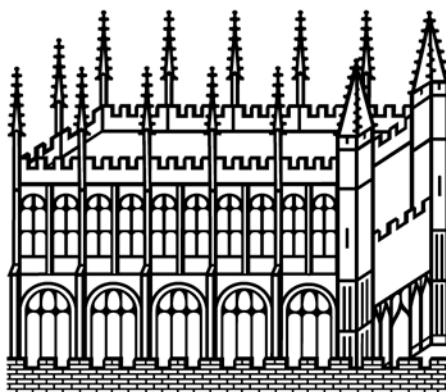




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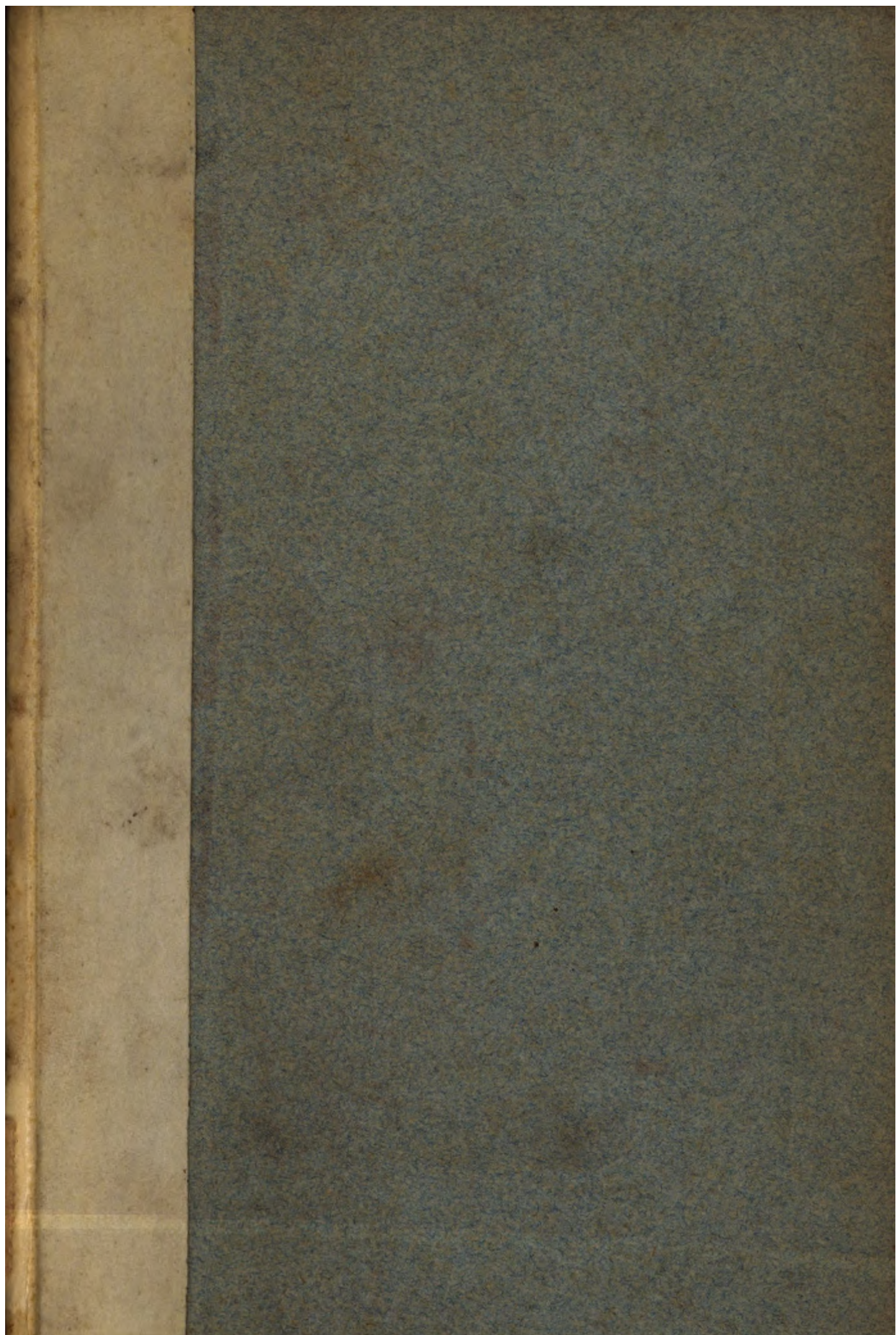
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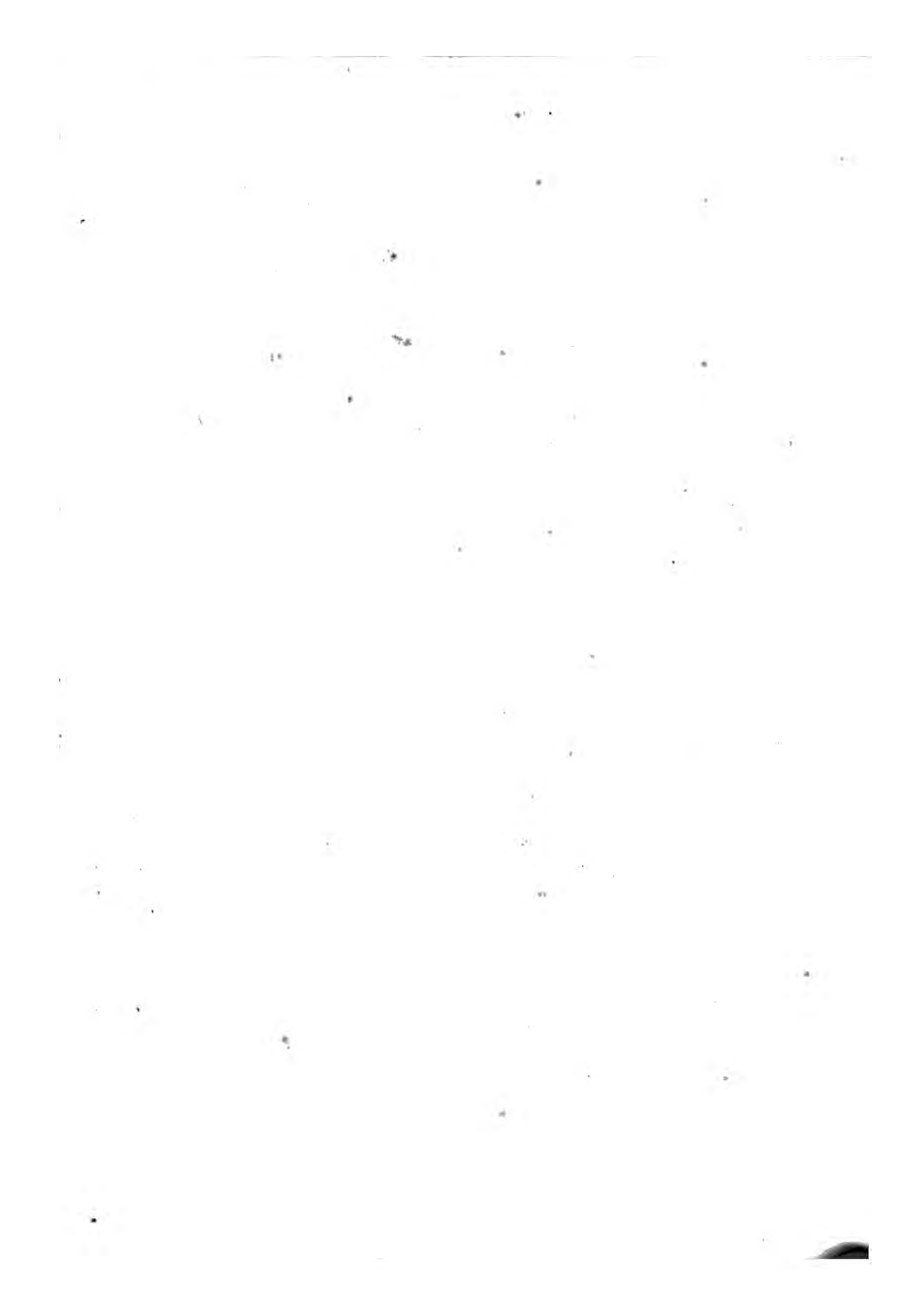
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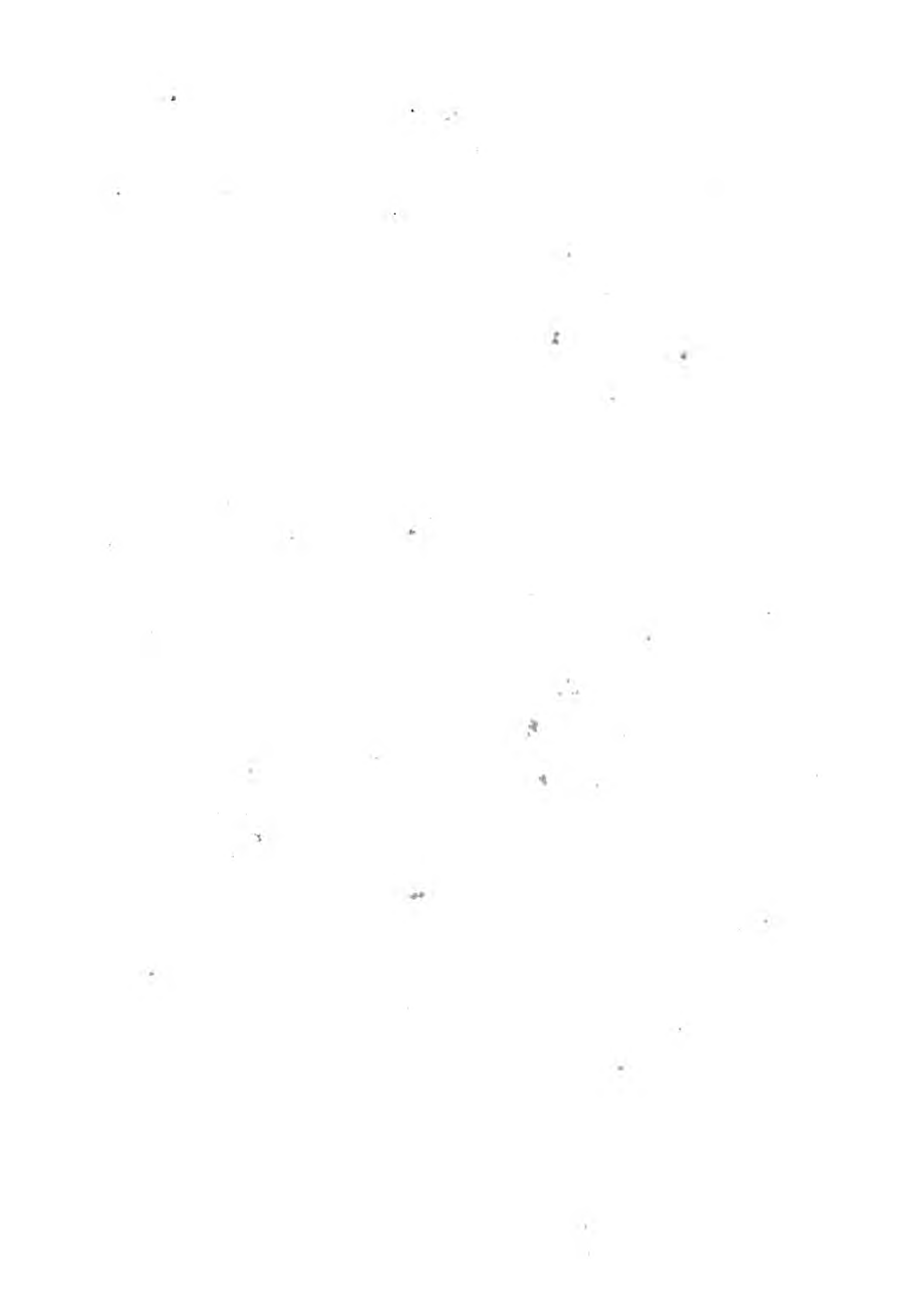


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ASPARAGUS CULTURE:
THE
BEST METHODS EMPLOYED
IN
ENGLAND AND FRANCE.

BY
JAMES BARNES
AND
WILLIAM ROBINSON

With Translation of Mr. Lebeuf's Essay on Asparagus,
AND
PARTICULARS OF THE SEVEN YEARS' COMPETITION INSTITUTED
FOR ITS IMPROVEMENT.

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ASPARAGUS CULTURE.

THE Asparagus (*Asparagus officinalis*) belongs to the Lily family, and is a member of a large genus of plants, mostly natives of Africa, distinguished by fine small leaves, which make some of the kinds very graceful and elegant. The common kind is a native of sandy shores all round the basin of the Mediterranean, and grows along those of western Europe, till it reaches the western and south-western shores of England. It also grows on sandy plains in South Europe and North Africa. The flowers, which are small, are greenish-white, borne in twos or threes, and are succeeded by small, round, red berries, and the plant has a very elegant and feathery habit.

SOIL, MANURE, ETC.

Soils, subsoils, and situations differ, and so must practice also. The soil all round our sea-coast, if rich, is eminently suitable for Asparagus; and once properly planted, it might go on for half a century without any more assistance than it gets from the flooding of each spring tide. Change the scene; place the beds in Sherwood Forest, with 10 to 20 feet of drift sand underneath them, and, without the liberal use of the manure cart, in seven years you would not have a piece of Asparagus as thick as a pipe-stem. For good and lasting beds of Asparagus, considerable depth of soil is requisite. The best soil is a rich friable loam; but good crops may be obtained from any good sandy or mellow loam. Should the texture of the soil be too close, it should be sufficiently lightened and made porous by the application of large quantities of manure; sand or sandy mud is, however, more beneficial than manure in its opening qualities for heavy soils. The situation for this vegetable should be open to the sun, yet sheltered from strong winds. As Asparagus is one of the most permanent and important of all garden crops, and well-made beds continue in a good bearing condition for twenty

years or more, it is advisable to decide, before forming the plantation, whether or not any alterations are likely to be made that would in any way disturb the beds. The ground should be trenched to the depth of 3 feet, at the same time turning in a heavy dressing of manure and seaweed (should the latter be easily obtained, otherwise it would not be advisable to go to the expense of procuring it, as very good Asparagus can be grown without it); and should the ground be deficient in depth or quality, some good sweet loam from an old pasture may most advantageously be employed. These ought to be thoroughly incorporated with the soil at the time of trenching, and so worked that they may have an enriching and ameliorating influence on every particle of soil in the beds. This trenching should be performed in the beginning of winter, and laid up in the common way of ridging, thus to remain till spring, when, towards the end of March or first week of April, according to the state of the weather and condition of the ground, the ridges may be levelled, choosing for the operation a fine dry day. Fork and tumble over with a strong fork or pickaxe the ridges at all times when frozen hard, in order to pulverize, sweeten, and incorporate all well together. The principle of success with this vegetable lies within a small compass. All seem to acknowledge that, in order to obtain a good crop, there must be a good depth of rich soil. About forty years ago a good piece of ground was chosen to make a permanent plantation of Asparagus. It was trenched 3 feet deep in trenches 3 feet wide, and cast up into rough ridges, after a crop of summer Peas. All decaying vegetation in the rubbish-yards and corners was at the same time well salted and turned up. Early in autumn, also, were added some old Mushroom, Melon, and Cucumber-bed material, a lot of manure from piggeries, cow-houses, and stables, a quantity of road-grit and sand, a quantity of ditch and drain parings, turfy loam and sods, quite 3 feet thick. These were all turned over four times and well incorporated together, between Michaelmas and Lady Day, as one would a dung-heap, the whole being left in large ridges exposed to the frost. By April this compost was in a kindly state; it was, therefore, laid down and planted with good, clean, one-year-old Asparagus plants, which certainly grew in a most extraordinary way, and the second year produced wonderful shoots as to size; and the same plantation has continued to produce fine heads ever since. In order to give a fair idea of the quality of "grass" which this plantation is still producing, it may be mentioned that one hundred heads

cut from it now average from 12 lbs. to 14 lbs. weight, the heads being 7 inches in length. Even after forty years' existence, this plantation is still improving, and it looks as if it would be as good sixty years hence as it is now.

