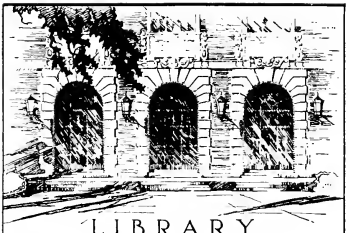

compensation would, tends to make them less careful in themselves and more disposed to conceal want of care in others.

I say, then, that the proposal to make the master liable to a servant for the negligence of a fellow servant, is contrary to principle, unjust, unreasonable, and calculated to produce, if not no good, at least more harm than good. It would be better to make servants liable to their masters for the damage caused by their fellows, than to make masters liable to them as proposed.

One word as to the Government Bill. Its provisions are needless or wrong. If the master, by an act of omission fails in his duty to a servant, he is liable, whether the failure was in himself personally, in his manager, or other agent. If the injury arises from an act of commission, then the reasoning I have used is applicable. Let the actual wrong-doer be responsible. No servant is bound to obey a command attended with danger.

One word more. It is proposed to guard the master by provisions that he shall not be liable if the servant contributed to the injury. There are other qualifications. In vain. The untruths told in accident cases are prodigious. They will be told in such as the Bill will give rise to. I foresee a frightful crop of litigation if it passes.

G. BRAMWELL.

HINTS

ON

VEGETABLE AND FRUIT FARMING.

BY

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HINTS

ON

VEGETABLE AND FRUIT FARMING.

THE problem of the Future of Farming appears difficult of solution. Some alarmists hold that the British farmer's occupation is gone; while others believe that the situation merely necessitates a change of system, and that if he energetically levels up his practice to meet altered circumstances, he may still have a profitable business. There are clear-headed men, gifted with an intuitive faculty of perception, and whose judgments are unaffected by panic, who say that corn-farming, pure and simple, will again pay in this country where the conditions are suitable, especially if some unfair burdens are removed from land, as they undoubtedly will be now that they have been so clearly set forth and brought prominently under the notice of the country and the Legislature. Every one knows that the wretched state of agriculturists during the last three years has been mainly caused by a cycle of wet seasons, which has happened before, and will happen again in due meteorological order. Most of the produce was of inferior quality during this cycle, and realised lower prices on account, in a degree, of the importation of the products of other countries, to the great advantage of the consumers. But this by no means is to be the normal state of our agriculture. Cycles of fine weather again will bring cycles of prosperity and contentment in Arcadia. There also are signs that the cost of the production of wheat will be increased in the United States, and that the effect of competition with that country will not be so disastrous to the home wheat-producer as some have prophesied. Fortunately there are other things than wheat for the English farmers to depend upon. There are meat-making, which will not for a long time, if ever, materially be interfered with by foreign competition; barley growing, wool producing, butter and cheese making, fruit, seeds, and vegetable culture, poultry rearing, and breeding of good animals of all kinds for home requirements and exportation. If we inquire

what class of agriculturists have held their heads above water during the late hard times, it will be seen that those who may be termed specialists have fared the best, generally speaking. The term "specialist" includes all breeders of stock of reputation, vegetable growers, fruit growers, dairy farmers, and seed growers.

There is an increasing demand in all countries, from China to Peru, for English breeding-stock of all descriptions. The statistics of the annual statement of the Board of Trade show that whereas the number of live animals, horses, cattle, sheep, and pigs, that were exported from this country in 1875 was 9572, of the declared value of 314,012*l.*; the number exported in 1880 had increased to 16,672, of the declared value of 425,400*l.* Surely there is room for a great extension of this trade. Foreign buyers would be encouraged by the lessened prices that would result from more breeders going into this business, and these prices would still be most remunerative. The noted herds of some English breeds are, in certain instances, so much reduced by the demand from abroad, that the old saying has been quoted about killing the goose that lays the golden eggs. This was urged as a reason for the short entries of some breeds of horses and cattle at the last Show of the Royal Agricultural Society at Derby. The exportation of fine wool from England is increasing in a rapid ratio. In 1875, 10,536,523 lbs. of wool were exported from the United Kingdom, and 17,197,300 lbs. in 1880. The exportation of seeds has increased in this same period from 119,060 cwts. in 1875, to 125,742 cwts. in 1880, and buyers from all countries are always ready to purchase good seeds of new varieties, or seeds of the best varieties of all kinds of cultivated plants. We must endeavour in every way to increase the exportation of specialities, and indeed all kinds of farm produce, and to keep up the reputation which the energy of the English farmers and the peculiar suitableness of the soil and climate have gained. Instead of looking back to Protection and turning ready ears to those who advocate unsound doctrines of political economy, we must try to make our stock, our wool, and all our produce as good as possible, and much desired by the people of all nations.

There also is a great and an increasing demand at home for the minor products of the land, some of which may now be classified as necessities; others in a degree as luxuries, because of their high prices. Fine qualities of cheese, good butter, milk, cream, eggs, chickens and poultry of all kinds, would have an extraordinary sale if only the prices were reasonable. And there is no doubt that all these things could be produced for sale at reasonable rates, and at the same time would yield a good profit if farmers would direct their minds and their energies to the work.

Foreign competition will not interfere with these industries. This game, at all events, is in the hands of the home producers. The chief drawback to the full development of this trade is the unsatisfactory present mode of distribution of nearly all kinds of farm produce, and especially of these minor kinds. In existing circumstances, the producers get the minimum value and the consumers have to pay the maximum price. The pernicious system of salesmen and middlemen, and the routine of markets, hinder enterprise and check production. In no cases is this so much felt as in those of vegetables and fruit, which are confined to a few centres—markets, for the most part, utterly inadequate for anything like general distribution. Even with the system now holding, it is fully believed that the production of vegetables, salad plants, and fruit could be very largely extended, to the gain of the cultivators and to the infinite satisfaction of would-be consumers who live in towns, and of those who have no gardens, who constitute a vast proportion of the population. This paper, therefore, has been written at the request of the Council of the Royal Agricultural Society, to point out the importance and advantage of adding these special cultures to the ordinary farm crops, and to give some practical information as to the most desirable sorts of vegetables and fruits for this purpose, together with details as to the modes of cultivating them, and the circumstances of soil, climate, and situation that are required.

It is not by any means suggested that vegetables and fruits are to be made at once to take the place of corn and other customary crops of the farm, nor that their cultivation should be generally and indiscriminately adopted; but it is desired to show that vegetables may be extensively grown in rotation with ordinary farm crops, as the practice is in Essex and other counties; also that a few acres of fruit-land may advantageously be added to almost all farms; and in some cases large plantations may be made. Before proceeding to descriptions and details, it will be desirable to mention, and if possible to meet the objections that are urged by interested, and, it is also fair to say, disinterested persons, against a considerable increase in the vegetable supply. Market-gardeners proper say that their profits have considerably diminished, and also that occasionally the markets are glutted with vegetables. No doubt the market-gardeners whose land is situated within 20 miles of the metropolis have lately felt the competition of farmers, who ought to be able to produce vegetables more cheaply, since their rents are lower and their taxation is not so heavy, and they have the advantage of being able to vary more frequently the courses of cropping upon the larger area of a farm. Farmers also within reasonable distance of London now

have equal facilities of transporting vegetables to the markets, and of getting manure from the London stables and cow-sheds by rail. Market-gardeners undoubtedly have made large profits, and naturally object to their reduction. The amount of capital they require per acre necessitates large returns, but it is maintained that farmers can produce vegetables without much additional capital, at a profit that will completely satisfy them. Then it is said that sometimes there are gluts of vegetables, and that greenstuff is wasted or sold at unremunerative prices. As it is mainly in the articles of cabbages and greens that gluts occur, and it must be said that these are not of frequent occurrence, farmers would be able to feed their sheep with them, and thus have an advantage over market-gardeners. But gluts are chiefly caused by the growers crowding all their produce into two or three markets in London even from long distances, and generally from the want of adequate means of distribution; for it is certain that only a comparatively small radius around the London markets feels the full effect of an excessive supply of vegetables. The same holds with regard to large towns, such as Manchester, Birmingham, Liverpool, to which market growers from far and near send all their vegetables without any reference to the demand. The area of the distribution of a market is necessarily limited. Multiplication of markets implies large outlays of money and additional cost ultimately to the consumers for tolls. Markets also necessitate middlemen, whose large charges above the cost price of the articles are also paid by the consumers. In order to get the actual market value of their commodities and to give the same benefit to consumers, producers must combine to form Supply Associations in various parts of large towns, or make arrangements and contracts with retailers to send them certain vegetables. This applies to fruit equally as to vegetables and to most other products of the farm.

The large and increasing importation of foreign vegetables is used by some as an argument against more vegetables being raised in England; but cabbages and greens of all kinds are not imported to any extent, being too bulky, and the season for imported cauliflowers and other vegetables practically is over before the English season has begun. The season of imported fruits likewise is for the most part over before those grown in this country are ripe. It is thought that a large trade might be established with France, Holland, and Belgium in fruit grown in England, coming as it does when the season of the common fruits of the Continent has passed. There also is a wide field for energy in the adoption of systems like those of the market-gardeners at Vaugirard and other places near Paris, of growing early vegetables under bell-glasses, and frames and lights.

