takes one-third of the crop; the farmer provides plant, labour, seed, and manure, taking two-thirds of the crop.

The landowner provides all stock, land, and half manure; the farmer provides labour, seed, and half manure, and the crop is divided equally.

The landowner provides land, seed, and manure; the farmer does all the work, and the crop is equally divided.



A NICE MIXED FARM.

It will thus be seen that some minor differences occur in the agreements. The first of the above list is most common. There are cases, however, where a progressive owner is anxious to get his land under wheat, and has financed the farmer, finding everything but labour. The landowner has provided a working plant, for which the farmer pays him from the proceeds of the crops, the payments extending over a term of seasons. Under this system men have started without any capital, and in a few years possessed a plant worth several hundred pounds, together with a snug banking account to their credit. Of course, in such cases the landowner knows his man, and knows he is honest, experienced, and capable. Usually the men have worked on the place as farm hands.

Under any conditions it is essential that the share farmer must have certain qualifications. It could not be expected that the landowner would consent to allow him to work valuable land otherwise. Practical experience of wheatgrowing is required, together with a good personal character. Local experience is also usually required, and in any case it would be the wisest course for any man to secure in his own interests such experience before endeavouring to start farming on shares. In Australia the man who is in earnest, and determined to go on the land, will find no difficulty in obtaining such experience. There is a good demand for willing farm workers at a rate of wages that will allow a thrifty man to put something by, while he is gaining a practical experience and a knowledge of local conditions. Once he has those he will not find it difficult to obtain the chance to start working on shares.

The share farmer has to find his own dwelling, and support himself and family. In some cases the owner erects the dwellings under special terms, but usually, as the farmer hopes to only be engaged for a few seasons share farming, the building is of a cheap nature, as the climate is temperate.

A man with \$1440.00 or \$1920.00 can purchase horses and obtain a plant, financing himself for a couple of years without depending too much on credit. Men have started with less and succeeded, as examples given later will show. It is not necessary to purchase a complete plant, and, as already stated, the more expensive implements can be purchased on terms. A man can handle 200 to 300 acres, and at the ruling prices for wheat of recent years, taking the average obtained by good farmers, the returns will run from \$9.60 to \$14.00 per acre and more for his share. In addition, after ploughing and sowing is completed, a team of horses will earn good money at contract work in the district, carrying on the roads and so on, until harvest time. In this way a farmer in three or four years, perhaps less, will be in the position to take up land on his own account on a private or Government subdivision, and start in to build a permanent and comfortable home for himself and his family.

While share farming he has proved his capability and obtained the confidence that comes with experience, together with a valuable knowledge of local conditions, which is a great help in selecting land for purchase.

It will be seen that share farming affords exceptional opportunities for the energetic man with a small capital. He can start

without sinking all his capital in rent or purchase money, and perhaps burdening himself with a heavy debt. In his own interests he has that to farm well, and indeed in most cases the terms of the agreement require conditions essential to good farming. Farmers are usually required to plough to a specified depth, and at times to prepare an area of fallow land for the succeeding crop. He is allowed to graze his horses on the property, or given the use of a paddock at a low rental.



THIS CROP YIELDED OVER 30 BUSHELS TO THE ACRE.

One of the advantages of share farming, making towards amicable working, is that the interests of the landowner and the farmer are the same. Both are anxious to secure the greatest possible return from the land, and there is a direct community of interest. The landowner may be more concerned about maintaining the fertility of the soil, and securing good farming, but this is also to the interest of the farmer, and certainly affords him a valuable lesson for the future when he is working his own property. While the system beyond question is equitable and fair, and gives the farmer an excellent chance to achieve success that would not be the case where he was working on wages, or an ordinary tenant, admittedly it is also advantageous to the landowner. He secures a good return from his land, and avoids the anxiety and trouble

often associated with the employment of labour on a large scale, while he has not to embark a large sum of money in working plant.

In connection with a system such as this the evidence of an unbiassed, independent outside body is, perhaps, more convincing than anything else. It is available.