Wherever ordinary farm-yard manure is not very abundant and labour plentiful, a good result may be obtained by collecting together all decomposing vegetable matter—old hotbeds, Mushroom beds, pig refuse, &c., with seaweed where convenient; and, when the position for the beds is determined upon, this should be spread upon the ground about a foot thick, and turned over with 2 or 3 feet of the earth two or three times in winter. This treatment will be attended with very excellent results.

The application of salt as a top dressing is of great benefit to Asparagus in inland districts, but is of little or no value in the vicinity of salt water. It should be applied in spring and very early summer by scattering some common coarse salt over the ground in showery weather. Old and well-established plantations are particularly benefited by this treatment; but in no case should it be applied to plants recently removed, for all such, however carefully transplanted, must have wounded roots, to which salt would prove very injurious; nor should it be applied at any time when the roots are in a dormant state. Besides its beneficial effects upon the plant as a manure, it is very destructive to the wire-worm and other insects so injurious to the roots of the Asparagus. Salt may safely be applied at the rate of 2 lbs. per square yard. It is, however, better to give this quantity in two doses. It should not be applied in dry or sunny weather.

SEED SOWING.

Asparagus is propagated by seed, which may either be sown when ripe in October, or in spring; but the latter time is certainly the best. It may either be sown on the ground prepared for the plantation, or in drills one foot apart in beds of light, rich, sandy soil, and transplanted to a permanent position when one year old, which is by far the most desirable method. To get strong clean plants at one year old, and to save a year's strength, sow thinly, and hoe out quickly after the plants are up, with a sharp one-hand 3-inch hoe, or otherwise thin the plants to 3 or 4 inches apart, taking care to select all the strongest plants to stand; thus, very strong clean plants may be produced in one year. By keeping the seed beds

carefully hoed and free from weeds, the plants will be in fine condition for planting out the following spring; whereas, should they be neglected, it will take two years before they are as large as well-attended one-year-old plants. It is in consequence of this very common neglect that many cultivators labour under the impression that the plants must be two or three years old before planting; which is undoubtedly a mistake, for all good growers invariably plant one-year-old plants, and count on reaping a crop the third spring from the time of sowing. One pound of seed will produce about 3,000 plants, and to plant an acre of *Asparagus* requires from 15,000 to 20,000 plants. Some of the finest shoots which push in the early part of the season from certain crowns should be allowed to run to seed. These should have the full benefit of exposure to light and air; and, as they advance in growth, they must be firmly staked, to prevent breakage by wind. When fully ripe, the largest and finest berries, of the deepest red colour, should be selected. They should then be carefully and gradually dried; or they may, after lying about ten days, be squeezed between the hands, and the pulp washed away; but by the former method they keep the longest.

PLANTING.

This should not be done till after the buds begin to push, as this plant, from its peculiar succulent roots, is less susceptible of injury from late planting than most other vegetables; yet it should not be delayed too long after the ground has become fit for its reception, in the end of April, as the sooner it is then planted the better will be the result. Plant in rows 2 feet apart, 16 inches being left between the plants in the row. Planting in rows in preference to beds is recommended, for by so doing the plants are allowed room enough to develop their roots without interlacing each other, and consequently causing an impoverishment of the soil. After being planted two years, every alternate row is best taken up for forcing, thus leaving the permanent rows 4 feet apart. The direction of the rows for the main crops is immaterial, but for the earliest ones it would be advisable to run them east and west, so as to be more immediately under the direct action of the sun's rays when they are most powerful. As soon as the *Asparagus* has commenced to shoot an inch or two, level the ground down methodically, mark out the rows 2 feet apart, placing a stake at each end, where the rows are to be planted:

stretch and place the line tight from end to end, draw a deep drill with the hoe on each side of the line, thus leaving a little ridge under the line, over which the planter should regulate the roots of the plants on each side, putting in the earth to cover them quickly as he proceeds. The hoe should be regularly used during the remaining summer and autumn months, care being taken to remove by the hand all weeds that come up about the crowns. When the stalks are completely withered in autumn, they should be cut down. Should the produce in spring be required in a green state, which is decidedly the best, an annual dressing of good manure slightly forked in should be given every autumn after the haulm has been cut, and thus left during the winter. In spring, before the buds begin to push, the ground should be again slightly forked over three or four times in dry weather, in order to lighten, pulverise, sweeten, and lay it down in an open healthy state, and not in too fine a condition, to get run together again immediately after the first heavy rains, but open, loose, and rather rough, in order to admit the sun's rays, atmospheric influence, and the rain kindly; such treatment not only forwards its progress, but also allows it to grow freely, clean, and straight without obstruction.

AGE OF PLANTS FOR TRANSPLANTING.

For planting, cleanly-grown and sound two-year-old plants are very generally preferred, although strong one-year-old plants are equally good. The balance of evidence is, indeed, in favour of well-grown one-year-old plants. The following curious experiment by a trustworthy French cultivator deserves consideration.

"I planted (No. 1) twelve roots of a year old; (No. 2), twelve of two years old; and (No. 3) twelve of three years old. The results were as follows:—

"First Year.—Of No. 1 all had made growth before May 4th, and the vegetation was fine; No. 2, ten plants started before May 4th, one on the 10th, and the other failed. The shoots were a little stronger than those of No. 1. No. 3, eight plants started before May 4th, one on May 12th, and the other three failed; and, although at first the shoots looked well, they afterwards declined, and on September 15th they were feebler than those of No. 2.

"Second Year.—No. 1, fine vegetation; shoots strong and regular on the 15th of September. No. 2, good growth; shoots irregular, and a little feebler than those of No. 1.

No. 3, growth mediocre; shoots very irregular, some roots having eight or ten, but all feeble; another plant died after having produced two stems.

"Third Year.—No. 1, growth magnificent: stems measuring on the 10th of May from 2 inches to $3\frac{1}{2}$ inches in circumference. No. 2, growth passable, but irregular; some tufts small and weak; the finest had shoots on the 10th of May, not more than $2\frac{1}{2}$ inches in circumference. No. 3, growth very middling and irregular; some tufts gave off shoots no bigger than quills, and the best reached little beyond $1\frac{1}{2}$ inch in circumference.

"Fourth Year.—No. 1, growth remarkable; the shoots appeared from the 3rd to the 10th of April, some as much as 4 inches in circumference; they afforded fifty shoots, which formed a bunch weighing more than $6\frac{1}{2}$ lbs. No. 2, growth passable, but a little later than that of No. 1, and with plenty of small shoots; fifty made a half bunch, weighing little more than the half of that cut from No. 1. No. 3, vegetation poor, one plant not starting till the 22nd of April; fifty shoots formed only half a bunch, and did not weigh more than $2\frac{1}{2}$ lbs.

"To resume, it will have been seen that the plantation formed with plants a year old gave at its fourth starting, or at the end of three years of plantation, a bunch of Asparagus twice as large as that of either of the others. In other terms, the plantation made with plants a year old produced double that of the one where two-year-old plants were used, and nearly treble that made with plants of three years old."

CUTTING.

Asparagus should not be cut till the second year after planting, and then only sparingly. By allowing the plants to get well and firmly established before making a very free use of the knife, and with judicious after-treatment, they will produce excellent crops for many years; and at no time cut too severely, but bear in mind that the more copious and healthy the foliage during the summer, the stronger will be the produce next spring. As the strength of the roots depends on the quantity of foliage, there must be shoots enough left to maintain them healthy and vigorous, and to replace and store up for the following season sufficient matter for the healthy action of the plants. It is not advisable, however, to cut away the strong shoots and leave the smaller ones; quite the reverse. Allow some of the finest shoots to grow after the first fortnight or three weeks' cutting is over, removing any small spray that may

appear; for a few strong shoots to each plant, properly exposed to light and air, will be more valuable than any quantity of small ones. In cutting, a little of the soil is removed from the necks of the shoots with the Asparagus knife, which is then pushed down, carefully avoiding injuring the crown or other shoots that may be pushing up. When the knife is at the base of the shoot, give it a slight twist towards, at the same time pressing it close to, the shoot; then draw it gently upwards, by which process the shoot is separated from the plant. The knife generally used in this operation has a rough or saw-like edge, set to cut only one way, and that by pushing down. It should always be kept sharp at the three or four first teeth from the point. For those that are fond of natural unbleached "grass," any kind of knife will do, and in kindly growing weather the heads may even be broken off without a knife. Asparagus for market is generally blanched by the earthing-up system, which is done by covering the crowns with a few inches of light soil, generally taken from the space between the rows, by which process we obtain the white bleached or blanched shoots daily seen during the season in the London market. When this method is adopted, the shoots must be cut below the surface just as it appears above ground. This mode, however, is not to be commended, the right way being, not to practise the earthing-up system, but to wait till the shoots are 6 inches above ground, when they may be cut over almost level with the surface. By so doing we obtain the Asparagus in its green and natural condition and of exquisite flavour, to which the blanched can bear no sort of comparison. The cutting season should cease about the middle of June, and in no case should it be continued after the end of that month. When green Peas can be had, Asparagus is less required; therefore it is desirable to discontinue cutting after the 10th or 15th of June.

FORCING ASPARAGUS.

There are several ways of forcing Asparagus, all depending on the same principles, yet each adapted to a different kind of garden. Some are expensive, others not at all so, where stable manure is plentiful and garden labour not a scarce commodity. Thirty years ago in the London market gardens a large forcing grower would purchase an acre or more from the grower, and send for it as his beds were made. At that time heating hothouses or pits of any kind by means of hot water was of course unknown. They employed

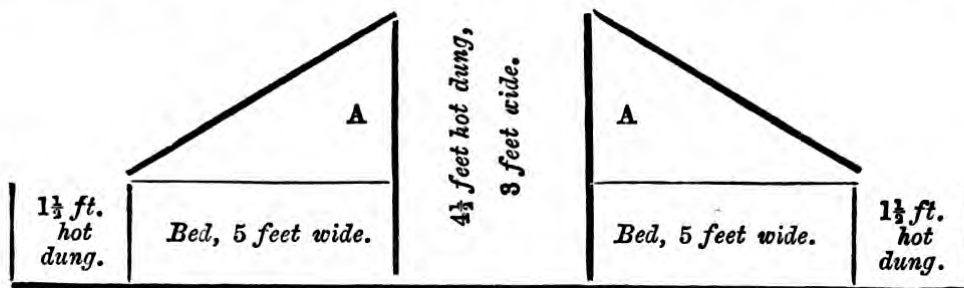
a great number of common garden frames. A trench a foot or so wider than the frame and 15 inches deep was then cast out, and in this was placed about 2 feet of London stable manure, and on this again a few inches of the rich friable earth of the old market garden which had been cast out of the trench, to secure the heat from evaporating. Then, soon after the frames were placed in a straight line on the hotbed, the plants were very carefully placed on the soil in the frame, covering them immediately with 3 or 4 inches more soil, or more if the Asparagus was required blanched throughout. If wanted quite blanched, of course air and light were not admitted. Every twenty-four days or so a fresh set of beds was made to keep up the supply.

Forcing may be commenced in November and continued till Asparagus is fit to gather in the open air. One of the best ways is to make a slight hotbed with stable manure, leaves, tan, &c. (these last materials, if easily obtained, will do well to mix with the manure), in a Melon pit, or under a common Cucumber frame. Two and a half feet high will be quite sufficient, and on the surface of the bed should be placed a few inches of light soil, leaf-mould, or sifted potting refuse, on which to place the plants, because such material does not act so effectually in repressing the heat as ordinary garden soil; and when the roots are taken up as completely and carefully as possible and placed thickly on this, they should be covered with a few more inches of the same material. If the Asparagus be required of its natural colour—and that is unquestionably the best way to enjoy it—give the frame full light and air when fine. Water occasionally with tepid water. After one good watering in the early stage, a little will afterwards suffice, for the winter crops at all events, as the slow evaporation of the period and the natural moisture of the bed will preserve the soil in a nice moist state. The heat of the bed must be preserved when it gets low by a lining, in the usual old-fashioned way, and by covering closely with mats or litter at night in cold weather—that is, if it be a common frame, but if in a brick pit this will not be necessary. The chief point is to be patient at first, to let it get a slow start, and not be over excited at any time, or it will start away and produce nothing but very weakly, spindling shoots; whereas, by bringing it on gradually and regularly, a really respectable cutting may be obtained.

It is also frequently forced by being placed on the floor, or on a bench or pit of some kind, in an early vinery or other forcing house; and, whenever there is space to spare, and the

heat is brisk and genial enough, this plan is good. Another very important way is by bringing the heat to the roots, and certainly by this plan a more permanent and stable kind of "grass" is obtained, because plant or root is not in the least disturbed. But it is an expensive way, though simple. The beds are in the first place very well made of rich deep soil, and the alleys of these beds are dug out to a depth of 3 feet or so, and then bricked; or, in other words, the Asparagus beds are made between low brick walls, perforated with "pigeon holes," to admit of the heat entering freely; and whenever forcing commences, the bricked trench on each side of a bed is filled with fermenting manure, covered over by a rough shutter, and the beds themselves with small wooden frames made to fit; these are, of course, only placed on during forcing, the beds being exposed in the summer season. The beds should not be more than 4 or 5 feet wide, to admit of the ready percolation of heat. This method is, however, only suited for places where a good deal of expense is devoted to the garden; and the modification or improvement of it, which consists in having hot-water pipes passing between each bed and the chamber covered with a slab of stone, is a much more expensive one. No matter what system is employed, a steady heat of from 60° to 65° will be found most suitable.