English producers surely might supply the large towns with salad-plants grown under glass, and, later on in the season, out of doors, more cheaply and certainly in a more fresh condition than the French gardeners. The quantity of these salad-plants imported is enormous, and it is increasing, because practically the importers now have the field to themselves. Early fruits also could be grown on a large scale under glass to compete with those that come from the Continent. In short, if well-directed and well-sustained attempts were made to produce early vegetables of excellent and good appearance, it is believed that the foreign growers might be ousted after a time. It may be thought that these are too trifling details for farmers proper to worry themselves about; but every farmhouse has its garden, whose soil and situation are in nine cases out of ten the best on the farm, and which is too often the worst-farmed part of the land; this entails the services of a gardener, or a workman who knows something of gardening, occasionally or permanently. A better gardener or an unusually intelligent labourer might be employed, and the garden should be considered as a source of possible profit, and tilled and tended in the most careful manner, and extended to the farm land as circumstances might warrant. Near towns it would be found that dealers would come out and take vegetables and fruit, until the quantity he produced would enable the farmer to consign to market on his own account, or to make arrangements with Supply Associations or retailers. In this manner what may be called the garden of the farm would be developed from the nucleus of the existing garden. All kinds of smaller herbs could be produced. Cultivation under glass might be adopted in the gardens of farms far more than it is at present, and with much profit and advantage, in the production of cucumbers and early salad plants, and gradually increased if found desirable. This might be done not only with bell-glasses and handlights, but also with frames and protection to fruit-trees on walls, and with also cheaply-built greenhouses. Flowers might be turned to profitable account. Upon the home gardens of market-garden farms it will be found that every spare product of vegetables, fruit, flowers, and herbs is sold, and spaces are reserved for seed-beds to supply the farm with plants. The cautious farmer may feel his way by means of his home-garden to gardening upon a large scale on his farm.

Another objection that is raised against extending vegetable culture is, that it would require a larger supply of labour than ordinary villages could furnish. This undoubtedly would necessitate additional labour, and create a demand which, however, it is believed, would soon be met. The better prices which farmers would be enabled to pay would attract labourers to the country,

and tend to keep in their native places the young men who now leave them to better themselves. Immigrants would come at busy times, as they come to the Essex and Bedfordshire market-garden farms, as they go turnip-hoeing and harvesting in various counties, as they come into Kent for fruit-picking, potato-digging, and hop-picking. The additional culture of vegetables, within certain limits, would not much clash with ordinary farm work, and would, if well managed, ensure constant employment for labourers all the year round. Now it happens frequently that unremunerative work has to be found at some periods of the year for the regular staff. Upon ordinary farms a staff has to be maintained principally for the important operations of turnip-hoeing, hay-making, and corn-harvesting. Vegetable culture could be arranged to work well in with these seasons. Much of the lighter work, as picking peas, pulling and bunching onions and carrots, could be done by women, who could also wash those vegetables that required washing, in sheds or barns, and bunch them and pack them for market. There would be plenty of work for the staff of labourers in winter in sending off stored carrots, or stored potatoes, or onions, or parsnips, or celery, or protecting radishes or lettuces, gathering Brussels sprouts, and in various other ways.

Vegetable culture is supposed to require almost fabulous quantities of manure. Without any doubt the system of growing vegetables practised by market-gardeners near London, who are not satisfied unless they get two exhausting crops in a year from each part of their holdings, entails immense manurial applications. As much as 30 tons of farmyard-manure are put on per acre for some crops, and even 50 tons per acre for celery. Upon two market-gardens visited in Essex, the average annual cost of manure was in one case 10*l.* and in the other 11*l.* per acre. On the other hand, upon a profitable market-garden farm visited in Essex the average annual cost of manure was only 2*l.* 10*s.* per acre; yet all the crops on the 200 acres, including cabbages, peas, Lisbon onions, broad and French beans, potatoes, wheat, oats, were remarkably good. Crops of vegetables taken in rotation with corn and other crops do not require more manure than mangolds, or swedes, or beans. Neither does it follow that farmyard-manure is indispensable. Upon the market-garden farms in Essex large quantities of horse-hoof parings, horn-shavings, fish refuse, and other refuse, are used in alternation with farmyard-manure; nitrate of soda and guano are also freely put on. Rape-dust might be used also with great advantage for many gross-feeding vegetables, as it is found to be one of the best manures for hops in Kent, Sussex, Hampshire, and Surrey.

Upon most farms there are some spots, some fields, that are

suited for vegetables, if well and properly cultivated. It is a mistake to suppose that land for this purpose must naturally be of exceptional quality. Much of the land in Essex and other market-garden districts, is by no means fertile by nature; nor is the sandy soil round Biggleswade in Bedfordshire especially rich. Land that will grow turnips and mangolds well will grow cabbages and other plants of the Brassica order. For onions, French beans, carrots, parsnips, and lettuces, fairly good soil is necessary, and soil that works well and does not bind. Peas for podding and broad beans flourish in those soils where field-peas and beans thrive. The loams and clayey loams of the Lower Greensand, of the Upper Greensand, of the Lower London Tertiaries, answer well for vegetables. Also the lighter marls of the Chalk, and the more friable clays of the Old and New Red Sandstone, and the Lias, and the peaty lands in parts of Lancashire and other counties, also much of the alluvial and drift soil, would answer admirably for their growth. It would perhaps not be too much to say that upon all soils where potatoes are successfully grown, the more common kinds of vegetables would do well. Except in the extreme north of England, the general climatic conditions of most of the counties would be propitious, if judgment were exercised in the selection of favourable situations, sheltered from prevalent winds in the bleaker districts. On almost all farms there are slopes and bottoms where protection of this kind is afforded, and fields near the farmhouse comparatively sheltered, where the best of the land is generally to be found, upon which vegetables would flourish.

Vegetable Growing.

In giving a list of the crops suitable for market-garden farming, and a short account of the modes of cultivating them, it will be well to commence with Cabbages, as they are easily cultivated, and are the crop upon which farmers usually try their 'prentice hands. These may take the place of mangolds or turnips in the routine of farm crops, and, as has been suggested, they form marvellously good food for ewes and lambs if they cannot be sold for vegetables. There really is no more expense in the cultivation of cabbages fit for human food than in that of cabbages for cattle, and the profit from them in some seasons is highly satisfactory. Supposing the plants were put out at the end of September upon land well manured, they might be cut for market upon the first approach of spring, or even in the winter if it were mild, they might be sold as greens, known as Coleworts, or "Collards;" or in May and June as perfect full-hearted cabbages. Sometimes coleworts make very high prices when green stuff is scarce,

as much as from 8*s.* to 12*s.* per dozen bunches, each bunch being about a handful. As from 140 to 300 dozen bunches are grown per acre, the proceeds sometimes are very large. The Blue Colewort, Cock's Hardy Green, and the Rosette are sorts adapted for this purpose, but these do not make good hearts; and the best sorts for cabbages proper, with good hearts, intended for spring cutting, are the East Ham, Enfield Market, Sugarloaf, Battersea, and Wheeler's Nonpareil, among others.

Cabbage-plants are grown in seed-beds, usually in strips about 5 feet wide. About 10 lbs. of seed are sown per acre on these beds towards the end of July, for winter planting, and the beds are carefully hoed over when the young plants are up, which are slightly thinned, and all the deformed plants are pulled out. For cabbages the plants are put out 22 inches by 20 inches. For coleworts they are set 12 inches, or 14 inches each way. One acre of seed-bed will plant about 15 acres of coleworts or about 20 acres of cabbages. Great care must be taken in the selection of seed of full germinating power and true to sort, and much attention must be paid to sow the seed deeply enough, yet not too deeply, in the seed-beds. In ordinary seasons cabbages will be cleared off by the end of June, and might be followed by wheat; or, if another crop of vegetables were desired, the ground might be prepared for autumn-sown onions; or a crop of potatoes might be obtained by putting them in as fast as the cabbages were cleared off. In early seasons sometimes a capital crop is grown in this way,* and in this case the land would then come in for winter tares, or be ploughed up for oats or barley. If dealers do not take the cabbages, they could be carted to the nearest town upon waggons with springs, made expressly for the purpose, which take huge loads; or to the railway station, where the cabbage can be moved into trucks, or the waggon itself taken to its destination on a truck, and brought back full of manure. 190 dozen of cabbages can be piled upon these vans, which are drawn by two powerful horses. About 1000 dozens of cabbages are produced per acre on an average, and the price ranges from 7*d.* to 1*s.* 4*d.* per dozen, and even higher occasionally. Cabbages also are planted in the spring for late summer or early autumn cutting.

ONIONS are a most paying crop, though more risky than cabbages, being liable to mildew, and entailing more outlay for labour. It is not well to crop the same field with onions more than once in five years. They may be taken after spring-sown cabbages, or mangolds, or carrots; or, as is done in Essex, cucum-

* There are quick growing kinds of potatoes, suited for this purpose. Among these is the Red Bog, which being planted at the end of April is fit to dig in August.

bers, which only stay in the ground a few weeks, are taken after spring cabbages, and onions follow the cucumbers. For onions it is required that the ground should be well worked, but at the same time it must have a fairly firm surface. If they are for seeding, or for pulling early, for which a sort known as the "two-bladed" is the best, it is better that the farmyard-manure should be scuffled in, and not buried by the plough. About 60 lbs. of seed are sown broadcast and harrowed lightly in, as early as possible in the spring, so that there may be no danger of frosts, which much injure the tender shoots.