In 1910 Australia was visited by the Scottish Agricultural Commission, a body of practical men from Scotland, who investigated rural conditions in the Commonwealth. The Commission toured the Commonwealth, visiting different wheat districts, and came into direct touch with local conditions. They paid great attention to the share farming, as its possibilities could not fail to impress them, and in their report on "Australia: Its Land, Conditions, and Prospects," they had the following to say:—

"After a year or two the newcomer finds himself ready for a start on his own account. If he possessed a few hundred pounds when he landed, he will now seek to become his own landlord in one or other of the ways open to him. If, however, he has yet too little money for that, he will be well advised to take no risks, but to be content meantime either with renting a farm or with farming on the share system. A man who is intelligent and industrious, who has had sufficient experience of farming in Australia, but who has not enough money to buy land, cannot do better than turn his attention to farming on shares.

"He can take up wheatfarming . . . and if he has a good reputation, he will find no difficulty in getting on shares the kind of farm he wants."

HOW THE SETTLER IS ASSISTED.

The different Australian States fully recognise the great value to the community of the farmer, and special steps are taken to assist him in different ways.

Financial assistance is rendered through agricultural banks in West Australia and Queensland, the Credit Foncier in Victoria, and State Banks in New South Wales and South Australia. Through these Government institutions advances are made to settlers. Full particulars in this regard are furnished in another booklet, obtainable by intending settlers.

In Australia all the railways are State-owned, and the endeavour is to carry farm produce and farming implements, fer-

tilisers, &c., at the lowest possible rate compatible with the railways covering working expenses and depreciation of stock. Special rates are made for long distances. The rates vary in the different States, but it can be confidently said that they prove no hindrance to successful wheatgrowing. As all the wheat grown in Australia has to be carried to the seaboard on the railways, the particulars of success achieved, as already given, proves that. The Common-



FARMERS ON THE WAY TO A COUNTRY SHOW.

wealth Statistician furnishes the following particulars of State railway rates for agricultural produce in the different States, which serve as a guide to the settler:—

State.	Charge per Ton in truckloads for a haul of					
	50 miles.	100 miles.	200 miles.	300 miles.	400 miles.	500 miles.
	\$	\$	\$	\$	\$	\$
New South Wales ...	1.20	1.80	2.28	2.52	2.72	2.88
Victoria ...	1.32	2.04	2.52	2.96	3.36	3.76
Queensland ...	1.10	2.10	2.64	2.88	3.12	3.36
South Australia ...	1.48	2.10	3.10	4.10	5.10	6.10
Western Australia ..	1.50	2.14	2.90	4.08	5.28	5.76
Tasmania ...	1.62	2.32	3.12	...	...	...
Average ..	1.36	2.08	2.76	3.10	3.90	4.38

The following table shows the rates on low-class freight, which includes ordinary articles of merchandise, such as are particularly identified or connected with the primary industries:—

State.	Charge per Ton for haul of					
	50 miles.	100 miles.	200 miles.	300 miles.	400 miles.	500 miles.
	\$	\$	\$	\$	\$	\$
New South Wales ...	.60	.86	1.36	1.86	2.36	2.86
Victoria ...	1.02	1.60	2.40	2.84	3.24	3.64
Queensland ...	1.10	2.10	3.60	4.40	5.60	5.60
South Australia ...	1.00	1.84	3.26	4.26	5.26	6.26
Western Australia ...	1.20	2.00	3.40	4.40	5.60	6.60
Tasmania ...	1.20	1.62	2.04	...	...	...
Average ...	1.00	1.64	2.86	3.62	4.42	5.48

The railways being publicly owned, there is always a demand for a reduction of rates when they show any undue profit over working expenses. The object of railway administration is to assist the producer.

The overseas trade of Australia runs into enormous figures, amounting in 1913 to \$759,422,400.00. Extensive shipping facilities are available, and the producer has cheap and constant access to the world's markets. The Australian wheatgrower is practically able to compete on equal terms in this regard with the farmer in the North and Midland counties of England.