Another way of heating the beds is by means of hot-water pipes. This is a modification or improvement of the last mode, and is the same as is practised in the Royal Gardens at



Section of two Beds with Alley between them, and half of two corresponding Alleys.

Frogmore. It is certainly a very expensive method; yet it must be admitted it is the most satisfactory in the end. At Frogmore the beds are 75 feet long and 7 feet wide, their sides being built with brick, "pigeon-hole" style. The spaces between the beds are 4 feet deep, the lower 2 feet being filled

with rich soil ; and in the upper 2 feet are a flow and return hot-water pipe connected with a boiler that heats six such ranges. On the top of the beds are special frames. In severe weather, the sashes must be covered with mats or litter.

Mr. Gilbert's mode of forcing *Asparagus* is clearly illustrated by the annexed diagram, and it is that adopted to a great extent in the market gardens. The beds are 5 feet wide, with 3-foot alleys between them. The alleys are dug out to the depth of 2 feet, the soil being spread over the surface of the beds, on which frames, covered with sashes, boards, or shutters, are placed. The space between the beds, being $4\frac{1}{2}$ feet deep and 3 feet wide, is filled with fermenting material, such as stable dung and leaves, as are also the outside half alleys. Before filling these spaces with litter, we make holes into the sides of the beds large enough to admit a one-inch bore drain-pipe. These holes we find beneficial in admitting heat to the interior of the bed. The side trenches are filled with hot dung to the height of the frames, the beds in which, marked A A, are also covered with the same material until the heads make their appearance, when it is removed. If white *Asparagus* is wanted, the frames are kept dark by being covered with shutters ; but, if green is preferred, glazed lights should be put on. After the fermenting material is removed from the beds, the frames are kept close for a few days, after which a little air is given on favourable occasions, a practice which improves both flavour and quality. It is necessary to maintain a temperature of 60° or 65° , but at no time should it exceed 70° . When this heat cannot be kept up, fresh linings must be added.

ASPARAGUS CULTURE IN FRANCE.

ASPARAGUS is grown much more extensively and to a much larger size in France than it is in England. The country is almost covered with it in some places near Paris ; small and large farmers grow it abundantly, cottagers grow it—everybody grows it, and everybody eats it. The system of culture is so essentially different from ours, and so successful, that it is desirable to make it fully known. Near Paris it is chiefly grown in the valley of Montmorency and at Argenteuil, and it is cultivated extensively for market in many other places. About Argenteuil 3,000 persons are employed in the culture of *Asparagus*. It is grown to a large extent among the Vines. The Vine, under field culture, is simply cut down to near the old stool every year, and allowed to make a few

growths, which are tied erect to a stake; they do not overtop the Asparagus in any way, but on the other hand the strong plants of that show well above the Vines. It is not planted in distinct close lines among the Vines, but widely and irregularly. They simply put one plant in each open spot, and give it every chance of forming a capital specimen, and this it generally does. When the stems get large and a little top-heavy in early summer, a string is put round all, so as to hold them slightly together (the careful cultivator uses a stake), and the mutual support thus given prevents the plant from being hurt by wind in its prime. We all know how apt it is to be twisted off at the collar by strong winds, especially in wet weather, when the drops on every tiny leaf make the foliage heavy. The growing of Asparagus among the Vines is a very usual mode, and a vast space is thus covered with it about here. But it is grown in other and more special ways, not one of these being like our way of growing it, which is decidedly much inferior to the French method.

Perhaps the simplest method, and the most worthy of adoption, is to grow it in shallow trenches. I have seen extensive plantings that looked much as a Celery ground does

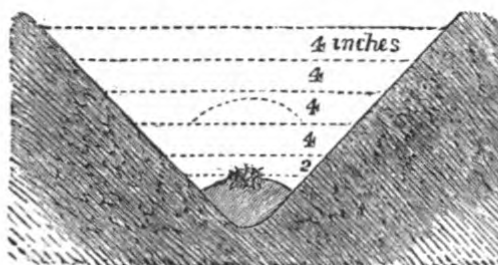


Common French mode of forming an Asparagus plantation.

soon after being planted, the young Asparagus plants being in a shallow trench, and a little ridge of soil being thrown up between the lines of Asparagus. These trenches are generally about 4 feet apart. Here, for instance, is a young plantation planted in March. In England, the Asparagus would be left to the free action of the breeze, but the French cultivators never leave a young plant of Asparagus to the wind's mercy while they can procure a bit of a stake about a yard long. But when staking these young plants they do not insert the support close at the bottom, as we are too apt to do in other instances, but at a little distance off, so as to avoid the possibility of injuring a fibre; each stake leans over its plant at an angle of 45° , and when the plant is big enough to touch it or be caught by the wind, they tie it to the stake. The ground in which this system is pursued being entirely devoted to Asparagus, the stools are placed very much closer

together than they are when grown among the Vines, say at a distance of about a yard apart. The little trenches are about a foot wide and 8 inches below the level of the ground—looking deeper, however, from the soil being piled up.

The young plants are placed in these trenches very carefully. A little mound is made with the hand in each spot where a plant is to be placed, so as to elevate the crown a little and permit of the spreading out of the roots in a perfectly safe manner. In fact they seem to be about as particular as regards depositing the young plants in the first instance, as a good Grape-grower is about his young Vines. They plant in March and April—using any kind of manure that can be had, but chiefly here, so far as I could see, the refuse of the town—the ashes, old vegetables, rags, and other matters, that the people throw before their doors, and which



This figure shows the mode of planting and the depth of the successive annual earthings given to the Asparagus, as grown in France. After four or five years' growth the ridges disappear, and the highest points of the ground are those over the crowns of the roots.

the dust-carts take away in the morning. They are very particular to destroy weeds, and they also take good care to destroy all sorts of insect enemies in the mornings, especially during the early summer. Between the lines of Asparagus they plant small growing crops on the little ridges during the first years of the plantation, but are careful not to put the large vegetables there, which would shade and otherwise injure the plants. When they plant, they spread a handful or so of thoroughly-rotten manure over each root, and they repeat this every year, removing the soil very carefully in the autumn down to the roots, putting on them a couple of handfuls of rotten manure, and spreading the earth over again, so that the rain is continually washing nutriment to the roots. When doing this, they notice the state of the young roots, and where a plant has perished, or has done little good, they place a stick, and replace the plant the following March. Early every

spring they pile up a little heap of fine earth over each crown. When the plantation arrives at its third year, they increase the size of the little mound, or, in other words, a heap of finely pulverized earth is placed over the stool, from which some, but not much, Asparagus is cut the same year, taking care to leave the weak plants and those which have replaced others, to themselves for another year.

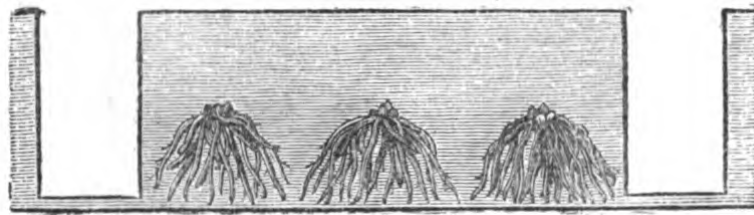
They cut the best of it when it is about an inch and a half out of the ground. Let us hear the French side as regards blanched Asparagus :—"In certain localities they do not yet value the distinction between blanched and green Asparagus, and occasionally prefer the last. That is an error very prejudicial to the consumer's interests. In the green Asparagus there is only the point edible; in the white it is often entirely so, and, moreover, it is infinitely more tender and delicate. All Asparagus cut when it is green is not fit to be eaten in the ordinary way, but may be used cut up small as an accompaniment to other dishes. To serve up green Asparagus is to dishonour the table! In the markets of Paris the green Asparagus is worth one franc a bunch, when the blanched is worth three francs; they do not eat it (the green Asparagus)—it serves for the manufacture of syrup of Asparagus.—V. F. Lebœuf."

When the plantation reaches its fourth year, the little mound of blanching earth is increased to 15 inches in height, for then they expect to cut something worth while, and these mounds are made in the early part of March; and even after this, as they grow stronger the little mounds are increased, and they always keep a look-out for the feeble plants, with a view to replace them. To have Asparagus as it ought to be, they say you must cut every day, or every two days, according to temperature, so that it may be obtained at the right moment; indeed if they do not do this, the shoots become too high and too green. They place great importance on obtaining strong and healthy plants; and in the establishments which I visited they have three kinds, l'Ordinaire, La Hollande tardive improved, and La Hâtive d'Argenteuil. The first is described as very fine, the second very strong, and the last is the earliest, most productive, and best. Of course there are various modifications of the plan just described, and in several instances I saw two rows placed in a rather wide trench in an alternate manner. As to the size and quality of the Asparagus produced by this method there can be but one opinion.

Concisely: the French mode of cultivating this delicious

vegetable differs from our own diametrically in giving each plant abundant room to develop into a large healthy specimen, in paying thoughtful attention to the plants at all times, and in planting in a hollow instead of a raised bed, so that as the roots grow up they may have annual dressings of enriching manure. They do not, as we do, go to great expense in forming a mass of the richest soil far beneath the roots, but rather give it at the surface, which is consistent with the nature of the roots.

The French mode of forcing Asparagus chiefly consists in digging deep trenches between beds planted for the purpose, covering the beds with the soil and with frames, filling in the trenches between the beds with stable manure, and protecting the frames with straw mats and litter to keep in the heat. In the beginning of November the pathways between the beds of Asparagus are dug up about 2 feet deep, and as much wide. Divide the soil coming from the pathway very care-



Preparation for forcing Asparagus. The trenches are dug out and filled with stable manure, the earth being heaped on the beds. These are covered with rough frames, up to the edge of which the heating material is piled.

fully, and put about 8 inches thick of it on the surface of the bed. Fill up the trench with good new horse-dung, and place frames on the bed. The manure should rise as high as the top of the frames, and the lights be entirely covered with mats and litter, to prevent the heat accumulated in the frame from escaping. About a fortnight or three weeks after, the Asparagus begins to show itself on the surface of the bed. Many market gardeners cover the whole of the bed inside of the frame to a thickness of 3 or 4 inches with dung, to force the vegetation more quickly, but in this case the manure must be removed when the Asparagus begins to shoot. When the shoots are about 3 inches out of the ground they may be cut. The mats must be taken off in the daytime, but the heat must be well kept up or the roots and buds will fail to push. The

beds are forced every second year only. The gathering of the Asparagus may continue for about two months, but no longer, or the plantation would be injured. When the gathering of the Asparagus is over, the frames and dung linings are taken away, and the soil which has been dug up from the alleys is put back again. The preceding applies to the forcing of the better qualities of Asparagus chiefly. A speciality is made of forcing the smaller sized Asparagus. It is in the garden of M. Caucannier, Place de l'Eglise, at Clichy, and a number of iron houses are there devoted to the culture. Indeed, if I mistake not, those in the Jardin Fleuriste are copied from them. There are frames within each house, just as in many propagating houses in England, and beneath them the Asparagus is forced for the markets, and in large quantities. The houses are heated by hot water, and the culture in other respects resembles that which is practised in forcing gardens in England—that is, when the plants are taken up to be forced indoors or in pits. The disturbance weakens the roots a good deal, and by this method the large table Asparagus is never forced. M. Caucannier and other growers produce it specially in a small state for soups, &c., but it is impossible to obtain in this way the large table Asparagus.

MR. NIVEN'S METHOD OF CULTURE.

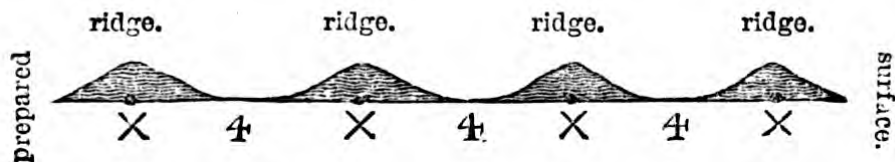
[Mr. Niven for a long time cultivated Asparagus with such success at Drumcondra, near Dublin, that we have thought it well to give his method of culture.]

ANY time during the winter or spring choose any portion of the surface of your garden, with an open south exposure; it matters not much what the soil may be on which the plantation is to be placed—provided the surface-water, in winter, does not stagnate on, or about it—but a soil of sandy quality is always to be preferred, where it can be obtained; but where not to be had, it is easy to add a few loads of sand in the surface preparation. Having fixed upon the space to be occupied, a layer of half-rotted leaves, or rotten hot-bed dung, may be spread over the whole, about 3 inches thick, to which might be added, where it can be obtained, a stratum of sea-weed. This, during the winter, should be slightly dug into the ground leaving the surface in narrow ridges, to receive the action of the weather. Or, it may be done immediately before planting in spring; the former time of preparation is, however, preferable. This process of surface management may be

described under the following heads, viz.: Planting, summer treatment, winter treatment.

PLANTING.