Pickle-makers make contracts with growers for onions, and a considerable amount of labour is required to pull them and peel them. If onions are intended for "bulbing," that is for large bulbs for storing, very much less seed is sown. It is an expensive process to keep the ground free from weeds where pickling or salad onions are grown, costing from 4*l.* to 5*l.* per acre. The gross return in exceptionally good years amounts to 150*l.* per acre, as was shown in the Report on the Market-garden Farm Competition in 1879*. Lisbon onions are sown in the autumn for "bunching." About 50 lbs. of seed are sown broadcast upon well-manured and well-prepared land; the onions are pulled in May and June, and are sent to market in bundles containing as many as a man can hold in his hand arranged in a fanlike shape, packed in layers in baskets for salads and for eating in the way in which labourers so enjoy them, raw with bread and cheese. These return, in good seasons, as much as from 50*l.* to 70*l.* per acre.

CARROTS are also a favourite crop of market-garden farmers, who grow them upon a large scale, and it is not uncommon to see fields of seven and even ten acres planted with them. Gardeners who live near towns often make a good thing by getting carrots early, and a few pounds might be made in this way in many farm-gardens without much trouble. Carrots are extensively grown by market-garden farmers and market-gardeners for "bunching"—that is for pulling when quite small. They may be taken after potatoes, or coleworts, or cabbages. The land requires to be well ploughed in the autumn, and well-made farmyard-manure should be scuffled in, and about 10 lbs. of seed, mixed with a little finely triturated earth sown broadcast as soon in the spring as the weather allows. Pulling is commenced when they are about half an inch in diameter. From twenty to forty are put in a bunch. The bunches are packed in crates and baskets, and bring from 2*s.*

* 'Report upon the Market-garden and Market-garden Farm Competition, 1879,' by Charles Whitehead. 'Journal of the Royal Agricultural Society,' vol. xv. s.s. Part II.

to 3*s.* 9*d.* per dozen bunches, coming to market after the French early carrot season is over. From 300 to 400 dozen bunches per acre are a fair crop. This crop is a very little while on the ground, but entails considerable labour in keeping the land clean from weeds. Cabbages may be taken after carrots, or wheat, or winter oats; the Early Horn and James's Intermediate are the sorts usually grown. The Italian Early Market is also a good carrot.

PARSNIPS are a profitable crop upon suitable land. They require a deep tilth, or they become "forked." This can be obtained by means of a subsoil-plough, following the ordinary plough. Manure should not be directly applied for this crop; they may, therefore, well follow late cabbages, or onions, or Savoys, or even coleworts, as the most successful growers do not have a "stale furrow," but prefer to plough and sow as closely together as possible. The seed is drilled in with a seed-harrow, in rows fifteen inches apart, in the spring as soon as the weather permits, the plants being left about eleven inches apart in the rows. The Hollow Crown is the sort usually grown; indeed, there is scarcely any other sort. Parsnips are not dug until they are wanted for market, not being injured by frost. Parsnips can be followed by spring cabbages, for which a good coat of manure would be necessary, or by spring tares.

PEAS for podding are not, as a rule, very remunerative. Occasionally, however, it happens that a good hit is made, when, by good management, or from advantages of situation, a grower is able to keep his plant through a very hard winter, or has a specially good sort. If he is near a good town, a farmer might well plant a few acres of peas. Much also may be done in the way of growing seed-peas for seedsmen by contract, where conditions of soil allow. Sangster's William I. is a good early pea, and Sangster's Imperial No. I., Fill Basket, Forty Fold, and Veitch's Perfection, are suitable for growing crops to follow in succession. A fair crop of peas for podding amounts to about 150 bushels (of pods) per acre, and an average price, *wholesale*, is about 2*s.* per bushel. Market-gardeners put peas between cabbages, and have many schemes for getting two crops from the same ground in the year; but farmers would hardly get labour enough for this system of double cropping. Still, in many circumstances, it would be well for them to watch their opportunity, and take lessons from market-garden practice. Thus, to quote the Report before alluded to, it is said of a market-gardener, "He sows onions, carrots, parsnips, spinach, peas and potatoes, in the early spring, after the winter green-stuff—such as hardy greens, or coleworts, Savoys, and purple-sprouting broccoli—has come off the land. After early cabbages, which should be cut in ordinary seasons by the end of May, he

plants potatoes, scarlet runners, French beans, blue peas, beet, marrows, cucumbers and summer lettuces." Market-gardeners never lose a chance. Market-garden farmers are equally on the look-out for a "catch crop," and farmers who may add vegetable-growing to their business will do well to follow their example.

CAULIFLOWERS sometimes give most satisfactory returns, but as they require protection during the winter, they cannot compete on anything like equal terms with those grown in Cornwall, France, and the Channel Islands. Occasionally there are winters through which cauliflowers would live, but the risk is too great to plant them on a large scale, therefore it is better to get a supply of plants grown under glass, or in protected places, and plant them out as early in the spring as possible. Farmhouse-gardens in many respects are admirably suited for rearing and protecting these plants, and indeed for producing early cauliflowers, which in some seasons are worth almost their weight in coppers and pay well for care. Cauliflowers must have good land and a deal of manure, with considerable moisture. In other respects they are cultivated in the same way as cabbages; the plants being reared in seed-beds and set out on the land when the weather permits, from 24 by 18 inches to 24 by 24 inches apart, depending upon the quality of the soil. Mitchell's Hardy Early, Early London—more delicate—and the Dwarf Mammoth, Veitch's Autumn Giant and Walcheren, are good sorts; and it is best to arrange a succession of sorts, so that the supply may be continuous.

BROCCOLI will bear ordinary winters, and should be sown so as to ensure a proper succession of heads.* It may easily be arranged that there should always be broccoli fit to cut. They are cultivated like cauliflowers, and set the same distance apart. The best sorts are the Hardy White, Snow's Winter White, Adams's Early, Grange's Early White, Early Penzance, and Leamington.

A few acres of cauliflowers and broccoli might be most advantageously grown upon farms having good land, and within reasonable distance of a town or of a railway-station, as they generally are most saleable commodities. They may be tried at first in a small way, and their cultivation could be extended if it was found that the surroundings were suitable and that they were profitable.

BRUSSELS-SPROUTS—CHOU DE BRUXELLES—are exceedingly good greens to grow for winter use, and have a sweet flavour after winter frosts. The habit of this is to produce many

* Mr. Shirley Hibberd, in his 'Profitable Gardening,' says, "It is a mark of good management if the gardener can cut broccoli or cauliflowers any day in the year, and to do this requires that sort of headwork which, as Cowper says, 'Forecasts the future whole.'"

sprouts or tiny cabbages upon a long stalk; successions of these follow on the same plant throughout the winter and the spring; when the summer comes they go to seed. They are remarkably hardy and bear the coldest winters. No farm garden, nor any other garden, should be without these. They may be cultivated with advantage by market-garden farmers, and are largely grown in market-gardens near London. The plants are picked out in April in rows 22 inches apart and 18 inches from plant to plant. It is said that the English-grown seed is not to be relied on, and that the only neighbourhood where the seed is to be depended on is Brussels.

LETTUCES may be deemed as hardly being vegetables for growth upon a large scale; but this crop sometimes makes a deal of money, without being very expensive to cultivate, and if vegetable-growing is seriously undertaken, no kind should be beneath consideration. They may be specially grown in the garden of the farm, in beds in the warm corner of many old farmhouses, or protected by hand-glasses; for English lettuces, fresh and firm, make long prices in the early spring-time, in spite of the competition of French market-gardens. The great object is to get lettuces very early in the spring, and for this, of course, the plants have to stand the ordeal of the winter. Lettuces require a fairly good soil. Cos lettuces, or the crisp, juicy varieties, with erect leaves, which the English prefer, do best upon loam, or loamy clay-land, or even upon well-farmed, stiff clay. Cabbage lettuces, or those more resembling cabbages in shape, of which the best sorts are the Dutch, Asiatic, Hammersmith, Imperial Ice, which never bolts or runs to seed, will thrive upon sandy or chalky soils, if properly cultivated and well manured. The best sorts to stand the winter are the Bath Cos, Hammersmith, Silician, or Paris Cos. The seed should be sown about the first week in August broadcast, upon a well-prepared bed. About half a pound of seed is sufficient to furnish plants enough for an acre. Unless the winter is very severe, these will be ready in May, and almost invariably make long prices. It would answer well to shake a little rough litter over them during the worst winter months. Enterprising men might invest in bell-glasses, which would ensure the preservation of the plants, and very early readiness for market. Lettuces for summer use are transplanted from frames or seed-beds in May, June, and July, with due regard to the succession of sorts and supply. Lettuces imported from France from January to June, make from 9*d.* to 1*s.* 2*d.* per dozen. English lettuces coming to market in the latter part of May, make from 8*d.* to 1*s.* 3*d.* per score, and an average crop is about 1400 score per acre. Autumn-sown lettuces may follow onions, or late cabbages that have been

heavily manured. Those planted in May and June might come after coleworts or spring cabbage.

Radishes are much cultivated by market-gardeners. The turnip-radishes, of which the best kind is the French Breakfast radish, are sown broadcast upon beds five feet wide, with a space between each, either in the late autumn or in the early spring. In the former case the plants must be lightly covered with litter. Spring radishes are only a short time on the ground, and would come off together with autumn-sown radishes in time for lettuces, French beans, or marrows. They are sent to London in bunches, each containing a large handful, and are sold at from 4*d.* to 8*d.* per dozen bunches. There is a great demand for well-grown English radishes throughout the spring and early summer, especially after the season of those imported from France is over. It is not suggested that radishes should be universally grown. They may, however, occasionally be taken as a crop by farmers who have land of fine tilth particularly adapted for market-garden culture, and they are just one of the subjects for cultivation in the home garden.