The postal, telegraphic, and telephonic services are also State concerns. There is a universal penny post throughout Australia, telegrams are conveyed at cheap rates, and special facilities are provided for groups of neighbouring farmers to secure a united telephone service. The farmer is able to keep in close touch with the world's markets through these means.

The Departments of Agriculture in the different States have, of course, been created to advance the interests of the farming community. They are large and important departments, well equipped, and have proved of great practical value. Wheatgrowing being the most important crop in Australia, the industry receives special attention, and scientific investigation and experiment is being constantly made, and the results communicated to the wheat-growers.

Agricultural colleges, where accommodation is provided for students, who are given theoretical and practical instruction in different branches of farming; experiment farms, where students are also trained; demonstration farms; and farmers' experiment

plots are conducted by the Departments of Agriculture. Wheat-breeding and pathological and bacteriological work is carried on, and expert instructors work in the field assisting the farmer in every possible way. Bulletins dealing with different phases of work on the wheat farm, giving the results of experiments made, lists of varieties of wheat to plant and when to plant them, are issued in large numbers, and either given to the farmer free or sold at a nominal price. Agricultural gazettes and journals are also issued monthly, while topical information is made public through the columns of the press, which in Australia devotes an unusual amount of space regularly to rural topics.

In New South Wales wheat experiments are conducted at the Cowra Experiment Farm, which is the headquarters, and at the Hawkesbury Agricultural College, and Wagga, Bathurst, Glen Innes, Nyngan, and Yanco Farms. At Nyngan tests are made with a view to determining the suitability of the different varieties for cultivation in dry areas. The work at each farm consists of:—Pedigree plots of the main varieties grown on the farms; cross-breeds in course of fixation for local conditions of soil and climate; a “stud variety trial,” including all standard varieties, newly-introduced wheats, and samples sent for identification; “stud bulks” to provide seed for planting the farm areas which supply seed wheat for sale.

Since 1897 the Government agricultural experts have been endeavouring to determine the varieties of wheats most suitable for different districts, and to secure new types which return the best milling results locally, and their efforts have been very successful. In this connection the work of the late William Farrer, wheat experimentalist of the Department of Agriculture, New South Wales, has become world famous. His efforts were directed to the production of new varieties of greater milling value and more rust-resistant. Farrer’s wheats, which rank among the most prolific grain varieties, are largely cultivated in Australia. Farrer’s work is still carried on, and it has been proved that Australia can produce strong white wheat equal in flour production to the old varieties, and equal in strength to the famed standard Manitoba wheat. Australian wheat is eagerly sought after by British millers.

Farrer’s work has been of direct and material value to the wheatgrowers, and his memory is held high in Australia. Prior to the introduction into the wheatgrowing areas of his crossbred wheats, growers depended mostly upon Purple Straw varieties. Hardly any varieties were known, and little attention was paid to the advisability of sowing certain varieties either early or late in

the season. The advent of these new varieties has brought about a great change. Such an extensive range is provided that farmers can begin their sowing much earlier, and finish with other varieties much later than was the case before. The sowing season has been lengthened by more than two months. Not only is the sowing period considerably prolonged, but the harvesting period is prolonged also, for the late varieties sown early mature late, those sown in mid-season are harvested in mid-season, and the early varieties which have been sown late mature and are harvested early. Thus instead of the whole crop becoming ripe at the one time it ripens in stages, and is harvested accordingly. Such a system has immense advantages over the old days, when practically the whole crop ripened at once.

The foremost variety bred by William Farrer is "Federation," which has become a general favourite in New South Wales, Victoria, and South Australia. This variety is a very heavy yielder, has good drought-resistant qualities, and withstands wind and weather so well that it may be said to be storm-proof. It would require a storm of exceptional violence to either cause the crop to lodge or the ear to shed its grain. Consequently it is most popular with growers, and a very large proportion of the wheat area is sown with this variety. It is estimated that in New South Wales and Victoria alone the increased value in yield obtained from this variety is worth over \$2,880,000.00 annually to the growers. It is estimated that the yield of Federation is at least 3 bushels more per acre than the next best yielding variety in New South Wales.