About the end of March or beginning of April (or even in May, when the young heads are 6 or 8 inches high), choose a dry day, and have the ridged-up surface neatly levelled down, after which, slightly dig the ground over again, which will thoroughly mix the surface with the manure and sand first applied; then tread over the whole, regularly, with the feet, and proceed to mark off, with the measuring rod, the places for the intended lines, at 4 feet apart; studying to run them as nearly north and south as possible, marking the place of each line with the corner of a draw-hoe, as for Peas. This being done all over the plot, at the distances described, have a quantity of compost ready, such as one-third rotten leaves, or rotted dung, one-third fresh soil (a hazel-coloured sandy loam from the corner of any grass-field is best), and one-third river or sea-sand. If this has been for some time previously prepared, so much the better. Along each drill or line lay a small ridge of the said materials, so that, when ready for planting, a section of the surface of the plot will appear thus:—

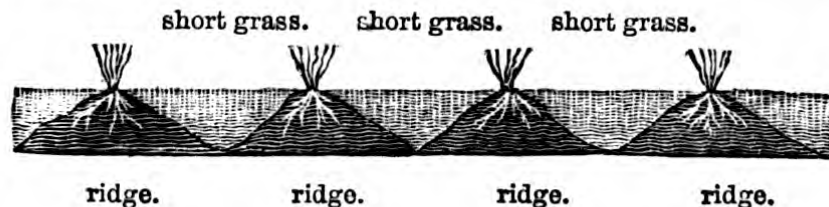


Choose, if possible, good strong two-year-old plants, a quantity of which may always be kept in a reserve seed-bed for successional plantations in any odd corner of the garden. As it is of essential importance that the roots should be as little exposed as possible during planting to a drying atmosphere, it may be best to proceed thus:—carefully lift the plants, and cover them over in the barrow or basket with a little sand: proceed to set them on the little ridge or saddle prepared for them, as a man sits upon horseback, at about 6 inches apart from each other, having a person to follow with a barrowful of sand, which, with the spade, he lays over the roots and crowns, about 1 inch thick, observing to tread successively both sides of each line as he proceeds, with one foot, to firm the sand to the plants, so as to secure them from the action of the air

until the process of planting is concluded, when a second and final covering of about 4 inches of the compost is to be put over the ridges or lines, which is to be firmly trod to the line of plants as before. A small portion of the original surface between may then be thrown up with the spade, right and left, pressing neatly between every two lines as you proceed, and the process of planting, which is exceedingly simple, is finished. A plantation so made, containing from 140 to about 200 square yards, and requiring from 700 to 1,000 plants, or so, would be sufficient to supply Asparagus during the season for any ordinary family—the expense of which, apart from the plants, (which might be about 2s. 6d. per hundred) would be a mere trifle, particularly where sand and leaves or rotten dung can easily be had. I may remark that I much prefer the single line method of culture to beds, chiefly on account of the greater facility in the subsequent management, and because the plants derive more equal nutriment from the artificial surface that is gradually forming. The produce of two rows so treated I have found fully equal in quantity to any one bed with three lines, besides being much superior in quality.

SUMMER TREATMENT.

“ This is an important matter in Asparagus culture. The plantation being finished, as has just been described, a good watering or two, should the weather be very dry, would, towards May, be advisable. In May, when the short grass-mowing begins, a portion of it is to be brought to the Asparagus lines, and shaken in between, quite to the necks of the plants—say, so as to fill up the hollow spaces between nearly level, when a section of the plantation would, at this time, appear thus:—The object of this application, which must



be renewed about once every month during the summer, will be at once evident, namely—the retention of moisture, and the production of vegetable food; and the slight fermentation that accompanies the decomposition greatly accelerates the growth

of the plant : besides, ultimately a bed of the purest vegetable matter is formed, into which, on both sides, the succulent roots of the Asparagus plants run freely. In this way, from the proximity of the roots to the surface, the genial influences of solar heat, and due atmospheric action, are enjoyed by the plant, without the least danger of its ever suffering from drought, in consequence of the non-evaporating nature of the vegetable mulching or covering alluded to, which receives and retains, as a sponge, the greater portion of the moisture that falls upon it, whereas, in the common Asparagus bed, the surface during the dry part of the year is almost completely exposed to the action of the sun and air, and, during any continuance of dry weather, may be seen to crack or rend in every direction, to the destruction of the roots in very many instances. After the shoots have begun to come up, we immediately begin to look regularly and carefully after the thinning. When the plants have pushed two or more heads each, the weakest are regularly cut away, as the stronger heads appear; so that by the end of the first season, not more than two, or at most three shoots, are left to grow to maturity on each plant. Proper attention to the thinning of Asparagus, in the first instance, immediately after planting, during the first and second years and afterwards, also in cutting for use, is of essential importance towards the future welfare of the plant. In consequence of proper attention not being paid to the subject of cutting, arising either from carelessness of the consequences, or from over-anxiety on the part of the gardener to send to table a good dish, much evil ensues to the plantation; for, frequently, instead of leaving a sufficient supply of strong shoots regularly over the bed, they are all cut away, and the weakest left, the inevitable result of which is a supply of comparatively small buds for the crop of the year following.

WINTER TREATMENT.

In November, or, as soon as the tops of the Asparagus become yellow, the whole should be cut over, and the soil along the crown of the ridge or line cleared away a little with the hand, when about 4 inches of sea or river sand should be laid along over the line of plants—this chiefly for the purpose of providing against the depredations of slugs in spring, and facilitating the clean free progress of the heads the next season. In the spaces between the lines, a few barrow-loads of rotten dung, leaves, or sea-weed may be laid, and the whole should

be neatly levelled with a three-pronged fork, stirring up the surface between the lines very slightly, as the levelling of the fresh material proceeds. No further care will be required till spring, when, just as the first heads begin to appear, the whole may be slightly stirred on the surface, and over the lines a little of the sand raked off. The process of mulching with short grass, or, instead of it, other vegetable or decomposing animal matter, is to be followed up, as already described, from year to year. The second year some of the thinnings may be fit for use, but by no means should any of the strong heads be cut for that purpose, except where there are too many to one plant, as the patience and forbearance now exercised will be amply repaid by the produce next year, when the crop may be regularly cut for use. In gathering Asparagus, a habit prevails of cutting the heads a few inches below the surface; but for what useful purpose I am at a loss to conceive; inasmuch as the white or blanched part of the grass is usually so hard and stringy as to be scarcely fit for use; whereas, by allowing the heads to grow the proper length above the surface, say about eight inches or so, they will not only still be compact, but the whole of the "Grass" will be tender and eatable.

ASPARAGUS PESTS.

Foremost amongst the causes which tend to diminish the yield of Asparagus deserve mention the luxuriant growth of fungus on the part of the plant above-ground, the attacks of wireworms on its roots, and the depredations of the Asparagus beetle (*Crioceris Asparagi*), which abounds more in some seasons than in others, and is sometimes very destructive in one locality and almost unknown in others. The larvæ feed upon the leaves, perforate the buds, and even gnaw the rind of the stems. When the beetle first appears it may be controlled, but if to become established the task is hopeless. Whenever the eggs or the larvæ appear, cut and burn the plants as long as any traces of the insect are visible. The larvæ, beetles, and eggs are generally found from the middle of June to September; its larva state continues only for about ten days, after which it descends into the earth to undergo its changes; and in three weeks the perfect beetle is formed, when it ascends the plants to deposit its eggs. The beetle, after eating into the vegetable, lays its eggs in the tender juicy portion of the stalk and leaves, and when the larvæ (the produce of the eggs) issue forth, they totally destroy those parts of the plant with which they come

in contact. The most efficient plan of dealing with this insect-plague is to collect and "stamp out" the young brood, or better still, the full-grown beetles, before they have laid their eggs. The work of collection must, however, be carefully proceeded with, for with the slightest movement the beetles will fall down and conceal themselves in the earth. After a time they reappear, and, if permitted, will crawl again on to the plant, lay their eggs, and recommence feeding. In his war of extermination with the beetles, the Asparagus-grower has no better friends and allies than the birds. If he is wise, he does all in his power to attract and protect them.

Respecting the fungus, the first symptoms are observable in August. Small dark brown spots, which in a few days attain the length of nearly quarter of an inch, appear on the stalks, and gradually assume a much darker shade. These spots are surrounded by the ruptured epidermis of the stalk, and are somewhat inflated. On close examination, vertical layers of small powdery spots are remarked under the epidermis; and it is their great accumulation here and there which causes the latter to burst. The injury done to the parts of the vegetable that are above the ground has an unfavourable effect on the roots, checking their development, and in the ensuing spring the yield of Asparagus will be found materially diminished by the premature death of many of the plants. As to the precise nature and proper designation of the disease, whether rust or another disease greatly resembling it, whether originating in (or greatly increased by) over manuring with nitrogenous fertilisers, and whether—as some maintain—never met with under the shade of trees, are questions on which uncertainty prevails. Should it be ascertained on further investigation that the disease is not confined to Asparagus—and Dr. Birnbaum has noticed a parasitic fungus almost identical in appearance on Couch Grass—the difficulty of combating the evil and preventing it from spreading will be proportionally increased. If it turns out to be rust, the spores alluded to are possibly the winter spores, which first develop themselves in spring on another plant, and are afterwards found on Asparagus in the form of mycelium or spawn. On one point, viz., the dangerous character of the disease, there is unfortunately no room for doubt, and the grower has every reason to be careful that it shall not gain ground, or be imported into districts hitherto free from it. Above all things he must endeavour to prevent the discharge of the spores—the organs of reproduction—

and, as soon as any signs of disease show themselves, his best course is to remove the parts attacked and burn them.

Wireworms are sometimes very destructive to the roots of Asparagus, but by means of dressings of salt, pieces of Carrots or Potatoes attached to a skewer, and buried a few inches in the ground near the crowns, they may be attracted and destroyed; these decoys should be examined once every two days or so. Snails and slugs often attack the plants in mild springs, just as they push through the soil, but they may readily be got rid of by dusting the ground with lime.

ASPARAGUS CULTURE.

BY

M. GODEFROY-LEBŒUF.



Varieties of Asparagus.—Originally there was but one form of edible Asparagus, the wild Asparagus (*Asparagus officinalis*), from which have sprung the common garden Asparagus and the Giant Asparagus. The former gave rise to the Early Pink Asparagus grown in Holland, at Ulm, and at Argenteuil, and the Late Pink Asparagus grown at the same places. Culture and selection have so great an influence on vegetables that they modify not only their constitution, but their mode of growth and their flavour. It is by dint of constant observation, combined with great care and patience, that the Asparagus growers at Argenteuil have succeeded in improving this vegetable by creating, as it were, two varieties, the Early and the Late, and that they have rendered those varieties permanent, so that they may always be depended on as being superior to their common parent both in size and quality. Asparagus is grown throughout the whole of France with almost equal care. How is it, then, that there are only certain privileged localities which produce it in such perfection in every way that even after twenty years' growth the same plants yield abundant crops? **This**

apparent anomaly simply arises from certain growers having adopted an intelligent and rational method of cultivation. By this means the Argenteuil Asparagus has reached such a state of perfection that it is impossible to mistake it for the old-fashioned varieties. Compared with them it gives crops of triple weight and size, while the Early variety comes to perfection ten days earlier than any other known kind. The appreciation bestowed on this variety everywhere is consequently fully accounted for.

EARLY AND LATE ARGENTEUIL AND DUTCH ASPARAGUS.

Late Asparagus.—The Late Asparagus as grown at Argenteuil is often flat in form; the eyes are prominent and arranged in a spiral, and the point is short and stumpy. When well grown the heads are from $3\frac{1}{4}$ in. to $7\frac{1}{2}$ in. in circumference at a distance of $8\frac{3}{4}$ in. from the tip. Fig. 1 shows one of these heads drawn from nature. There were others grown at the same time which were much larger, but this one was chosen on account of its representing the purest type of this variety. The entire stem of the Late Asparagus when full grown measures from 5 ft. 10 in. to 7 ft. 8 in. in height. This variety is very vigorous, will thrive in almost any kind of soil, and lasts for many years. The crown of the root rises but slowly out of the ground; the Late variety therefore is better adapted for a shallow soil than the Early variety. It produces less than its congener during the first years of its growth; but, on the other hand, it lasts much longer. We have seen Asparagus beds twenty-seven years old which still yielded abundant crops, the heads measuring from $2\frac{1}{2}$ in. to $3\frac{1}{4}$ in. in circumference.

Early Asparagus.—The Early Argenteuil Asparagus (fig. 2) is generally round, but sometimes slightly flattened. The eyes are not so prominent as in the Late variety, and they form less regular spirals. The point is conical, often swollen in the middle, and longer. The heads measure from $2\frac{3}{4}$ in. to $5\frac{1}{2}$ in. in circumference at $8\frac{3}{4}$ in. from the tip. Fig. 2 shows a head of Early Asparagus of the average size drawn from

nature by M. Godefroy-Lebœuf. There were many heads grown at the same time which were much larger, but a medium-sized head was chosen as being a type of the variety

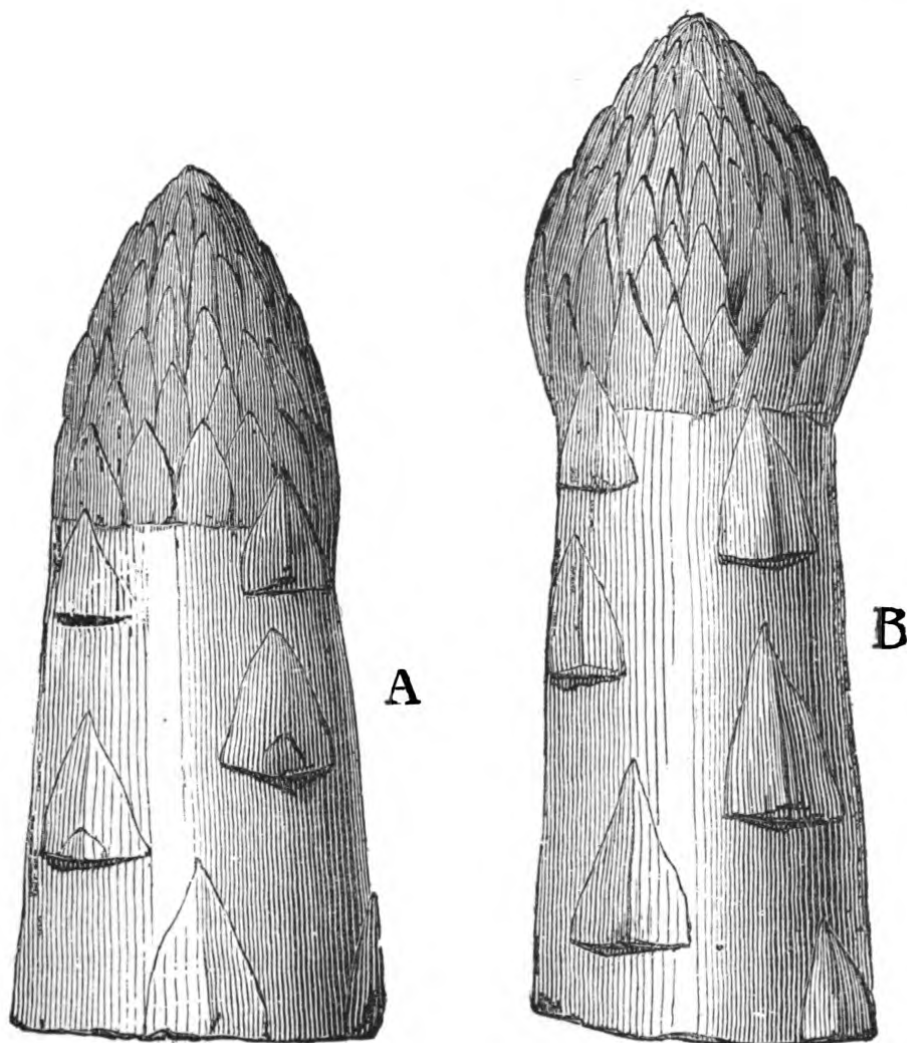


Fig. 1.—Late Asparagus.