French Beans and Scarlet Runners are grown extensively upon market-garden farms in Essex and Surrey. Both these are delicate plants, and require a fine tilth. The land is ploughed twice, manure not being directly applied. The seed is dropped by hand in drills made with a hand-plough. French beans are set 2½ feet apart, and 8 inches or 9 inches in the drill. Scarlet-runner rows are put 3 feet apart, and the seeds are dropped into these about a foot distant. These are very delicate plants, and are cut up by the least frost, and, when the plants are young, are injured by excessive wet. Slugs do great harm to them. Stakes are not put to scarlet runners in the field. Their habit is dwarfed, and made upright by cutting off the tops of the shoots. It should be borne in mind that French beans have not much chance of ready sale when there are plenty of scarlet runners ready.

Celery is most profitable in soils and situations that suit its growth. Well-grown, well-blanched, short-eating celery is always a most saleable commodity. The cultivation requires much care and involves considerable expense, and is perhaps, as it may be thought, more suited for market-gardeners than for farmers, but there is no reason why it should not be more largely grown in farm gardens and for market purposes. There are market-gardeners near London who grow as many as 50 acres of celery. The seed should be sown first in frames with a little heat, towards the end of February, from whence the plants are put out into rows 5 feet apart, with a few inches between each plant. Quantities of well-rotted manure must be put on before

the plants are put into rows or trenches, which should be dug out to a depth of from 1 foot to 15 inches. When the plants are about 16 inches high they should be earthed up slightly. After a short interval they should be earthed up again, and this must be repeated until the earthing-up is completed. Celery may be planted after cabbage, or broccoli, or early lettuces, and the plants are put in early in May.

Marrows and Cucumbers are grown upon market-garden farms, but their culture is somewhat hazardous, though they do not remain long on the ground. The least frost, or too much wet, injures the plants. Some growers sprout the seeds in flannel, but this renders them delicate. The seed is put in rows 4 to 5 feet apart, early in May. The plants are rarely transplanted where cucumbers are grown on market-garden farms. There are special kinds of cucumber for growing in the open air, and upon ridges, among which are the Early Short Prickly, Sutton's Perfection, Rabley Prolific. Between the rows a drill of rye is put in as a shelter. Occasionally scarlet runners are grown between the rows to serve as a protection. These cucumbers make from 3*s.* to 4*s.* per barrel; from 175 to 200 barrels are grown per acre.

Tomatoes are not grown nearly so much as they should be; the taste for this vegetable is increasing rapidly, both for eating raw, according to the American fashion, or for boiling or baking. They thrive well under the protection of buildings, and there are many neglected corners and borders near farmhouses and farm-buildings where tomatoes would flourish, protected from fowls and other creatures by galvanised wire-netting. Plants may be obtained by sowing seeds in shallow pans or boxes in March and April, and transplanting into pots, and finally, when large enough, they should be topped and planted out. The great thing in the cultivation of tomatoes is to keep pinching off the heads continually and to cut away all secondary shoots on which no flowers are forming. Or five or six seeds may be sown towards the end of April where the plants are required, so that no transplanting is necessary, and the strongest plants should be retained and trained to a wall or to a stake, and the pinching and topping process done as often as necessary. The plants require watering if it is dry, in their early stage.

Cabbages, Cauliflowers and Broccoli Plants may be grown for sale with good results. Upon a farm in Essex, visited in 1879, several acres of cabbage-plants were sold at 40*l.* per acre, having only been eight weeks on the ground. The seed was sown in August, and the plants were cleared off by October, in time for wheat to be sown. A splendid crop of carrots (bunched) had been cleared off in July.

The cultivation of seeds is frequently productive of much profit, especially of ONION-SEED, and MANGOLD- and TURNIP-SEEDS, which are grown very advantageously by market-garden farmers and by farmers. Mangold-seed is grown from seed drilled in a seed-bed at the rate of 1 cwt. per acre, which will give plants enough for 6 acres. The plants are left in the seed-bed till early in April, when they are transplanted in rows 20 inches apart, with intervals of 20 inches between each plant, in the rows. Cutting is done in September before the seed is fully ripe, as it will run out if it is allowed to become too ripe. The seed-stalks are bound up in small sheaves and are thrashed by a machine. An average crop of seed is about 18 cwt. per acre. Prices run from 28*s.* to 60*s.* per cwt.

SEED-PEAS are also grown in parts of Kent, Essex, and other counties to great advantage. These are generally grown for seedsmen, who find the seed and pay so much per quarter for the produce. In a few cases farmers grow seed-peas on their own account. There is a demand in America for good sorts of peas for podding, which farmers may just as well supply as the seedsmen.

TURNIP-SEEDS of different sorts are grown from plants transplanted from a seed-bed in November, and set at about the same distance as the mangold-plants. The stalks are cut in July. An average yield is 25 bushels per acre, and the price runs from 14*s.* to 25*s.* per bushel.

RADISH-SEED is generally obtained from seed sown in the spring, with the surplus plants hoed out. An average crop is 22 bushels per acre, and the price is about 20*s.* per bushel. It is a bulky, troublesome crop to harvest.

There are other seeds that might be grown by the farmer, and other vegetables and herbs that could be cultivated. POTATOES have not been alluded to, as they are already largely grown by farmers. Market-garden farmers do not, as a rule, grow many potatoes. When they do grow them they generally plant early sorts, and send them to market directly they are fit to dig. TURNIPS also bring high prices in some seasons, and there would be no difficulty in getting an acre or two sown with White Dutch or Early Stone turnips in March for market, if prices were good; there would be no loss here, as they would come in for the sheep if they could not be sold. Various small things might be raised in farm-gardens which would bring in ready money and be very profitable. These cultures should not be despised because they are trifling and insignificant. Parsley, mint, thyme, beet, asparagus, and other herbs and vegetables are among these things. Those that have been enumerated above are the most important, and most suitable for cultivation upon

a large scale. When the cultivators have found out the pleasant results of growing those that have been described, they will be keen enough to adopt any others which they may think will pay.

Fruit-Growing.

Many of the remarks that have been made concerning vegetable-growing will equally apply to fruit-growing. By far the greater part of the land in England will grow fruit of some sort or other. The sorts that may be peculiarly suited for certain districts may be ascertained from examination of the fruit-trees in the gardens, and, at least in the case of quick-growing bush fruit-trees, by planting some as an experiment. The garden of the farm should be made the base of operations with fruit-trees as with vegetables, and the extension of their culture may be made large or small, with these fruits, or with those fruits, according to circumstances. It would for instance be most unwise to form an apple-orchard or a cherry-orchard or plum-orchard in a locality where these fruit-trees had previously not been cultivated, until careful inquiry had been made and the opinion of experts obtained; or to plant any particular sorts of these without first finding out, as far as possible, whether it were likely that the conditions of soil, climate, and situation would suit them.

A tenant would hardly plant fruit-bushes or fruit-trees unless he had a lease; he should also have a guarantee of payment for the increased value that he had imparted to the land. He would hardly be justified in planting standard fruit-trees unless he were assured of definite and sufficient compensation for this improvement. In some fruit-growing counties it is customary for the landlord to find the standard trees and the tenant to pay for planting them, but no special compensation for unexhausted improvements is allowed. In the Agricultural Holdings Act planting orchards is one of the thirteen improvements of the first class, which continue unexhausted for twenty years, and it would give a stimulus to fruit-planting if tenants could be guaranteed compensation even at this rate, which, however, is not by any means adequate in the case of apple, pear, and cherry-trees. The uncertainties of land-tenure have much hindered the increase of fruit-land. Some few tenants who are of a confiding nature and have "long leases and practical landlords," as a large fruit-grower remarked lately, do plant fruit-trees; but most tenants are bound to require something more than this before they thus improve the property of other persons. To make fruit-plantations, and apple and cherry-orchards espe-

cially, is to improve land in an extraordinary degree, more particularly in these days, and owners of land should encourage this by taking upon themselves a fair share of the cost, and by guaranteeing just compensation.

Supposing all difficulties of this kind adjusted, the farmer willing to try fruit-growing cannot do better than plant red currant, or black currant, or gooseberry-bushes, either by themselves or with standard or half-standard apple-trees among them, or plum- and damson-trees, or pear-trees, according to circumstances. He must select a fairly good soil and the best-sheltered situation.

Gooseberry and red currant-bushes do well on light, porous land or in good loam and clay-loams. Black currants require a deep soil, retentive of moisture, and will thrive in all the better descriptions of clay land. These bushes should be set 6 feet apart each way, which would take 1210 bushes. The land should be well manured and deeply steam ploughed, or ploughed deeply, with a subsoil-plough following. If standards are put in they should be set, if apple-trees, from 24 to 30 feet apart each way, which would give 75 and 48 trees respectively per acre. Plum and damson-trees would be put about 15 feet apart each way, or 193 trees per acre. Should no standards be planted, the bushes may be put $5\frac{1}{2}$ feet apart each way, giving 1440 to the acre. Upon strong land black currants should be set 6 feet apart, as their growth is very luxuriant.