Other of Farrer's wheats have been singularly successful, as an instance "Bunyip," which can be sown safely a month later than was the case with any variety previously. It must be recognised that the result of such experimental work is of great value to the grower.

New wheat varieties are bred at the experimental farms, and thoroughly tested and proved before they are put out to the farmer. In New South Wales they are then grown on farmer's experimental plots. The State is divided into divisions, and in each an inspector supervises the sowing and cultivation of these plots, which are situated on private farms by special arrangement, the farmer carrying out the work and the department finding seed, manure, and supervision, usually near the roadside, where the plots can be seen by district farmers and progress noted. The inspector advises growers generally, while the plots are a silent teacher all the time. They have proved a valuable medium of practical education amongst the farming community, special attention being given to

cultural methods. In 1911-12 plots were cultivated in New South Wales in eighty-three districts. In 1911 there were seventy-two farmers' plots in Victoria on which manurial and variety wheat trials were conducted.

In the latter State, however, a change has been made, and the majority of these plots have been discontinued, and a commencement made towards a policy of concentration in experimental investigation. It was decided to establish a Central Research Farm at Werribee, on which the initiative with regard to all experimental and research work is undertaken, while other State farms and the Agricultural College will be used as district experiment stations. The work at the Central Research Farm is intended to confer on agriculture the benefits of the most scientific advances by the prosecution of investigations and trials under practical and accurately-recorded conditions concerning problems involved in increasing the agricultural output. Attention will be given to improvement of wheat, soil renovation, fertilising and tillage methods, rotation of crops, &c. The farm is within 18 miles of the capital city, Melbourne, and is easy of access by farmers from all parts of the State. Much of the soil closely resembles in physical character and chemical analysis that of the principal wheatgrowing districts. At Longerenong Agricultural College and the Rutherglen Viticultural College attention is given to the improvement of wheat by systematic selection, crossbreeding and hybridisation in one case, and the fixation and testing of new crossbred wheats in the other.

South Australia also has its Government Agricultural College, where extensive wheat experiments are conducted. The college has been of the greatest benefit to the farming community. In that State there are several demonstration and experiment farms established by the State, including the Parafield Wheat Research Station, 170 acres in extent, which is set apart for the raising of high-grade seed wheat for distribution amongst growers, and the raising of new varieties of wheat by crossbreeding and selection.

In Western Australia several State farms were established for the purpose of demonstrating the possibilities of farming on up-to-date principles in the different districts. Having achieved that object as far as pioneering work is concerned, they are now maintained as experiment stations for the production of purebred cereals, &c. At Narrogin State Farm students are accepted for instruction in practical agriculture.

Queensland has its Agricultural College and State Farms. Although the area under wheat has not yet attained large dimen-

sions in that State, principally because stock-raising proves so profitable, good average yields are obtained as compared with the other States, and considerable scientific attention is being devoted to wheat culture. At the Roma State Farm and Hermitage State Farm extensive wheat experiments are carried out in the way of manurial trials, variety tests, and methods of tillage. The greater portion of the State Farm, Hermitage, is devoted to the production of seed wheat true to type, thus making available a supply of tested seed for the growers.

Agricultural High Schools are also established in some States, and agricultural teaching and agricultural education extends from the classes in the State Public Schools, through the High Schools, Agricultural Colleges, and finally the University.

Agricultural Societies exist in practically every farming district in Australia. They are usually subsidised by the various State Governments, and conduct annual agricultural shows, which are a source of education and social entertainment. They are the leading functions in the different country districts. Usually experts from the Departments of Agriculture attend these shows—at times a special exhibit is made by the State Experimental Farms—and lecture on agriculture. In the capital cities Royal Agricultural Societies hold annual shows, which are magnificent exemplifications of the resources of the States and the progress in agriculture. Wheat competitions are naturally a strong feature of these exhibitions.