Fig. 2.—Early Asparagus.

which is most in favour in the Paris market. The Early Asparagus attains a much greater development than the Late, often reaching to the height of 10 ft. It is very vigorous, and is not particular as to the richness of the soil ; neverthe-

less it requires a depth of at least 10 in., for the crown of the root rises every year about $\frac{1}{2}$ in. It begins to yield at the end of the third year, and from six years old it gives good crops for from fourteen to fifteen years. After this time the heads are somewhat smaller, but the crop is abundant. When well cultivated it will continue yielding for from eighteen to twenty years.

Dutch Asparagus.—Dutch Asparagus (fig. 3) is nearly always round. The eyes are arranged spirally, and are narrow and prominent. The tip is sometimes conical, at others elongated, and at times swollen in the middle. The heads are from $1\frac{1}{4}$ in. to $3\frac{1}{2}$ in. in circumference, measured at $8\frac{3}{4}$ in. from the tip. Fig. 3 shows one of the finest heads of this variety, drawn from nature by M. Godefroy-Lebœuf. The general height of this Asparagus is about 5 ft. It is neither so handsome, so well-flavoured, nor so tender as the two Argenteuil varieties. It also requires a much richer and deeper soil; its cultivation in France, therefore, has been given up by the best growers. Among other defects which are laid to its account are the following: it very soon grows hard, it opens its point very rapidly, and turns green in twenty-four hours. This variety fetches but a low price in the Paris markets, where it is sold at 1 franc a bundle, while the Argenteuil variety of the same size fetches from three to four times that price. It is not a good plant for cultivating on a large scale, while for amateur growth it is unsuitable on account of its small yield and its bitter flavour. It should only, therefore, as a rule, be grown where other sorts cannot be obtained. It has

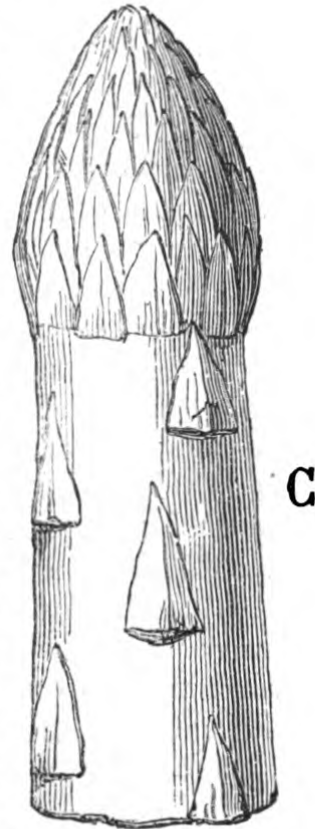


Fig. 3.—Dutch Asparagus

been estimated that it yields only a quarter of the crop furnished by the Argenteuil sort, all other things being equal. It also needs greater care and a larger quantity of manure.

The Soil.—Asparagus may be grown, and will thrive, in almost every kind of soil; heavy and damp soils, however, must be lightened before they will yield abundant crops. The best soil for growing Asparagus is a light one, either calcareous, siliceous, or granitic. If the soil is hard and heavy, it must be made lighter during the first few years by spreading over the stools a certain quantity of sand, lime-kiln, or other ashes, coal-dust, and similar inert materials, until it has lost its property of hardening and cracking during the dry season.

Preparation of the Ground.—Generally speaking, a great deal of very useless trouble is taken in the preparation of a piece of ground intended for an Asparagus bed. Some growers dig out the whole of the soil to the depth of 3 ft. or 4 ft., filling up the void with masses of manure, which, instead of favouring the growth of the crop, are not only lost but are absolutely injurious. When the spot on which the Asparagus bed is to be formed has been decided on, it is only necessary to turn up the soil to the depth of from 10 in. to 12 in., either before or after the winter sets in. Large and small stones must be carefully removed, so as to render the soil easier to work. Asparagus requires a firm soil to root in; we must be careful, therefore, not to dig down below a greater depth than 12 in., for if the roots bury themselves at too great a depth they will feel the effects of the atmosphere in a very small degree. Their growth will be consequently retarded, the crop will be smaller, the heads thinner, and the plants shorter-lived. The soil ought to be allowed to remain fallow after digging, that is to say, nothing but the rake should be passed over it to make all smooth—thus enabling the frost to have a greater action on it than otherwise. Whatever may be the quality of the soil in other ways, it is of the greatest importance that the ground should be cleared of stones great and small, as they not only prevent

the heads from appearing above the surface, but, by lying on the tops of them, cause them to bend and become deformed. The ground should also be kept clear of weeds.

Manuring before Planting.—Except in the case of poor soil, we need not give any manure before planting. If the soil is exhausted, we should dig in—either in September, October, or November, but not later—a quantity of well-rotted manure, so that by the end of the winter, when we are about to plant, we may find the whole of it resolved into soil. As a general rule, we must never manure at the time of planting, for manure attracts insects, and insects attract moles and mice, all of which are very injurious to the young plants.

Choosing the Plants.—If we sow Couch Grass we shall certainly not reap Wheat; and if we plant a sickly-looking, weak tree we shall never produce one that is healthy and vigorous. If, therefore, we plant puny Asparagus plants we shall only obtain a wretched crop. We have often heard it said that it matters little whether the plant is strong or weak, and that as long as we cultivate properly and give plenty of manure, we must necessarily obtain firm and well-flavoured Asparagus. There is only one species of edible Asparagus, but there are almost as many sub-varieties as there are growers, for when the plant is grown from seed it infallibly varies when the seed-plants are not specially grown for the purpose. It is necessary, therefore, to choose our seed from those plants which produce the finest growths. Between the wild Asparagus and the varieties which are cultivated now-a-days the difference is very great. Notwithstanding this, they are all produced from the same type. Amongst these sub-varieties there are all kinds of shades, but between the wild Asparagus and that grown in Holland and at Argenteuil there is a wonderful difference. Take a walk through the Asparagus beds of Argenteuil, St. Denis, Gennevilliers, Colombes, and Sannois, and when the time for cutting arrives, notice the shape and quality of the heads and taste their flavour and

you will soon become convinced that the different sorts cannot be mistaken for each other, neither as to earliness, quality, form, vigour, or general appearance. It is not sufficient to find out the localities which are celebrated for the best growths of Asparagus, but we must also find out whether they are grown by A or by B, and even then we may be at a loss, for in one plot B may grow a crop which leaves nothing to be desired, while the crop in the very next plot may be worthless. In using the terms variety and sub-variety we do not intend them to be understood in the strict botanical sense; they must therefore be looked upon as cultural expressions, that is to say, that these varieties are capable of returning to their original type if they are neglected or badly cultivated. Nothing, therefore, is so difficult as to procure varieties not merely of good quality, but of exceptional quality. The choice of plants is therefore a matter of great importance in growing Asparagus; so important is it, in fact, that we should reject all stools offered at a cheap rate, and always pay a fair sum for them, as long as we are sure of obtaining a good variety. What possible good can there be in exercising economy in purchasing cheap stools which will only yield one-half or one-third of the crop obtainable from the best varieties for a few extra pence? In those localities which are most renowned for Asparagus—at Argenteuil, for instance—the growers attach the greatest importance to having good varieties, and they not only choose them from amongst their own plants, but from amongst those of their neighbours, so much so that a grower who has cultivated a number of seed-bearing plants with the greatest care suddenly finds himself deprived of them just as the time comes for gathering the seed. It has also happened that the stools were destroyed by those who stole the seed, so that the proper owner of them was no longer able to procure a supply at will. This trait in the character of Asparagus growers will show how much importance they attach to the choice of good varieties. Sharp growers, consequently, who have succeeded in producing rare sub-varieties, prevent them from becoming multiplied either by

breaking off the fruit-bearing shoots or by destroying the seeds, so that they should only be recognised by those in the secret. If it is a difficult matter to obtain good seed plants in places where Asparagus growing is carried on on a large scale, it will be readily understood that it is almost impossible to find them in small gardens where the cultivation of Asparagus is almost unknown. How then are we to recognise a good plant? Nothing is easier to those who have seen it grow, or more difficult for those who have only seen it as a stool at the moment of planting. In making a choice, we must be certain of the seed in the first place, and ascertain that it comes from a good variety, after which we destroy all those young plants which show any signs of departing from the type which we are desirous of growing. This is an art which can only be practised with success by those who are thoroughly acquainted with rearing Asparagus. The wisest course to pursue, therefore, when about to commence an Asparagus bed is to go to some well-known firm with a reputation to lose, and to place full confidence in it for the choice of seeds and plants. Even when we have a thoroughly good plant in cultivation we must know how to gather the seed at the proper time and in the proper manner. In addition to this all of the seed even from the best plants is not equally good. The seed, for instance, which has been gathered from a stool which has flowered side by side with a bad or medium kind, and at the same time, is worth nothing, because it has been fertilised badly. Again, the seed should be perfectly ripe, and it must be kept properly after it has been gathered. The last heads generally yield nothing but doubtful seed, which seldom reproduces the proper type. The seeds which grow at the end of the shoots also, as well as those produced by the upper and lower extremities of the stem, have the same defect. Those seeds, too, which are not sufficiently ripe or which are too small are sure to produce bad plants. Seed should be only collected from those plants which have reached the age of from seven to ten years and which carry but few seed-vessels. The seed-bearing stems also yield bad seed.

By the above we can easily see that the difference between the difficulty of procuring good seed and good plants is enormous; we therefore recommend the amateur and small grower to give up all ideas of raising *Asparagus* from seed.

The Age and Strength of the Plants.—Two-year-old stools are still planted by some, but for a long time past practical growers have given up planting stools of more than a year old. The plant from a two-year-old stool is always a bad one, no matter what may have been the amount of care which has been bestowed on it, for the reason that it produces too many heads, which consequently lack strength and sap. General weakness is the consequence, and the crops are all puny and of poor quality. *Asparagus* is a plant of vigorous growth, but no plant in proper health would stand transplanting the second year without suffering from it; it would, in fact, give an abortive growth, which would never produce good heads. A plant which has come off a healthy stock is sufficiently strong for planting at a year old, and all of an older growth should be neglected. Great attention, therefore, is necessary in our choice of plants, and, as we have said before, bad goods are always dear, more especially in the case of *Asparagus*. The strength or size of the stools is of little consequence if the seed has been good, so that at the end of the second year there is but little difference between them.

Form of the Ground for Planting.—If you wish to plant a plot of *Asparagus* distinct from the rest of the kitchen garden, you must open several trenches at about 36 in. apart, 10 in. deep, and 10 in. wide, throwing up on each side the earth taken out, so as to form a mound, as shown in fig. 4 at RRR. The line which passes beneath the letters HHH shows the level of the earth, and the upper part of the earth taken out of the trenches. The letters MM (fig. 4) show the stools in their proper position before they have been covered with a layer of earth. It will be noticed that the sides of the trenches are almost perpendicular below ground, and that above ground they form an angle with the

mound at the level of the soil. This angle disappears as soon as the stool is covered over with earth, and the base of the mound is at the bottom of the trench, the sides meeting in an angle at the top. Beware of digging up the bottom of the trench, or of hoeing or raking it as recommended by many authors. The soil should be left alone, for Asparagus likes to run over the surface and not to penetrate beneath it; besides, as already stated, the roots, if they penetrate too deeply, will not feel the beneficial effects of the sun during the spring. On the other hand, they may meet with a subsoil that is cold, damp, and dry, all of which conditions are unfavourable to the plant, independently of the fact that the manure which

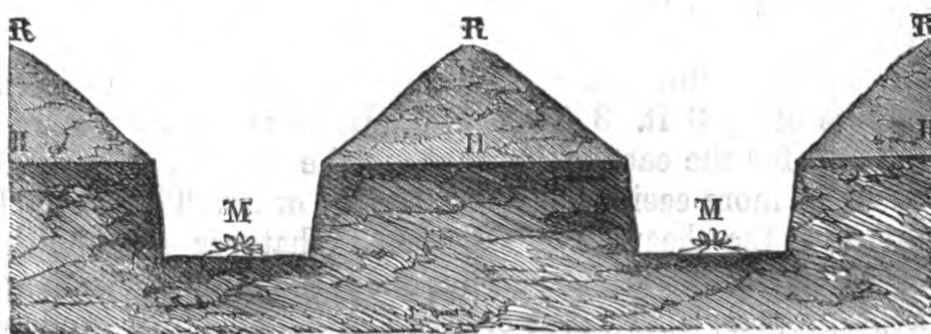


Fig. 4.—Asparagus trenches.

has been applied has great difficulty in reaching the roots, either nullifying its effects entirely or retarding them considerably. If the soil is very light, instead of digging trenches of 10 in. make them only 7 in. or 8 in. in depth. If the ground is very dry and we plant late, the trenches should not be more than 10 in. deep, and a hole of from 2 in. to 2½ in. should be dug out to receive the stool. Loose earth is then thrown in and the whole is filled up until it takes the form shown in the cut (fig. 4). If you do not wish to have an Asparagus plot distinct from your ordinary kitchen garden, open several trenches a yard wide at a distance of 3 or 4 yds. from each other and plant in two rows. By adopting this plan your Asparagus will have a considerable space over which

to spread its roots, which will by this means run no danger of becoming entangled with those of the plants in the neighbouring trenches. They will thus become finer, more succulent, and will last longer. Most authors recommend the use of long trenches dug to the depth of at least a yard, and filled up with all kinds of manure and composts. Experience has shown for a long time past that no method could be much worse than the one just described. Besides being expensive, the yield of Asparagus is late, sparse, and weak ; in fact, it is the primitive method of growing Asparagus.

Distance between the Plants.—When we plant in an open plot the stools should be at least 3 ft. 3 in. from each other, but if two rows of plants are grown side by side they should be 2 ft. 8 in. from each other. For our own beds we have adopted a uniform distance of 4 ft. between the lines, the plants being 3 ft. 3 in. apart. By this means we have more room for the earth taken out of the trenches, and the mounds are more easily made and kept in order. This method, therefore, is the cheapest in the end. Whatever may be the distance, the weight of the crop is about the same if the plants be kept properly apart, but crowded Asparagus beds produce late and smaller crops of very inferior appearance and quality, besides which they are much more quickly exhausted. They require more manure, and their cultivation is much more difficult and costly. Such plantations are more liable to the attacks of insects, and become unfit for good plants, seeing that they degenerate towards the original stock much more quickly. We have, therefore, everything to lose and nothing to gain by not planting the stools at a sufficient distance apart.