Gooseberries.—The plants are easily raised by taking straight pieces of the cuttings 8 inches in length from the bushes, and setting them in rows, in a nursery in the autumn, without taking out any of the eyes, or buds. In two years they will be fit to plant out if carefully tended, and in two years after they will have fruit worth picking. Good plants can be bought in fruit-growing districts at from 6*s.* 6*d.* to 12*s.* per 100. Pruning is done from October until the end of January. The rank-growing shoots and branches are cut away, and a moderate supply of young wood is left in the bush, which should be shaped like a cup. The branches should be trained to droop somewhat. If cut in this way they do not feel the effects of spring frosts so much as if they were left to grow quite upright. The choice of the sorts of gooseberries must in a degree depend upon the locality, but in most places those named below may safely be planted. For example, the Whitesmith is a capital gooseberry for picking green, and comes early, but is not so good for sale when ripe, as consumers like red fruit best, which always has a bitter flavour. The Early Sulphur is also good for picking green. When ripe it is yellow, and of second-rate quality. The Crown Bob is a famous sort, with a large

red fruit, and answers for picking green or ripe. Probably the best of all is the Warrington for picking green or for picking ripe for preserving. It is an early sort for picking green, yet is about one of the last to come to full ripeness. A good proportion of a farm plantation should be planted with this. The Lancashire Lad is a useful sort for farms, as also are the Red Rifleman, Golden Drop and Monarch. There are other sorts raised in Lancashire, the great centre of prize gooseberries concerning which fables are narrated. Of these the best are the Roaring Lion, Leveller, Leader, Napoleon, and Careless. These may be cultivated with good results in the gardens attached to farms, and should be sent for sale in small quantities, being showy fruit, and should be packed in neat baskets and tastefully set off. The garden may also be turned to good account in the production of early gooseberries in sheltered spots, for sending to market green for puddings and tarts, for which sometimes as much as 8*d.* or 9*d.* per lb. is given. The ground is dug with a three-pronged spud in the winter, and is manured with rags or shoddy, or refuse substances. It is hoed in the summer once, or twice if necessary. Directly the berries are large enough the bushes are picked over, and the largest are sent to market, when they make from 3*d.* to 3¼*d.* per lb., or even more at the beginning of the season; but the price soon falls to 2*d.* and 1½*d.* per lb., and even to 1¼*d.* per lb. An average crop from gooseberry-bushes in full vigour would be between 6500 and 7500 lbs. per acre, and the price between 1½*d.* and 2*d.* per lb. Occasionally, when the soil is well suited for these bushes, very large profits and very quick returns are made. The expense would depend upon the amount of the crop, in respect of picking, carriage, and salesmen's charges. The expenses in connection with the cultivation alone would range from 10*l.* to 12*l.* per acre, and all other charges in the case of an average crop would amount to 7*l.* or 8*l.* per acre. There is a very great demand for this fruit for bottling and preserving, as well as for eating. Gooseberry-bushes are liable to be attacked in the early spring by the larvæ of an insect known to entomologists as the gooseberry sawfly (*Nematus Ribesii*). To prevent this, it is desirable after an attack to dig quicklime, or lime-ashes or soot, close round the bushes in the late autumn. Syringing with soft soap and soda and water has been found efficacious. Sprinkling with powdered hellebore also is effective, but it is dangerous to apply this when there is fruit on the bushes, as hellebore is a deadly poison.*

* See 'Manual of Injurious Insects, and Methods of Prevention,' by E. A. Ormerod. Sonnenschein and Allen, Paternoster Square.

Red Currants.—These bushes are propagated in the same way as gooseberry-bushes, from cuttings put in a nursery. The length of the stem can be regulated by the number of "eyes" retained on the cutting; but it is generally better to let the stocks be short. Bushes may be taken out from the nursery after the second year, and put 5½ feet apart, or 6 feet if standard trees are planted with them. The distance at which currants and gooseberries are put, whether 5½ feet or 6 feet, must depend upon the quality of the soil to some extent. Currant-bushes must be kept cup-shaped, and the terminal shoots should be pruned to lengths of from 6 inches to 9 inches, according to their vigour. Laterals should not be pruned away, as in gooseberry-bushes, but cut back, so that spurs may be formed, upon which the fruit is grown. The best sorts are the Scotch, the Imperial, Red Dutch, and the Raby Castle. There is a kind of red currant known as the Queen Victoria, whose bunches and berries are exceedingly large and fine. This is particularly adapted for growing in the gardens of farms, as it requires rather more care than other kinds, and the fruit makes a good display. If it were packed in small neat boxes, or baskets, and set off with coloured paper, the fruit would bring good prices in London, Brighton, and other places. Here, again, the garden of the farm may well be utilised. Bushes may be bought of fruit-farmers at from 6*s.* to 9*s.* per 100. An average crop is from 4500 lbs. to 5200 lbs. per acre, and the price runs from 1¾*d.* to 2¾*d.* per lb., while the amount of expense per acre is about the same as in the case of gooseberry-bushes. There is a very large and increasing demand for this fruit for jelly, jam, and for bottling.

Black Currant-bushes, as has been said, require a deep, moist soil. They are easily propagated by cuttings. Care should be taken not to cut these too long, nor to remove the buds, as the bushes should have very short stems or stocks. In fact, in most cases black currant-bushes do not grow from a single stem, as in the case of gooseberry and red currant-bushes, but are stocks close to the ground. As the fruit comes on seasoned wood of the previous year, the young wood requires to be pruned away. After the first year or two no shortening of leading spurs is required, and the pruner need not be afraid of cutting hard, at least when the bushes are on kindly land. Bushes can be purchased of fruit-farmers at from 6*s.* to 9*s.* per 100. The cultivation and manuring are exactly the same as for gooseberries and red currant-bushes. The best sorts are: Naples, the Green Bud, Baldwin's, and Lee's Prolific. There is a sort called the Prince of Wales, which has large berries and comes

later than the other sorts. This fruit occasionally pays remarkably well. In very hot seasons the berries are apt to run off, especially if there is not much natural moisture in the soil. An average crop would be about 2800 lbs. per acre, and the average price 3*d.* per lb. Expenses of cultivation, picking, packing, carriage, and commission upon an average crop would come to about 17*l.* per acre. This fruit always is in great demand for jam, jelly, lozenges and, as some say, for port wine.

RASPBERRIES are grown upon "canes" or stems, pulled up from established stocks in the autumn, and put into well-ploughed or deeply-dug ground, in rows 5 feet apart, and 15 inches in the rows. The cultivation afterwards is like that of gooseberry and currant plantations, except that some planters use horse-hoes between the rows of canes. Raspberry canes cultivated on a large scale are not staked, but are left to support themselves, and are cut down in the late autumn to about 3 feet in height; the older wood is cut away, and all superfluous young wood. They require a fairly good soil, not too porous, as they do not bear drought well. The Red Antwerp and Fastolf are usually planted. Carter's Prolific is also coming to the front, having large well-coloured fruit. An average crop is about 3000 lbs. per acre, and the price about 3*d.* per lb. There is a great demand for this fruit for jam, and raspberry vinegar, and for many concoctions and confections. It may be said here that many of the numerous non-alcoholic beverages so much in vogue, and steadily increasing in favour, are flavoured with, or partly composed of, fruit extracts. Raspberry culture necessitates a good supply of women for picking the fruit, as the canes want looking over many times. Raspberries are largely grown in Kent. Some growers have from 20 to 40 acres. They are picked into galvanised iron pails, and sent to market in tubs, with lids to them, because their juice easily escapes. Some of the finer fruit is sold for dessert purposes, and should be carefully packed in small baskets, or better still, in small earthen crocks, holding from 7 to 14 lbs. These are much used for raspberries and strawberries by fruit-growers in Derbyshire and other Midland and Northern counties, and are cleaner, and retain the juice much better than baskets, and should be adopted in Kent and other counties where these juicy fruits are produced for sending small quantities of fruit to market.

We have much to learn in the modes of packing and arranging fruit. Those who intend to grow fruit extensively would do well to go to Covent Garden Market, and notice the packages of the French and other importers of fruit, which are much smaller and neater, and, it must be said, far cleaner than the

"sieves" and "half-sieves"* in which much of the English fruit is packed; many of these are dirty in the extreme, and wholly unfit to put fine fruit in.

STRAWBERRIES may be profitably grown in most of the lighter clays, also upon loams, and upon the better sandy soils. Upon loams and good descriptions of clay, the plants will continue to bear well and pay for several years. Upon some soils they will only pay for three or four years. In parts of Kent, upon the London Clay, and Greensand, they will last for six or eight years. They are propagated by runners taken from the best plants directly the fruit is picked, and are put in a nursery, and transplanted from thence in the autumn. Or the runners are left on the plants till the autumn, by which time many have thrown out roots; these are cut away and put at once into the ground in rows, 30 inches apart, with a distance of 18 inches between each plant. Some put the plants 30 inches apart each way, or 3000 plants per acre, so that the ground between may be horse-hoed. Early potatoes may precede strawberries; the land should be well manured and deeply ploughed, and subsoiled if necessary. Just before the fruit is changing colour the ground is covered with rough farmyard-manure or litter, laid all round the plants, to keep the fruit from the dirt, to stimulate the growth of the plants, and to retain the moisture. Picking is done by men and boys very early in the morning, and necessitates a good supply of labour. Women pack the fruit for dessert in punnets, which are put into deal boxes, holding five dozen. In some districts the best fruit is put into earthen crocks or pots. Inferior fruit is put in tubs, and sent to jam markets. For this there is a very extensive demand. The average price of the fruit is about 6*d.* per lb. An average crop would be about 3000 lbs. per acre. Frequently as much as 5000 lbs. have been grown per acre. Keen's Seedling, Princess Alice, Dr. Hogg, Refresher, La Grosse Sucrée, Elton Pine, Eleanor, Comte de Paris, Sir Joseph Paxton, are among the best for field purposes. It is curious to notice how little attention is given to strawberries in the ordinary farm-gardens. The bed, in all probability, has not been changed for many years, and is a thick mass of roots and runners, instead of having been moved every four or five years. The fruit may be profitably grown upon banks and side ground which it is difficult to cultivate. It always meets with a ready sale, either raw or made into jam.