South Australia led the way in the formation of an Agricultural Bureau, which has branches throughout the country districts. The members meet regularly, and discuss farming subjects, are periodically addressed by officers of the Department of Agriculture, and also hold an annual conference. The bureau has proved a valuable means of education, as it brings the farmers together, and engenders a spirit of co-operation and mutual assistance. In New South Wales an Agricultural Bureau was formed within recent years, and is now well established, having nearly 100 branches. Farmers' unions and associations are also powerful bodies in Australia, exercising both an educational and political influence.

SOCIAL LIFE IN AUSTRALIA.

Australia is essentially a "White Man's Country." Over 90 per cent. of the total population of 4,872,059 people are of British descent. The people are free and democratic, and their laws progressive and advanced; in industrial and social legislation Australia

leads the world. It is essentially a peaceful country, and so far has been blessed by never having war within its boundaries. Respect for the law, and absence of violent crime is a marked feature of life in the Commonwealth. In the country districts crime is practically unknown, and it is common for houses to be left unguarded, and locked doors are rare. The people are kindly and hospitable, and there is very little class distinction. In its place is an equality of opportunity that opens all avenues to those with ambition. Working men and their sons frequently rise to the highest positions the States have to offer, and such an occurrence is so common as to fail to arouse any comment. In politics there is a universal suffrage, every man and woman having a voice in the government of the country, therefore the laws are framed for the good of the majority. No land offers better or freer social conditions to the homemaker. Advantages offer not only to the settler himself, but he has every reason to hope for a happy destiny for his children.

As has been stated, the climate is exceptionally healthy and mild. The dry atmosphere, long hours of sunshine and open-air life tend to health and happiness. Indeed it is no exaggeration to say that the fertility of the soil and the congenial climate has greatly lead to easy-going methods of farming, which are not altogether in the interests of the country. Few countries could carry on their rural industries with similar easy methods; none would leave the people as prosperous as the people of Australia.

The information already given shows that the wheatfarmer, except in the most isolated districts, has the facilities for educating his children at little or no cost. Living is cheap on the farm. In most parts of the wheat belt fruit grows luxuriantly, and within three or four years a few trees will provide the settler with sufficient fresh fruit for home consumption, and to make jam and preserves for the family use. Vegetables can be grown during the greater part of the year, and throughout the twelve months if there is an ample water supply. Ideal settlers' homes are to be met with in all districts—a weatherboard or brick cottage, comfortable and roomy, with wide verandahs, covered with creeping grape or passion fruit vines, a few beds of brilliant flowers, a vegetable patch, and an acre or so of fruit trees. Many wheatgrowers combine fruitraising or poultry-keeping with wheatgrowing; some, in suitable districts, find great profit in cultivating a vineyard. These developments depend upon the man and his capability and tendencies, and upon the co-operation and talents of his wife.

For his meat supply the farmer usually depends upon his own flock of killing sheep, varied with beef or bacon procured from

the township. If he is within 10 miles of the township he will obtain his bread supply from the local baker, although, of course, many housewives do their own baking. In the country districts, however, bread and stores are delivered long distances, 20 miles and more.

The smallest country town has its church, school, post and telegraph office, bank, savings bank, stores, blacksmith's shop, hotel, and so on. There is usually a School of Arts, with a circulating library.

The country districts enjoy a system of local government, and the farmer elects the councillors who manage local affairs.

He has his annual show, usually an annual race meeting. There are football and cricket clubs for his boys. Open-air sports are popular in the country districts of Australia, and are a splendid means of bringing the young fellows together.

The Agricultural Bureau or Farmers' Associations' meetings provide intercourse with other men on the land. Farmers' picnics or carnivals are an annual function in many places.

Within 2, 3, or 4 miles away, according to the size of his farm, there are neighbouring farmers and their families. The settler is not an isolated unit in a strange land, but is living in a civilised country amongst civilised progressive people, enjoying the advantages and facilities of modern conditions, and living under a system of political and religious liberty.

To all white men Australia, with its vast tracts of untilled wheat land, holds out a welcome hand. The self-reliant man, with a small capital, can come to Australia, confident that with energy and attention to his work he can build up a prosperous career, and rear his children in a contented home surrounded by health and happiness, helping in the making of a young, clean nation, part and parcel of an enlightened race.

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