Planting.—We plant Asparagus both in the spring and autumn. The autumn plantings do not succeed in light soils ; most of the young shoots die down during the winter, and those which resist present but a wretched appearance. In cold climates autumn planting meets with but little better success, even in the case of dry soils ; this is due to the fact

that Asparagus, being a succulent plant, does not grow in the winter like woody-fibred plants, and that it very often rots when it is placed in the ground too soon. It is only in southern climates that it may be planted in autumn or winter. Whether you plant in beds or borders, the proper position of each stool must be marked off with the measuring line and dibber. Having completed this part of the operation, bring a little light soil over the part marked, so as to form a little mound as shown at M M (fig. 4) of about 2 in. in height, and in the form of a flattened sugar-loaf, continuing the operations to the end of each line. You next take a stool and spread it out on the little mound, arranging the roots in such a manner that they neither touch nor cross each other, covering them up to a depth of from 3 in. to 4 in. with fine, light soil. Press the soil down firmly over the roots so as to bring them close together,

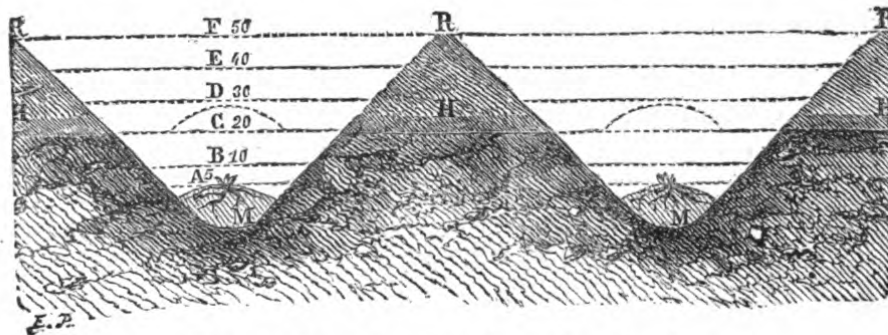


Fig. 5.—Asparagus trenches after planting.

so that the stool may not be disturbed, as well as to drive out all the air from beneath the soil, and the operation is finished. It now only remains for us to fill up the empty spaces between the mounds with earth, smoothing the surface of the bottom of each trench with the rake level with the line B, as shown in fig. 5, that is to the depth of 4 in. Fig. 4 shows a section of the beds before they are planted, and fig. 5 a section of them after the operation has been completed, with the exception that the stools and mounds are shown while they are really covered up by the soil which has been taken from the mounds, where they formed an angle on a level with H H (fig. 5). The stools

consequently are covered up as far as the dotted line B 10, that is to say, to the depth of an additional 4 in., including the little mounds which have been flattened down by the superincumbent pressure, and are now only from $\frac{1}{2}$ in. to 1 in. thick. For planting under walls on the level surface we dig holes of 8 in. in depth, refilling with 1 in. of light earth, and plant according to the directions given above, filling up with $3\frac{1}{2}$ in. to 4 in. of earth. Small mounds are placed round the plant so as to attract the humidity of the soil, if it is dry, and on the mounds must be formed others, or the Asparagus heads will be too short. Some authors recommend that the stools should be planted as soon as they are pulled up, but this is an error, for Asparagus takes root much more readily when it is faded. Like all succulent plants it is apt to rot if it is planted when quite fresh. It has also been observed that plants sent from a distance strike root much more easily than those taken from a plantation close by, and produce much better heads. We have ourselves planted on the 16th of April stools which were taken out of the ground on the 20th of the previous February, and the plants which they produced were in all respects most satisfactory.

TREATMENT OF YOUNG PLANTS.

First Year.—The operations to be performed during the first year are limited to keeping the Asparagus plantations constantly free from weeds, hunting down the *Crioceris Asparagi*, as explained farther on, and placing sticks at the bottom of each stool as soon as the stems are 18 in. or 20 in. high. For the latter purpose we insert a little stick of wood at 12 in. or 14 in. from the stool so as to avoid all danger of hurting the roots, bending the stick over until it is in close proximity to the shoot we desire to protect. At the point where the stick touches the shoot we tie them together with a piece of bast or other tying material. This operation is for the purpose of preventing the wind from disturbing the stool in the soil by shaking the shoot backwards and forwards. This precaution is very necessary in localities exposed to high

winds, but it is much too often neglected, and the *Asparagus* suffers accordingly. Where *Asparagus* is grown on a large scale, this support is dispensed with, the stool being covered up with fresh soil in the month of July. As it often happens that late shoots issue from the stools, they also should be fixed to a support as they come up. This operation is also unnecessary when the plant is grown on a large scale. If very dry weather sets in, we may throw on the stools 3 in. or 4 in. of soil taken from the mounds. The rain and the action of the hoe cause the soil of the mounds to fall into the trenches, so that the stools which were once covered with 4 in. of soil, at the end of the season become covered to the depth shown by the line c, fig. 5. In the month of November the surface of the trench is brought down to the level of the line B, fig. 2, or even below it, by throwing back the soil on to the mounds at each side before manuring.

Second Year.—In the month of March, after having dug up the mounds, we throw a few inches of earth into the trenches, raising the level to between the lines B and c, or even up to c (fig. 5), but not higher. In performing this operation we must be careful not to touch the young shoots, which will have just been formed, for if we hurt the stool the crop is endangered. During this year the same ordinary operations of weeding, hoeing, &c., are performed as described in the directions for the first year, keeping a sharp look-out for the advent of the *Crioceris*. In the month of November the trenches are dug up by taking up the soil as far as the line B (fig. 5) if the stool has not become raised, but in such a manner as to leave a good 2 in. on the roots. We then scatter throughout the whole length of the trenches either well-rotted manure, oil cake, or artificial manure in the proper proportions, throwing back the soil on to the mounds, as in the first year. The winter being over, the trenches are filled with from $1\frac{1}{2}$ in. to $2\frac{1}{2}$ in. of earth, so as to bring them to the level of the line B (fig. 5), making the arched tops as high as the line D, describing the curve shown by the dotted line.

Before making these mounds we must take away the old shoots by detaching them gently from the stool.

Third Year.—During the third year we proceed as during the first, with the exception that if the plantation has prospered we may gather our first crop, taking only two or three heads, but not more, from the healthiest-looking stools. In the autumn the trenches are cleared in the same way as in the first two years, and the mounds then are manured, as will be described presently. The mounds are lowered as during the first year, but we must only manure lightly. The weaker-looking stools are marked with a stick, so that they should not be earthed up in the coming spring, and so have nothing gathered from them. As for those which are strong and healthy we stick two or three old Asparagus heads into each stool, taking one out for each young head that we gather, so as to keep count of the crop. This is only done during the first year.

Fourth Year.—This year's operations coincide absolutely with those of the second year, with the exception that we may gather one crop during a period of three weeks, taking care, however, not to try the weaker stools too much. The trenches are manured during the winter, and when spring arrives we scatter over them a little soil, so that the stools may be buried to a depth of about 5 in. For this operation we must refer the reader to the Calendar of the Asparagus Cultivator.* From this period the stool producing its roots at the collar has a constant tendency to raise itself. It is for this reason that, having cleared it of soil in the autumn and earthed it up again in spring, in fifteen years the mounds will be lowered entirely to the general level of the beds, as indicated by the line H H H (fig. 5). In order to earth up the stools, we are consequently obliged to take the soil away from the mounds, which, so to speak, now become lower than the

* See page 57.

stools themselves. The earthed-up stools now reach to the height of the line E (fig. 5), and even to the line F, if the beds are very old. Early Asparagus rises, as a rule, about $\frac{1}{2}$ in. per annum, and the Late about half that distance.

List of operations to be performed after the fourth year :

1.—In November take away the tall shoots after having cut them away about 12 in. below the soil.

2.—During the winter we must break down the mounds at least every three years.

3.—Rebuild the mounds.

4.—Manure must be distributed.

5.—Make up the bottom of the trenches at the end of the winter (say from the 15th to the 20th of March), by covering them with 3 in. or 4 in. of soil that we took out of them and threw on the mounds in the autumn.

6.—Towards the end of March take away the old heads and form arched-headed mounds of 7 in. or 8 in. in depth over the stools.

7.—Hoe as often as necessity requires it ; but, whether weeds are troublesome or not, the whole ground should be well hoed four times a year from March to October, namely in April, June, July, and September.

8.—Break down the small round-headed mounds immediately after the crop has been gathered, except high winds are liable to break the shoots, in which case it is better not to unearth.

9.—Support the shoots with sticks if necessary, but this is not needful when the plant is produced on a large scale.

Digging.—Under this heading may be included both the breaking down and building up operations connected with Asparagus culture, as well as the frequent hoeings which must be practised. The hoeings are a kind of superficial digging which only penetrated a slight depth below the surface, and are performed by means of a shallow hoe or even a rake. The other two operations are performed with the large hoe and flat-toothed fork. This latter instrument is but

little known and used, but it is of the greatest possible service, and we recommend it highly to Asparagus growers.

Shallow Hoeing is a very simple and very easy operation, so well known as not to need description. We ought, however, to remark that it is essential to use a very light tool and not to disturb the earth to so great a depth as is done in certain localities. It is only necessary to penetrate to a depth of about $\frac{1}{2}$ in., so as to cut off the weeds at the crown. If we hoe more deeply than this we shall not only bring up to the surface a number of seeds which will promptly germinate, but we shall cut the weeds too far below the collar, at the same time pushing them back again into the soil, so that after the next shower of rain we shall be surprised to see a large number of them lifting up their heads once more. Digging operations require a much greater amount of attention than light hoeing. The labourer, armed with his fork, sits astraddle on the mound and stirs up the soil at the sides, throwing a little of it behind him without destroying the shape of the mound too much, and taking care not to hurt the roots of the Asparagus plants, which he may easily do if he works below the surface of the soil in the trenches.

In sandy situations, or very soft soils, there are certain strong-growing weeds that the flat-toothed fork is powerless to destroy ; in this case the large broad hoe must be used, but it requires long practice to handle this implement properly. It is a very tiring tool to use, but it completely moves the earth, for it makes a hole like a spade. The hoe has the advantage of not interfering with the form of the mound, so that it leaves no work behind it. But, in spite of every precaution, the form of the mound is more or less spoiled by digging operations, so that it must be restored to its original shape by the aid of the flat hoe or the small hoe. Careful growers overturn their mounds every year ; others, every two years ; while others only perform this operation once in three years. There is no doubt, however, that the more the earth is disturbed the more active is the growth of the plants.

Manures and How to Use them.—By adopting the method of culture described above, we need only use a comparatively small amount of manure, hardly double the quantity of that employed for root crops—Potatoes, for instance. All manures are apparently good for Asparagus ; there are, however, certain precautions to be taken in using them. For instance, farm-yard manure should not be employed in too fresh a condition, as it would affect the roots and certainly spoil the crop for two or three years. We must also beware of employing other manures of too active a nature, such as lime, sheep's, asses', or mules' manure in too large doses. We may obtain excellent results on certain soils by using a double dressing composed of one-half stable manure and one-half dried blood, guano, burnt seaweed, &c., but it must be tried on a small scale before applying it to the whole plantation. The ingredients are not to be mixed together, but applied separately, the blood, guano, or seaweed being used first. A good deal has been said about the use of common salt in Asparagus culture ; but we have tried it several times without being able to come to any exact opinion on the subject. We should consequently advise Asparagus growers to make a trial of it on a small scale before applying it to the whole of their beds, in order not to run the risk of accident. There are two methods of applying manures—the first by placing them in the trenches ; the second by distributing them over the mounds. The following is the general mode of procedure : We must always be careful to manure either before or at the beginning of the winter, in order that the rains may have time to dissolve the more soluble portions and carry them down to the roots. If we defer the application of the manure until spring, the good effects of it will scarcely be apparent, or it will not be perceived until a year has elapsed. When we adopt the system of dressing the trenches, we begin by taking off the top of the small mounds, and, this being done, we spread the manure throughout the whole length and breadth of the trench, taking care to keep the stools free from it, and more especially the spots from which the young heads

will spring, as the immediate contact of manure of any kind with them will rust them and render them unsaleable and uneatable. The quantity of manure to be used varies according to circumstances. In the case of short stable manure, from which all the long straw has been removed, it is applied in a layer of from 1 in. to $1\frac{1}{2}$ in. in thickness across the whole width of the trench, or only from 16 in. to 20 in. in length, according to the age of the stools. At Argenteuil a cubic foot of night-soil is used for every five or six stools, that is to say, about a cubic yard for every 140 stools, once in two years. In spring, the soil which was taken during the process of unearthing, is replaced, so that the manure now becomes covered to the depth of from 3 in. to 4 in. In manuring the mounds we must begin to open them up as soon as possible, that is to say, towards the end of October. This is effected by cutting a number of trenches 14 in. in width and of such a depth as to reach to the bottom of the main trenches without injuring the roots of the plants. The soil which is taken out of these small trenches is deposited in the main trenches between each stool of Asparagus, so placed as not to cover up these latter; in fact, so that it may be gathered up again when necessary without endangering the young shoots which mark the position of the stools. These small trenches being made, the manure is thrown into them to a depth of at least $2\frac{1}{2}$ in., the extra soil is replaced, and the mounds are trimmed up. The trenches are opened up either with the flat hoe or with the spade. The flat hoe is the most difficult to manage, but the work is done much quicker than when the spade is used. We should advise Asparagus growers to use the flat hoe in localities where the soil is pretty free from stones. In stony soils the trenches are somewhat difficult to open up, and we are sometimes obliged to have recourse to the large-toothed fork to stir up the soil, which is afterwards carried away by the shovel. In the latter case we must manure much more generously, and only undertake this operation once every four or five years, in order to avoid a too frequent recurrence of

the expense and inconvenience it gives rise to. It may be performed during the fourth, eighth, and twelfth years.