* Half-sieves are generally used for gooseberries, currants, and cherries in Kent, and the weight is made up to 24 lbs. for currants and cherries, and 28 lbs. for gooseberries. Raspberries are sent in tubs holding ½ cwt. In other counties various sized baskets, called "pots" in some places, are used.

There are fruit-growers in Kent who have from 80 to 120 acres planted with strawberries.

FILBERTS AND COB-NUT-TREES are grown from suckers or spawns taken from old trees, or pieces cut from the tree, as some prefer, and put in a nursery. In two or three years they are planted out about 13 feet apart, or 257 trees to the acre. A tolerably light soil is best for them, although they thrive remarkably upon the Atherfield Clay, in Kent, which is heavy and adhesive. They also do well in what is termed in Kent "stone-shattery" land. It is necessary that they should be in a position sheltered from the prevalent winds. Standard apple- or plum- or damson-trees are usually put with them in Kent, and currants and gooseberry-bushes are set between the rows, which are taken away when the nut-trees attain a good size. After four or five years a little crop may be expected, and after eight years they will yield a good quantity. The ground is dug in the winter with a three-pronged spud, and hoed once or twice in the summer. Rags, fur, or fur waste, shoddy and refuse manures are applied, not very lavishly. From one and a half to two tons of rags or of shoddy every other year form a sufficient dressing. Pruning requires great skill and care to keep the trees in cup-shape, with the inside as clear as possible. Every branch is examined by the "tree-cutter," who leaves the finest young wood, and cuts away the older and coarser branches. In height, full-grown trees are about 6 feet. Cob-nuts are more cultivated now than filberts, as the nuts are much larger and are more saleable. Owners of land, or tenants with long leases and agreements for compensation, might plant nut-trees to great advantage in places where the soil and situation are suitable. These nuts are packed in ordinary sieves, like other fruit, and consigned to salesmen in London, and are in great request, making from 7*d.* to 1*s.* 4*d.* per lb. An average crop is about 8 cwts. per acre. A demand for cob-nuts has arisen in America, and it is likely that as the nuts produced in that country have not the same flavour as the English, this will assume important proportions.

APPLE-TREES are planted either upon grass-land or in plantations upon cultivated ground, with fruit-trees or bushes under them. In Kent filbert- and cob-nut-trees are frequently put under apple-trees, and sometimes gooseberry- and currant-bushes are set between the filberts. There is not much difference between the yield of apples upon grass-land and plantation, or cultivated land. Some hold that the fruit grown upon grass-land is more plentiful and of better colour and quality; while others say the same with regard to the fruit produced in plantations. Apple-trees require a fairly good soil and a deep subsoil. They

will not do well, for instance, upon land with a depth of a few inches upon chalk, nor with a gravelly subsoil, nor upon clay with an undrained, impermeable substratum.

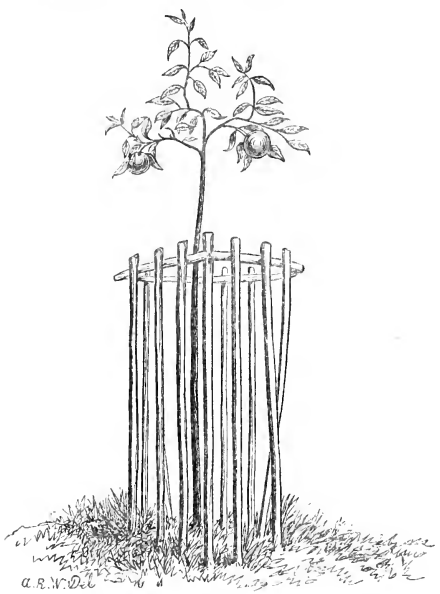
The aspect of the orchard or plantation should depend upon local circumstances. It should not be too much exposed to the prevalent wind, and a sheltered situation is desirable if it can be obtained. Protection from the east wind is thought advisable, as it generally happens that a cold wind prevails from this quarter in the early spring, and checks the development of leaves and blossoms and encourages the increase of aphides and other injurious insects.

Standard apple-trees are raised from crab-stocks, grafted with scions of the required sorts ; or from stocks raised from the pips of apple-trees, having hard clear wood, and grafted with the sort required. Crab-stocks are the best. Grafted stocks are fit for planting out when they are from four to six years old. In selecting standard trees for orchards or for plantations, preference should be given to those which have long stems. These ought to be at least 6½ feet from the fork to the ground, so that the branches are out of the way of cattle in the former case, and well above the under fruit in plantations. Apple-trees are planted about 30 feet apart each way, which gives forty-eight trees per acre, when bush fruits are to be put with them ; and 24 feet apart, or 75 trees per acre, upon grass-lands ; but the distance must be varied in a degree according to the soil and especially to the sorts planted, as some sorts have a more luxuriant and widely-extending habit of growth than others.

Planting should be done early in November. It is most important that the trees should be well established before the frosts set in, and the practice of planting in the winter or in the spring cannot be too much deprecated. Holes should be dug at least 3 feet 6 inches in diameter, and the subsoil should be loosened by the spade or spud to a depth of 2 feet. Care must be taken that the tree is not put too deeply in the ground. Three or four strong branches are enough to form the heads of standard trees. All other shoots must be removed. After this they will require very little pruning, but should just be looked over every year or two, and any superfluous shoots cut away, to keep the middle of the tree from being crowded by crossing or interlacing boughs. Stakes must be put to the young trees at once to prevent them from being moved by the wind ; the trees must be protected by wisps of straw or rags, from injury by the cutting of the strings tied round them, and should be carefully examined every year to see that the strings are not too tight. Protection from cattle, sheep, and rabbits, is most essential. Not half enough attention is paid to this and other details. If

a tree is barked by animals in the least degree, it generally cankers and is unhealthy. Where no cattle are grazed, cages of galvanised wire of a fine mesh put round the trees about 4 feet high and 8 inches in diameter, at a very small cost, will serve to keep off sheep and rabbits. A fence against cattle and horses may be made by driving split fence-rails cut into "slats," or lengths of 8 feet, and $1\frac{1}{2}$ to 2 inches in thickness and width, into the ground, and fastening them at the top with braces, according to the appended figure (Fig. 1). The pieces should be creo-

Fig. 1.—*Illustration of a protecting Fence to a Fruit-tree.*

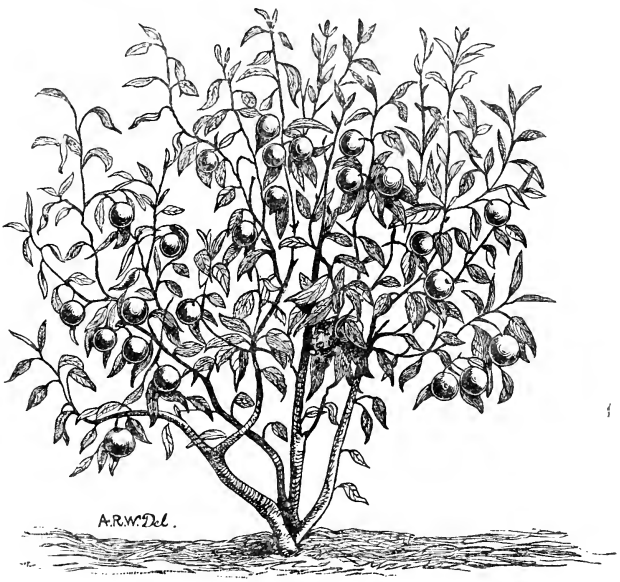


soted, as all posts and parts of fencing that go into the ground upon farms should be, and with care they will last pretty well until the tree is out of danger. Good trees can be purchased at about 4*l.* 5*s.* per 100 ; but fruit-planters should not mind a little extra cost to ensure good trees of the sorts desired. They must be careful to buy only of respectable nurserymen, or of fruit-growers of standing, and should require full guarantees. The cost of planting, staking, and fencing would be from 4*l.* to 8*l.* per acre. In plantations the trees only require to be protected against rabbits by cages of galvanised wire-netting. The best manure for apple-orchards is farmyard-manure laid round the trees, or manure from sheep, cake or corn fed. Superphosphate, bones, nitrate of soda, and potash may be occasionally used with

advantage. Rags, fur waste, and refuse manure are used in plantations. As to the sorts of apples much must depend upon the locality. As a rule, however, the following may be planted: —For cooking purposes, the Early Julien (ready in August); Keswick Codlin (September); Manx's Codlin (September); Lord Suffield, a famous apple (September and October); Cellini Pippin (September). The Ecklinville Seedling, Old Hawthornden, Stone's Apple, or Loddington Seedling, New Hawthornden—a capital apple, follow on in November; and for the winter months, keeping up to the spring, there are none better than the Blenheim Orange, Northern Greening, Lady Henniker, Golden Noble, Lord Derby,—a magnificent apple, Winter Queening, Grenadier, Wellington, Warner's King, Norfolk Beaufin, and Gooseberry Pippin. Among dessert apples, the best and earliest is Mr. Gladstone, a new and beautifully-coloured fruit, ripe in August. The Red Juneating, the Early Strawberry—a perfect picture, and the Red Quarrenden, also handsome, are ripe in September. For September and October the sorts would be the Worcester Pearmain, one of the most brilliantly-coloured apples that can be seen; the Red Astrachan, a lovely combination of red and white; and the Summer Nonpareil; and for keeping, the Ribston Pippin, Cox's Orange Pippin and the Margil, both these last being of exquisite flavour, exceeding that of the American New Town Pippin; Court of Wick, Claygate Pearmain, Mannington Pearmain, King Pippin and Blenheim Orange, Gascoyne's Seedling and the Golden Knob. Some of these, notably Lord Suffield, Stones and Keswick Codlin, come into bearing after a year or two. In ten years there would be a good return from most of the trees, if they had been well-selected, well-planted, and properly managed. Half-standards are sometimes put in plantations. These trees should be formed by working upon a stock known as the Doucin, which exercises a dwarfing influence upon the habit of growth, and causes early fruiting. These stocks are worked close to the ground, whereas, in the case of standards, the crab- or apple-stocks, grown from pips, are worked standard high. The trees may be allowed to grow up with a single stem as high as it is wished, and a head formed as in standards; while the side growth should not be cut away, but pruned, or tipped, and its growth regulated according to fancy. The advantages of these, both for gardens and plantations made by tenants, are that they come to fruit quickly, that they may be set much more closely together, and are less liable to cankered disease, and that the fruit is finer. Their cost is about the same as that of standards, and they may be set 16 feet apart each way without any fear of crowding, if they are warranted to be upon the proper Doucin stocks. For gardens apple-

bushes are coming into general fashion and high favour, inasmuch as they come into bearing in about three years from the grafting, and remain bushes without hacking and excessive cutting. For these the true English Paradise stock, of dwarfing nature, is used and grafted close to the ground. Bushes of this kind can be put anywhere in gardens, from 7 to 10 feet apart, and are things of beauty in leaf, in bloom and in fruit. A plot planted with bushes of various kinds of apples is as pretty as a variegated flower-bed, when the blossoms are out, and even prettier when the fruit is ripening. A sketch of a Margil * apple-bush, in my own garden, is given here as an illustra-

Fig. 2.—*Sketch of a Margil Apple-bush.*



tion of the shape of a typical bush. This is only four years from the graft, and has thirty-one apples upon it of fine size and lovely colour, and bore half this number last year (Fig. 2). That these apple-bushes are profitable goes without saying, and it is believed that they would be immensely profitable if cultivated upon a large scale, either by themselves or with gooseberries and currants. They are suitable for tenants, as paying at once, bearing removal ; in fact, being benefited by being lifted

* The Margil is a beautifully-coloured apple of Ribston Pippin flavour. Dr. Hogg says, "It is one of the finest dessert apples, a rival of the Ribston Pippin, exceeding it in juiciness, and being a better size for dessert."

occasionally. Bushes of this kind that were transplanted last March were full of rosy apples in October. Very little pruning is necessary for bushes, and they may be cultivated most profitably in the gardens of farms, as they take up little space, and their fruit is usually well-grown, and but little attention to them is necessary. It would be well if farmers would grub up the wide-spreading, rarely-bearing fruit-trees of common kinds, which take up so much space in their gardens, and in the customary orchards near their houses, and plant bushes or pyramids which would be highly ornamental and certainly profitable. A little pruning and pinching the shoots is all that is required. Their prices range from 1*s.* 6*d.* to 2*s.* 6*d.* each. But planters must have a guarantee from the nurseryman that they are *bonâ fide* Paradise stocks and not crab-stocks. Everything depends upon the stocks in these as in other fruit-trees.

With regard to the demand for apples, it is very great and increasing. Within the last few years a demand has arisen even for the most common apples for mixing with other fruit for jam—to serve as "stock" in fact. Dessert apples of good colour and flavour are always most saleable. Consumers of such fruit well know what high prices they have to give for it, even in the most plentiful seasons. In short, it cannot too strongly be iterated that a wide field is open to occupiers and owners of land and the possessors of the humblest garden for the culture of apple-trees according to the best systems; and that by planting well-selected, well-raised trees, either half-standards or pyramids, or espaliers, or cordons, or bushes, a quick return may be insured.

PEAR-TREES are more delicate than apple-trees; their blossoming is earlier, and therefore at a more critical season, while they do not bear extremely hard winters so well.

Pear-trees are largely cultivated in East Kent and Gloucestershire upon grass and in plantations, and in Herefordshire and Worcestershire upon grass. There is no reason why their cultivation, and especially of the finest sorts, should not be largely extended in all but, perhaps, the most northern counties of England. Fine-grown pears always are in great request, at full prices, at least to consumers.

The methods of planting, of protecting, of the general management, and pruning are very similar to those described in the case of apple-trees, though the distance between the trees may be somewhat lessened, unless plum-trees or damson-trees are planted between the pear-trees, as sometimes is done by fruit-growers in Kent, where they are set 12 yards apart. Half-standards raised upon Quince stocks may be set much more closely in plantations; and bushes may be set more closely still, and planted with very good results, both in large plantations and

in gardens. Pears can be grown just as well as apples upon bushes and pyramids, and any one may have the finest fruit in his garden, in the garden of the farm and in the fruit-plantation, at a small expense, with but a little attention, and quickly. The old saying that one "plants pears for his heirs" is no longer applicable. For bushes, well-selected Quince stocks are grafted close to the ground. For standards, clean pear-stems are grafted at standard height. In America pears are extensively grown upon bushes. Some time ago an account was given in an American paper of the return of a dwarf-pear plantation, which was 120*l.* per acre, at ten years old. The best sorts of pears for ordinary culture are Doyenné d'Été, Chalk (July); Lammas, Windsor, Caillot, Rosat, Bellissime d'Automne (August); Williams' Bon Chrétien, Yat, Bergamot, Hessle—a very prolific pear, Marie Louise, Eyewood (September); Beurré Bosc (October); Beurré de Capiaumont, Duchesse d'Angoulême, Rondelet, Catillac, Bishop's Thumb, Broom Park. For pyramids or bushes, the following sorts are suited:—Doyenné d'Été, Beurré Giffard, Beurré d'Assomption, Souvenir du Congrès, Gratioli of Jersey, Beurré Superfin, Beurré Hardy, Doyenné du Comice, Pitmaston Duchess, Fondante d'Automne, Winter Nelis, Olivier de Serres, Easter Beurré, Beurré Rance. For the farm-garden the best kinds of pears that might be grown, either on standards, pyramids, or bushes, or espaliers, are the Souvenir de Congrès, Beurré Clairgeau, Louis Bonne of Jersey, Durondeau, Beurré Superfin. These are remarkably fine pears, and may be sent to market by the dozen, and will always find a sale at good prices.

Pears and apples that ripen in the winter require to be carefully kept in a dry well-ventilated chamber, with an even temperature, and laid upon stout laths set an inch and a half apart to allow circulation of air. A series of trays placed one above the other, running in grooves, is the best form, as they can be pulled out and the fruit examined. They should frequently be examined, and sent to market when ready.* It would pay well to consign brilliant-coloured and, indeed, all the finer fruit, especially that grown on bushes, in small, well-made, bright-looking baskets or boxes, set off with pink or white

* It is too much the custom for large fruit-growers to send their apples and pears to market straight from the tree, and then they wonder that they make poor prices. No doubt they are wise in sending off the common kinds, for which there is generally a ready sale for smashing; but it is a sacrifice to consign fruit that would keep well with care until February and March, to salesmen in October or November. Some Kent fruit-growers keep apples and pears in oast-houses, which are fairly suitable. All large fruit-growers who wish to make the full value of their fruit, must arrange proper places for storing it until it is properly fit for use.

paper; and for this kind of fruit, as well as for all superior fruit of every kind, contracts should be made, if possible, to supply it directly to the retailer.

PLUM-TREES AND DAMSON-TREES are grown on grass or in plantations. Standards are set 15 feet apart each way, which would take 193 trees per acre. In very strong land they are set 18 feet apart. In Kent they are frequently put between apple- and pear-trees, and are removed when these trees get large. Plum-trees and damson-trees are often set with fruit-bushes. This is a kind of plantation which tenants with long leases might undertake without much risk, as the plum-trees will come into profitable bearing after five or six years, and the damson-trees after four or five years. Plum-trees are raised from common plum stocks, grafted or budded with scions of the kind required. What is known as the Brussels stock is used for producing large quick-growing trees; the Pershore plum-tree, grown so largely in Worcestershire, which can be raised from cuttings, is also a good stock. For bush and small pyramids, the grafts or buds are worked upon the *Mirabelle petite*, a stock having a bushy and prolific habit. The famous Farleigh or Crittenden damson, which is so wonderfully productive and profitable, can be easily raised from its own suckers or spawns without grafting or budding. Nurserymen, however, hold that better trees are obtained quite as quickly by grafting upon ordinary stocks; the stems of these are clean, and free from the disfigurement caused by cutting away shoots from the natural stocks.