Unearthing.—This is the term given by the Argenteuil growers to the operation which consists in taking out the soil from the bottom of the hollows or trenches in which the Asparagus stools are planted and throwing it upon the mound from which it was taken. When first a plantation is made the intermediate mounds have a pretty rapid slope, that is to say, they form an angle of 45° with the perpendicular. It is plain, therefore, that the soil forming their sides will gradually tend to fill up the intervening hollows, either from the action of the rain or from the constant weedings with or without the use of the hoe. Commencing with the autumn immediately following the first planting we must begin to unearth, that is to say, to clear out of the trenches the soil which has fallen into them from the sides of the mounds, and also remove from above the stools a portion of that with which they were covered at the time they were planted, say to the depth of $1\frac{1}{2}$ in. or so, so that the action of the frost may open the soil and that the rain may penetrate and improve it, also that during the first fine days of spring the sun may warm the surface of the soil and penetrate as far as the stool. Under the old-fashioned system the contrary operation took place. The trenches were filled with manure and stable litter for fear that the action of the frost should kill the plants. This is an error which has luckily long been exploded. The Asparagus will never freeze as long as the stool is covered with a layer of soil of $1\frac{1}{4}$ in. to $1\frac{3}{4}$ in. in depth.

Earthing up the Mounds.—Earthing-up operations should be commenced at the beginning of March. This operation consists in taking out the soil which was thrown into the trenches at the end of the preceding autumn and restoring it to the sides of the mounds. Some growers divide this operation into two parts, one being performed in March and the other in April, so as not to interfere with the warming up of the earth by the solar rays, for when it is

completed at one operation the heat penetrates the soil with much less rapidity and the growth of the plants is much retarded. A layer of fresh soil $\frac{1}{2}$ in. thick is also thrown into the trenches, so that the roots may be covered to a total depth of from 3 in. to $3\frac{1}{2}$ in. Treated in this way Asparagus will stand the drought of summer without harm. For earthing up the large flat or the narrow hoe is used.

Formation of the lesser Mounds over the Stools.

—The formation of the lesser mounds covering the stools should be begun about the 25th of March in the climate of Paris, but in warmer localities about twelve or fifteen days before the first young heads begin to make their appearance. These lower mounds will vary in height according to the age of the plantation. The following measurements may be taken as being pretty near the mark : At three years from the first crop, from 5 in. to 6 in. ; at four years, from 6 in. to 7 in. ; at five years, from 7 in. to 8 in. ; at six years, and for all the following years, from 8 in. to 9 in. These differences in the heights of the lower mounds are dependent on the size of the stool. The stronger the stool the greater the depth of earth above it that it will support, seeing that the larger and stronger the heads the more easily can they penetrate the superincumbent soil, whilst a young and comparatively weak shoot will become sickly during the process of slowly pushing itself through, besides which, it will most likely become so deformed as to be unfit for market. By properly earthing up we may obtain heads of the following lengths : third year, 9 in. ; fifth year, 10 in. ; sixth year, 11 in. ; and all the other years from 11 in. to 12 in. For making the lesser mounds we use the narrow or broad hoe, taking care to use fine open mould which has been well exposed to the atmosphere, so that the young heads may push through it easily. If it contains any stones they must be carefully sifted out and not allowed to remain in the plantation, for reasons already stated. We must also be careful not to allow any manure to remain in these lesser mounds. In order to gain an exact

notion of the way in which these lesser mounds are formed, we have only to glance at fig. 6, where we have the section of an Asparagus plantation before these lower mounds have been formed. The stools are at the bottom of the hollows T T, and the upper mounds A A are at their greatest height, whilst after the operation of earthing up the lesser mounds has taken place, the aspect of the ground becomes completely



Fig. 6.—Asparagus trenches before earthing up.

changed, as seen in fig 7. The mounds A A (fig. 6) are lowered, their tops c c c being completely carried away, as shown in fig. 7, in order to fill up the trenches and form the lower mounds B B, covering up the Asparagus stools T T (fig. 7). It must be perfectly understood that the lesser mounds

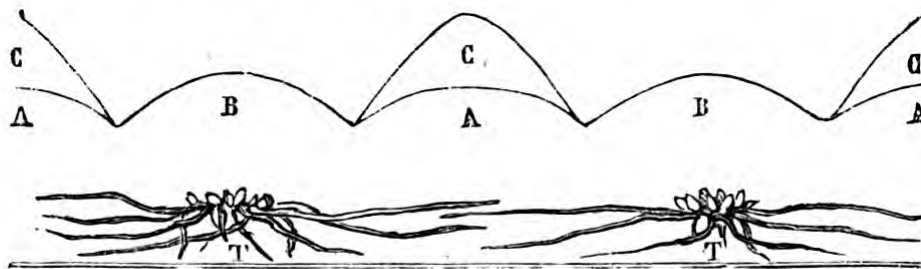


Fig. 7.—Asparagus trenches after earthing up.

which earth up the stools are not continuous ridges like the upper ones A A (figs. 6 and 7), but form little isolated conical hillocks, like mole-hills, the centre of each being over the centre of each Asparagus stool. Consequently, B B (fig. 7) represents a series of separate mounds and not a continuous ridge running from one end of the trench to the other. Some cultivators recommend that these lower mounds should be

made isolated one year and in the form of a continuous ridge the next. There is, however, no advantage in this; on the contrary, we think that there is a double inconvenience involved in this method, for not only is the labour of cultivation rendered much more difficult and irregular, but the stools do not gain so much benefit from the rain. It happens frequently that during the gathering in of the crop heavy rains set in, followed by great drought. In this case the mounds become excessively hard, and the heads find the greatest difficulty in penetrating the thick crust of their prison. Now is the time to use the three-pronged fork and stir up the earth to the depth of from 1 to 1½ in. only, so as not to injure the young heads, which are just beginning to push their way through. Three such forkings are sufficient for each mound.

Gathering the Crop, Keeping, Packing for Market, and Transport.—The Asparagus cutter must know his business, otherwise he will do more harm than good by injuring the stools. In former times Asparagus cutters used a long knife curved at the point, the cutting edge of which was toothed like a saw or nicked like a scythe. This erroneous method has long since been abandoned, and the crop is gathered as follows: We must first of all clear away the soil which surrounds the head we are going to gather, either with the fingers or else with the point of the knife used for cutting it. The knife is then thrust down so as almost to reach the root, taking care not to cut or bruise the neighbouring heads which have not yet pierced the soil. The head is seized between the knife and the thumb as near the root as possible, by pressing the blade of the knife firmly against its base, taking care not to bend or bruise the head in the middle. The head, being held firmly between the knife and the thumb, is gently pulled or twisted out and removed, the hole left by it is filled with soil by means of the cutting knife or the fingers, and the operation is finished. Care must be taken not to cut the head with the knife, which is only used as a lever and not as a cutting instrument. In order that Aspara-

gus may be gathered in this manner, it must be grown on the Argenteuil system, otherwise the heads being hard and woody it will be found impossible to detach them easily from the parent stool. Where this method is carried out carefully it has a great advantage over the old-fashioned system of cutting with a saw-bladed knife, and we strongly recommend all growers to practise it. It is somewhat slower, it is true, but it has the great advantage of not wounding the heads surrounding those which are pulled up, as well as of separating the useless stump of each head from the stool, instead of allowing it to wither and rot. For this purpose we have invented a special instrument in the form of a large, flat, shallow spoon, which is very easy to use. The best time for gathering Asparagus is when it shows some $1\frac{1}{2}$ in. to 2 in. above the ground. If it is gathered sooner than this there is a loss, in consequence of the heads not being sufficiently mature. If we defer it until later, the heads lose their proper flavour and hue, and become bitter in taste and green in colour; besides which it is only eatable throughout a portion of its length.

Keeping.—If we cannot use the gathered Asparagus at once, it must be carefully moved into a cellar specially devoted to the purpose. It must not be either washed or damped, and must be spread on the ground in the coolest and darkest part of the cellar out of reach of the light. Asparagus may be kept in this way for nearly a week, but it loses part of its flavour, becomes harder, and does not cook so well. If the crop is intended for market, it must be tied up into bundles, the size of which is regulated by the locality to which they are intended to be sent. At Argenteuil the bundles are generally from $6\frac{1}{2}$ in. to $7\frac{1}{4}$ in. in diameter in the middle, and from $4\frac{3}{4}$ in. to $5\frac{1}{4}$ in. in diameter at the head. To make the heads up into bundles, a small bench is used, to which is fixed at right angles a piece of board containing a hole of from $4\frac{3}{4}$ in. to $5\frac{1}{4}$ in. in diameter, and $1\frac{3}{4}$ in. deep, the hole being backed by another piece of board firmly screwed on. About 10 in. in front of this piece of board is another up-

right piece fixed parallel to it, and provided with a U-shaped hole. This upright piece slides backwards and forwards in a groove and may be fixed at any distance from the first upright piece by means of a thumb-screw. One of the sides of the U is hinged, so as to allow the workman to remove the bundle. The workman sits in front of the bundling bench, and turning it with the hole away from him and the U nearest to him, he chooses the best heads of Asparagus from a heap by his side, and places them in the U, allowing their tips to rest lightly in the stopped hole. If the Asparagus is flat he places it in such a way that the largest part is on the outside of the bundle. The medium-sized and smaller heads are placed in the centre. The heads are so adjusted in the hole that they are quite level. When the bundle is large enough a strip of Willow is passed round it about 4 in. from the top, and firmly tied, but, of course, without bruising the heads. Another strip of Willow is tied round the bundle about 4 in. from the lower end. Any of the heads whose lower extremities project too far beyond the bottom of the bundle are cut off level, and the operation is finished. Crooked heads may, with care and gentleness, be bent perfectly straight. If they break during the operation the two pieces may be united by inserting a sliver of wood into one of the broken ends and then sticking it into the other. When the whole of the gathering has been made up into bundles, they are placed upright in tubs or tanks of water, which must completely cover them. They are left in this condition for several hours and are then washed with a long-haired brush, which is passed gently over them backwards and forwards. They are then drained for ten minutes or so and are ready to be sent to market.

Packing and Carriage.—Asparagus is sent to market in large, strongly-made baskets, which contain twenty or thirty bundles and even more. The bottom of the basket is lined with hay or straw as well as the sides, after which the Asparagus bundles are put in rows and pressed together sideways pretty firmly, so that they cannot shake about. A layer of

straw is now placed, and another layer of Asparagus, and so on till the basket is nearly full, a thicker layer of hay or straw being placed on the top of all. Great care must be taken not to stint the amount of hay or straw used in lining the top, bottom, and sides of the basket, otherwise the tips of the heads will be knocked off and the Asparagus rendered unsaleable. The Asparagus grower who seeks to do a good trade must exercise great taste and judgment in preparing his merchandise for market. The first thing to be done is to place the largest and best looking heads on the outside of the bundle. Towards the end of the season, however, Early Asparagus becomes rather small; we must therefore have at hand a certain quantity of large heads of Late Asparagus, so as to be able to "dress" the bundles in a proper manner.

DIFFERENT METHODS OF GROWING ASPARAGUS.

As we have already said, Asparagus may be grown in a variety of ways—in square or oblong beds, or in borders under a wall, in separate stools, or isolated plots.

In Square Beds.—This is the mode of culture which has just been described, and consists in opening a number of trenches side by side with each other at a distance of from 3 ft. 3 in. to 4 ft. 9 in., according to circumstances.

In Oblong Beds.—We have also spoken of this method of culture, which consists in planting two rows of Asparagus side by side, leaving a wide empty space between them, so that the roots which spread out very widely may not become entangled or live at the expense of each other.

Wall Borders.—We may grow Asparagus on wall borders, in lines between the Vines in a Vineyard, or between espaliers. With a northern exposure we shall get a late crop, with a southern an early one.

Separate Stools.—We may also grow Asparagus in single stools in Vineyards in corners, in fact, wherever a piece of ground is to be found upon which the sun shines. Asparagus grown thus continues to bear for a long time, and in no way,

yields to that grown in square plots. Most of the Argenteuil Asparagus is grown in isolated stools in Vineyards.

In Clumps.—In newly-planted orchards we may plant between each tree a clump of eight stools, which will yield good crops for fifteen years. The manure and cultivation given to the Asparagus helps the neighbouring trees. Thus we may increase our fruit crop and grow Asparagus at the same time.

Each of these methods has its peculiar advantages. Planting in the open square bed allows us to choose the most favourable situation for growing the plant without disturbing the harmony of our ordinary kitchen garden, but the yield is not so good and the plantation does not last so long. In the long-bed system we may grow Asparagus nearly anywhere, and thus destroy the symmetry of our kitchen garden, injure the neighbouring crops, and increase the difficulty of gathering, by reason of the large extent of ground to be traversed by the labourer. If we plant in wall borders we often utilise ground which otherwise would be very often lost, but with a southern aspect we must take care to plant at a distance of at least 10 in. from the foot of the wall. With a northern, western, or eastern aspect we can plant in the plot at a less distance. In the isolated stool system we may obtain very fair results in well ventilated situations. In Vineyards, for instance, we may obtain large crops of Asparagus of excellent quality. It is by adopting this method of Asparagus growing that the Argenteuil growers obtain such fine results both in the way of the natural product and the pocket. These isolated stools cost but little to establish, and last for a long time. We have seen stools twenty-eight years old, which still gave excellent crops. On the clump system, when planted amongst tall trees, we may gain great advantages from this mode of culture. As yet it has been but little practised, but we strongly recommend it, on account of the excellent results which it yields. It may easily be conceived that if we grow Asparagus at the foot of

a tree, digging, hoeing, and weeding are unnecessary, and that these isolated clumps will furnish large and good crops for many years, especially in those places which have been dug deeply for the reception of trees, or where new soil and manure have been laid down for the same purpose, and that without in any way injuring the neighbouring trees, which themselves in turn profit by the care bestowed on the Asparagus, as well as by the manure with which it is dressed from time to time.

COST AND YIELD OF A HECTARE ($2\frac{1}{2}$ ACRES) PLANTED
WITH ASPARAGUS AT ARGENTEUIL.

Opening the trenches, making the mounds, planting the stools at the rate of 100 stools per work- ing day, at 4s. 2d., or £2 per thousand for	
10,000 stools	£20
10,000 stools at £3 12s. per 1000	36
Carriage and sundries, say	4

£60

By spreading this sum over twenty years, the average life of a plantation, we have per annum	£3
Rent of one hectare of land at 2s. $4\frac{1}{2}$ d. per acre, say	12
Labour, one hectare, say	14
Manure, per annum	14
Cutting, pulling, bundling, carriage to Paris market	40
Sundries, say	3

£86

The medium yield of each stool is half a bundle, which for 10,000 stools would be 5000 bundles, at say 1s. $7\frac{1}{2}$ d.	£400
Deduct for bad crops, damage, &c.	60

£340

Expenses	86
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£254

counting twenty years of full crops, for although we only begin to pull at the end of three years, the stool is just as likely to last twenty-four years as twenty. We have also not taken into consideration the choice early bundles, which often sell for 12s. or 15s. at the beginning of the season instead of 1s. 7½d., besides which we must deduct the expenses of gathering for the first three years.