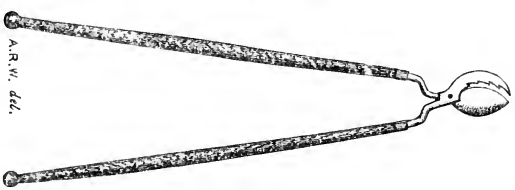
Plum-bushes may be planted in plantations with gooseberry- or currant-bushes with immense advantage. Wind does not injure them. They bear fruit abundantly. They may be planted thickly; the fruit is of fine quality, and can be picked without ladders, or breaking the trees. When the superior advantages of fruit-bushes of all kinds are fully realised, we shall see a great revolution in English fruit-culture. The American fruit-growers are largely adopting this system, and gardeners who grow fruit for market have found out its superiority over the old method. Good sorts of plums for plantations are the Early Rivers, Early Diamond, Blue Prolific, Perdrigon,* Early Orleans, Corse's Nota Bene, Dauphine, Belgian Purple, Washington, Prince of Wales, Prince Engelbert, Pond's Seedling, a magnificent plum, Coe's Golden Drop, Belle de Septembre. The best damsons are the Farleigh or Crittenden's, the Shropshire and the Prune. They do not last

* "It is said that the Perdrigon plum, with two kinds more, were first made natives of this soil by Thomas Lord Cromwell when he returned from his travels."—HASTED, '*History of Kent.*'

nearly so long as apple- and pear-trees, and come into good bearing at from six to seven years old, when planted upon good, well-drained soil. They will thrive upon loams, clay-loams, the lighter marls and clays, and should not be planted deeply, as their roots do not go down far into the ground, but run along the surface. Nor should they be put in a situation much exposed to the wind, as the branches are brittle, and break off easily when laden with fruit.

PLUM- and DAMSON-TREES do not require much pruning. A little tipping of strong leading shoots must be done for a few years, and a little occasional judicious clearing out of the centre in the case of standard trees. Bush trees must be tipped and crossing shoots removed. For pruning standards, and indeed for bushes in their higher branches, there is a capital cutting-machine, in use on a few farms, made by a village blacksmith. As will be seen in the engraving (Fig. 3), there is a

Fig. 3.—*Pruning Machine.*



sharp oblique knife on one side, and on the other a kind of hook, which has teeth or notches to grip the shoot or branch, while the knife is pressed into it by the leverage of the long handles. These cutters may be 2 feet or 4 feet long, or any length, and it is wonderful what large boughs can be cut off by them. For young trees and bushes no ladder is wanted if this cutter is used, and it is most objectionable to set ladders against young trees. For picking and pruning, a step-ladder should be used when possible.

Plums always sell well. This year they have made capital prices. They are ready when other fruits are out of season and when the foreign season is over. For damsons there appears to be a practically unlimited demand, at 8*s.* to 12*s.* per sieve. Also Greengages, of which the best sorts are the early Gage, Reine Claude Hâtive; a late Gage, Reine Claude de Barry. Blecker's Yellow Gage is also an excellent fruit and is always in demand. Although acres of them are planted in East Kent, they are more fitted for the farm-garden or for snug sheltered spots. As they are valuable fruit, to ensure full prices for them they should be packed in small boxes in single layers, and set off with a little

fringe of coloured paper, in the same way as they are sent from the Continent.

Cherry-trees yield a handsome return in localities suitable to their growth, as in parts of Mid Kent, near Maidstone, upon the Lower Greensand, and in East Kent upon the loams and brick-earth of the Tertiary soil over the Chalk, where they thrive particularly well, though the situation is high and exposed. As they blossom early in May, they are liable to receive injury from spring frosts. These trees require a dry subsoil, therefore are not suited to heavy clay soils. The ordinary method of obtaining standard trees is to graft upon stocks of the wild cherry, *Cerasus avium.* Standard trees may be purchased at from 1*s.* 4*d.* to 2*s.* each, and should be planted about 30 feet apart, or forty-eight trees to the acre, upon cultivated ground with gooseberry- and currant-bushes under them, and plum-trees may be set between them. After ten or eleven years the bushes should be taken out and grass seeds sown, as cultivation does not suit cherry-trees when they have attained a certain size; or the trees may be planted at once upon grass-land. The plum-trees may remain from twenty-five to twenty-eight years, at which time the cherry-trees will be in full vigour. There is no reason why cherry-orchards should not be made in many English counties. Encouragement should be given in every way by landlords to their tenants to plant them as well as apple- and pear-trees. Pyramidal trees or bushes are formed by grafting upon the Mahaleb stock, *Cerasus mahaleb*, a native of the South of Europe. These are very prolific, and may be planted in the same way, and with as much advantage as apple, pear and plum pyramids and bushes.

Pyramids and dwarf trees of the English red cherry, or Kentish Red and Flemish, should be planted in every available spot, in gardens and in plantations. They do not take much room, and invariably make high prices, because their fruit has a fine subacid flavour, and is peculiarly suited for bottling, drying, and preserving. The Morello cherry also is recommended to farmers for growing against north or west walls, or north heads and sides of barns, or lodges, or stables, while the south and east sides of buildings would be occupied by plums, figs or peach, or nectarine-trees. Morello cherries always sell well for making cherry-brandy, and for preserving, and should be sent for sale in cardboard boxes, with two layers in each, the stems being cut to about half an inch in length.*

* Cherries are usually packed in half-sieves, holding 24 lbs. Very fine Bigarreaus and other kinds are sometimes put into quarter-sieves, holding 12 lbs.; but it would well pay to put the very choicest fruit into 2 lb.-boxes or baskets, as is done by the French growers.

The best sorts for standards are the Early Purple Gean, Early Rivers, Adam's Crown Heart, Early Frogmore, Knight's Early Black, Kentish Bigarreau or Amber Heart, Elton Heart, Waterloo, Black Heart, May Duke, Black Eagle, Flemish, Turkey Head or Turk, Florence, Kentish Cluster or Crown, Morello. These ripen in the order in which they are given above. Those that are best for pyramids are the Early Purple Gean, Belle d'Orleans, May Duke, Royal Duke, Flemish, Kentish Red, and Morello. The three last are hardy, very prolific, and their fruit always is in great demand. All cherries are most saleable. The importation of cherries from France, Holland, and Algiers has ceased when English cherries are ready for market. They have sold remarkably well this year, having made from 14*s.* to 30*s.* per sieve of 48 lbs. A landowner in East Kent, who has planted many acres of land with cherry-trees, cleared 420*l.* in the last season by the fruit from 7 acres. English cherries are superior in flavour to those grown on the Continent, as indeed most of the English fruit is, and they are much appreciated by gourmets. As has been said before, they ripen when Continental cherries are over, and at a time when there is not an abundant supply of fruit in Paris, Brussels, and other cities. The same applies to plums and to soft fruits. Seeing that there is no duty upon fruit imported into France, and only 5 per cent. *ad valorem* upon fruit imported to Holland, and 10 per cent. in the case of Belgium, surely a trade might be established with those countries. The Kentish Railway Companies have stated that they are willing to give facilities of transport and a quick service, and it only remains for enterprising growers to open communications with dealers in the chief cities of those countries.

This concludes the list of fruits that may be grown upon a large scale, the cultivation of which does not entail a great amount of skill or knowledge. There are other fruits whose cultivation would be taken up by enterprising fruit-farmers after a time, such as peaches, nectarines, apricots, figs, and grapes, out of doors, and under glass with or without heat. A great deal of money is made from these by the few who grow them, who make a business of producing luxuries for the wealthy. Judgment is necessary in the selection of suitable spots and of suitable sorts of fruits for planting, and special care must be taken that the sorts are true to their names. Planting must be thoroughly well done in every detail, if the best results are desired. This kind of ship is most easily "spoiled for want of a halfpennyworth of tar." Cultivation also must be carried out in a liberal manner, and far more attention paid to packing and setting fine fruit off in the best light than is now bestowed by ordinary fruit-growers.

Fine apples and pears should be stored and only sent to market when they are ready for use, in order to make the best prices of them. Above all, fruit-growers must combine and establish a better mode of selling their fruit, in order to get a price more approximate to its real value. Already in Kent some growers have taken steps to form an Association to alter all this, while others have commenced to make contracts with retail shops to supply them directly.

There is an enormous demand for fruit of all kinds, and intending planters must not be frightened either by fear of the foreigner or that the supply will be in excess. Jam-making assumes larger proportions year by year, and, as has been suggested, fruit is also used for flavouring drinks of all kinds, for dyeing, and for making wines. Some idea of the extent of the jam-making trade may be gained from the following, which appeared as an advertisement in a newspaper in Kent, during the whole fruit season :—

"To Fruit-growers, Dealers, and Others. Wanted for Cash—

5000	bushels	Green gooseberries.
5000	„	Black currants.
8000	„	Green gooseberries.
2000	„	Red currants.
500	„	Common apples.

Address——Covent Garden, London."

It would be most desirable that fruit-growers should have some conveniences for turning their fruit into jam or jelly, in case of gluts in the market. The process of jam-making is simple, and is understood by most housekeepers. It seems that nothing but a good-sized copper would be required to convert quantities of fruit into jam, which, from its *bonâ fide* character, would certainly hold its own against the manufactured, strangely-blended concoction of ordinary smashers, who use common apples as a foundation. Indeed, it is alleged that marrows, turnips, and other vegetables are used by some of the smashing fraternity ; and flavoured, according to taste, with raspberries, gooseberries, and currants. A landowner in the Midland counties having planted hundreds of acres of land with fruit-trees has, with admirable foresight, put up an apparatus for boiling down fruit, if the prices offered for it, when raw, do not suit his ideas.

Fruit-growing is a most interesting and engrossing occupation, and, taking an average of seasons, is also most profitable. As has been shown, it may be commenced in a small way,—in the garden of the farm, and gradually extended as circumstances may warrant. The chief objection to its adoption hitherto by

tenants—that so much time elapsed before any return could be made—has been removed by the introduction of trees of dwarf and early fruit-bearing habit, in the shape of half-standard pyramids and bushes as regards apples, pears, and plums; and a tenant protected by a long lease and by assurance of compensation for improvement, which most landlords would be glad to give in these days, may venture to cultivate these fruits. In the case of other fruits, it has been shown that in two or three years the bushes will begin to bear, and soon become remunerative.

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