COMPARISON BETWEEN DUTCH & ARGENTEUIL ASPARAGUS.

A great number of persons do not yet seem to properly understand the difference between the Argenteuil Asparagus and that of other celebrated localities. The following are some comparative calculations which will enable them to judge of the merits of the case. The experiments of which the figures are the outcome were made on thirty-five stools of the same age of each variety. The plants were reared in the same soil and were seven years old, the gatherings being made under precisely the same conditions.

ARGENTEUIL ASPARAGUS.

(Early.)

First gathering made April 3.
Produce of a single stool during
forty-two days—29 heads, weigh-
ing 1540 grs. (say 3 lb. 6½ oz.).
Prices at the market rate in the
Paris market.

1540 grs. (say 3 lb. 6½ oz.) re-
presents half a bundle, a good
bundle weighing from 3 kilos. to
3 kilos. 200 (say 6½ lb. to 6¾ lb.).
Amongst these heads there were
ten small, eleven medium, and
eight large, which taken at the
ordinary price would have sold
at the rate of 3 fr. (2s. 4¾d.) per
bundle, or 1 fr. 50 c. (1s. 2½d.);
but as the latter do not fetch so
much as the former, this price
must be reduced to 1 fr. (9½d.)

DUTCH ASPARAGUS.

First gathering made April 20.
Produce of a stool during forty-
two days—24 heads, weighing
605 grs. (say 1 lb. 5½ oz.).
Price at the market rate in the
Paris market.

605 grs. (say 1 lb. 5½ oz.) repre-
sents about the fifth of an ordi-
nary bundle of from 3 kilos. to
3 kilos. 200 (say 6½ lb. to 6¾ lb.).
The heads were none of them
very large. There were eight
very small, ten medium, and six
somewhat large. The ordinary
price for a similar quality would
be 1 fr. 50 c. per bundle (say
1s. 2½d.); the value of the crop
would therefore be 30 c. (3d.).

Wishing to push our experiments farther, we undertook
an investigation into the quantity of eatable substance con-

tained in each variety, with the following result. We first of all weighed out 1400 grammes (3 lb.) of Argenteuil and Dutch Asparagus, that is to say,

ARGENTEUIL ASPARAGUS.		DUTCH ASPARAGUS	
	Grammes.		Grammes.
Undressed	... 1400 (3 lb.)	Undressed	... 1400 (3 lb.)
After being peeled } they only weighed }	1070 (2.35 lb.)	After being peeled } they only weighed }	1050 (2.31 lb.)
Cooked, they } weighed ... }	1050 (2.31 lb.)	Cooked, they } weighed ... }	1030 (2.26 lb.)

The Argenteuil Asparagus when served at table and eaten left a residue of uneatable stalk weighing 400 grammes (0.88 lb.), that is to say, the eatable portion of the 1400 grammes of raw vegetable amounted to close on 1000 grammes or 2.2 lb.

This variety took only twelve minutes to cook, and was tender, sweet, and pleasant to the taste.

The Dutch Asparagus when served at table and eaten left a residue of uneatable stalk weighing 704 grammes (1.54 lb.), that is to say, the eatable part of the 1400 grammes of raw vegetable only amounted to 696 grammes or 1.53 lb.

This variety took seventeen minutes to cook, and was somewhat woody and very bitter.

These results show that there is really no comparison in point of merit between the Argenteuil and Dutch varieties. In point of quantity there is a difference of two-thirds in favour of the former Asparagus. Again, in point of price the advantage also rests with the Argenteuil variety, that is to say, 1 franc (about 9½d.) against 30 cents (about 3d.). As for the eatable portion, there is more than one-third more in the Argenteuil variety. Those who grow to sell will have little difficulty in deciding upon which variety to plant. The amateur also who prefers quality to quantity will hesitate still less, as the Argenteuil variety is sweeter and more succulent than the Dutch, which has a disagreeably bitter flavour. To this must be added the fact that the Dutch Asparagus requires a richer soil and double the quantity of manure.

COMPARISON BETWEEN A PLANTATION MADE WITH STOOLS OF A YEAR OLD AND ANOTHER MADE WITH STOOLS OF TWO OR THREE YEARS OLD.

There are still persons who think that if they plant stools of two and three years old they will be able to gather their

crops earlier than when employing plants of one year old. In order to disabuse their minds of this old-fashioned prejudice, we shall place before them the result of some comparative experiments which we have recently made in spite of the question having long since been decided. We planted twelve stools of one, two, and three years old respectively in the same soil under the same conditions and at the same time. Calling those plantings Nos. 1, 2, and 3, the following is the result obtained during the first year :—

No. 1.—All the stools came up before May 4 and were well grown.

No. 2.—Ten stools showed above ground before May 4, one on the 10th, and one appeared to be dead. The Asparagus-heads were very fine—finer, indeed, than those of No. 1.

No. 3.—Eight stools showed above ground before May 4, one on the 12th, and three gave no signs of life. The heads were very fine at first, but they became bent towards the end of the year (September 15) and were much weaker than those of No. 2.

Second Year.—No. 1.—Well-grown, regular, and strong heads, which measured on September 15 1 in. in circumference.

No. 2.—Well-grown, but irregular heads, somewhat weaker than those of No. 1.

No. 3.—Only pretty well-grown heads, very irregular, some of the stools having as many as eight or ten, but all very weak. One stool died after growing two heads.

Third Year.—No. 1.—Magnificent growths, the heads measuring on April 10 from 2 in. to 3½ in. in circumference.

No. 2.—Growth passable only, but very irregular. Some of the stools are very small. The finest of them produced heads which from April 8 to 10 only measured 2½ in. in circumference.

No. 3.—Growth very poor and very irregular. Some of the stools continue to produce small heads not much thicker than a quill pen, the largest being from $1\frac{1}{2}$ in. to 2 in. in circumference.

Fourth Year.--No. 1.—Growth very remarkable. The heads began to show on April 3, 4, 5, 7, and 10. Some are from $3\frac{1}{4}$ in. to 4 in. in circumference, and measure $4\frac{3}{4}$ in. Fifty of the heads form a bundle which weighed 3200 grammes (7 lb.).

No. 2.—Growth passable, but later than No. 1. The heads made their first appearance on April 6, 10, and 11. Many of them were very small; fifty of them barely made half a bundle, and only weighed 1700 grammes ($3\frac{3}{4}$ lb.).

No. 3.—Growth but poor, and somewhat late. The heads made their appearance on April 4, 6, 9, and 11; one did not show till the 22nd. Fifty heads barely formed half a bundle, and only weighed 1150 grammes ($2\frac{1}{2}$ lb.). To sum up it is clear that the plants of a year old in their fourth season, that is to say, after having been planted out for three years, gave a bundle weighing 3200 grammes (7 lb.), while those of two years old only gave 1700 grammes ($3\frac{3}{4}$ lb.), and those of three years old only 1150 grammes ($2\frac{1}{2}$ lb.); in other words, taking round numbers, the plantation made with the one-year-old plants produced double the crop of the two-year-old plants, and treble that of the three-year-old plants. The reader may easily draw his conclusions from the preceding facts.

Sowing in the Open Ground.—Some authors advocate and many persons still adhere to the old-fashioned method of sowing Asparagus in the open ground instead of planting out the stools as already directed. This method of cultivation is defective for two reasons: first, because if all the seeds do not come up we must begin our work all over again, which will not only retard the crop of the year and make the plantation irregular; and secondly, every plant, whether good or bad, must be kept in the place where it was sown.

Again if two or three seeds come up side by side it is very difficult to thin them out, there generally being two left behind which give rise to a couple of stools, which will certainly interfere with each other's growth, and will only yield a poor and uncertain crop. By adopting the transplantation system we need only use the choicest plants we can get, which is after all the easiest and cheapest way of obtaining fine and profitable crops. The difference between a plantation formed from seed and one made by transplanting the stools is very great, and is so much in favour of the modern system that it can be only ignorance of the results obtained by it that can account for the old-fashioned method being adopted. We have seen even at Argenteuil plantations formed from seed, but with all the care that it is possible to bestow on them they produce exceedingly irregular crops, so much so that they yield less than half the quantity given by the planted beds. The defects of the old system are so apparent that we need not have recourse to any facts in proof of them.

Utility of Earthing up.—We have often been asked to explain the part played by the mounds of earth beneath which the stools are buried at a certain time of the year. Earthing up allows us to plant the Asparagus stool less deeply, so that it has all the benefit of the manure, the rains, and the spring sun. It also allows us to shelter the heads from the influence of the atmosphere and the light, so that they do not turn green and hard, but remain white and tender, besides growing much longer. Another advantage gained by earthing up is to prevent all danger from the late spring frosts, the young shoots being so well covered up that they experience no injury. In certain localities people have not yet learned to distinguish the difference between blanched and green, and many affect to prefer the latter. This vulgar error cannot be too quickly extirpated in the interests of all true lovers of this delicious vegetable. In the case of the green Asparagus it is only the tip of the shoot that is eatable, whereas the blanched Asparagus can be nearly all eaten, besides which it

is infinitely superior in point of tenderness and flavour. Asparagus which is green at the moment of gathering should only be used as a garnishing for Peas. No one with any pretensions to good taste would serve up green Asparagus to table. In the Paris market green Asparagus only fetches 1 franc a bundle (9·6d.), while the blanched vegetable fetches 3 francs (2s. 4·8d.). The green Asparagus is never eaten in Paris, but is used for making syrup of Asparagus and other pharmaceutical preparations.

THE ASPARAGUS GROWER'S CALENDAR.

January.

Culture in the Open Ground.—Finish manuring the trenches which have not received their proper share earlier in the season, and level the mounds. Prepare the ground for fresh plantations in the spring, and finish the hoeings and diggings in those places where the trenches are to be opened at the end of the month.

Forcing in the Open Ground.—The beds of the first season are nearly exhausted by this time; we must therefore prepare others, so that we may have Asparagus in January, February, and beginning of March. On days when the sun shines we must uncover the frames; if the weather is cold increase the quantity of stable manure, and, if necessary, put some inside the frames.

Forcing in Heat.—Make new beds for Asparagus to be gathered at the end of January and the beginning of February.

February.

Open Ground.—Begin planting in dry situations, and open up trenches in moist ones, so as to expose the soil to the action of the air. Manure those soils which have become poor with well-rotted stable manure, artificial manure, ashes, composts, &c., and replace the soil dug out before the winter sets in.

Forcing in the Open Ground.—Continue the work of the preceding month, and begin gathering the second batch of forced Asparagus if you have not already begun to do so in January.

Forcing in Heat.—Keep warm those beds intended to yield at the end of February and the beginning of March.

March.

Open Ground.—Continue planting in dry situations, beginning only at the end of the month in damp soils. Begin to earth up at the end of the month those heads which show signs of appearing. Earth up in the trenches to a depth of 2 in. or 3 in. if you have not done so in February. Begin cutting the early varieties.

Frames in the Open Ground.—Take away the frames and stable manure towards the end of March. Empty the trenches and fill them with soil.

Forcing in Heat.—Towards the end of the month break up the beds, the open-air culture taking the part of forcing in heat.

April.

Finish planting and earth up those stools which have been left open during the preceding month. Continue to gather, hoe and weed the beds and the mounds. Keep a sharp look-out for the *Crioceris* and other insects. Destroy snails and slugs, both of which are particularly fond of the young heads just at the moment when they show their tips above the surface of the earth.

May.

Continue to gather, hoe and weed the beds and mounds. Wage incessant war against the Asparagus beetle and other enemies of the plant. In young plantations especially keep a sharp look-out for the cockchafer grub. Sticks are placed at the foot of the stems of the young plants to which they are tied with rush or bast; or else they are left unearthed, which is

quicker and easier when Asparagus is grown on a large scale. If the season is dry, from 2 in. to 3 in. of soil is placed above the stools planted in the spring, so as to keep them fresh. When once they have begun to show any heads above the ground, the stools may be covered to the depth of 6 in. without harming them.

June.

Discontinue gathering about the 10th of the month, or even earlier. We must cease gathering in those plantations which show signs of weakness, as well as those in which very early varieties have been planted, according to the season. A falling off in the thickness and length of the heads is a sure sign that the plantation wants repose. Continue to hoe. Let the young shoots be attached to training sticks, as directed in the preceding months. A sharp eye must be kept on the enemies of the Asparagus grower, the mole, the Asparagus beetle, and the cockchafer grub.

July.

This is the period at which the Asparagus beetle lays its second batch of eggs. This insect must therefore be well looked after, whether in the beetle or larvæ stage, or in the egg. War must also still be waged on the white worm. Hoe and weed where necessary. Young plantations in gardens in very light and dry soil must be watered, if the weather is very dry and hot, at least every fortnight, if possible. Young shoots should be tied to training sticks.

August.

Insects and other pests must be hunted down. The trenches and mounds must be hoed and weeded if necessary, and the taller shoots of the plants supported by sticks, so that the wind may not break them down. This is only necessary in situations which are exposed to high winds; in sheltered positions it is unnecessary.

September.

The work to be done during this month is very small. When Asparagus is planted in vineyards the work is limited to tying the long overgrown shoots to training sticks to keep the wind from blowing them down, or to prevent them from keeping the sun and air from the Grapes, and so preventing them from ripening. Weeding and hoeing operations are carried on if necessary weather permitting. At this period of the year the young plantations are usually free from the attacks of their usual enemies. At the beginning of the month, however, a sharp look-out should be kept for any straggling beetles or white worms.

October.

In light and dry situations we may begin planting, but only in warm localities. In the north and centre of France, and *à fortiori* throughout the whole of England, it is better to wait for the spring. We should also towards the close of the month cut down the old heads and begin to unearth, dressing heavily with well-rotted stable manure, artificial manure, oil cake, wood ashes, compost, &c. Damp soils are drained if they are intended for spring planting. Mixed mould, manures, and composts should be prepared for use in the coming spring, and a good supply of young plants should be secured beforehand.

November.

We now begin to force Asparagus in the open ground and in heat. The stems of the plants above ground are cut down to the height of 12 in., and then tied up in bundles for burning. The mounds are dug up and lowered, so that manure may be brought within reach of the roots. We continue planting during the first fifteen days of this month in dry lands. In the south of France we may plant during the whole of the winter. Unearthing is also continued, as well as manuring. The ground may also be prepared for the spring plantations. Borders and mounds and trenches are prepared for forcing.

December

The work indicated in the month of November is continued, and unearthing and manuring are discontinued. Composts and manures are prepared for spring plantations and good plants are secured, if that has not been done already. Fresh manure should be added to those beds in the open ground where forced Asparagus is being grown, if the weather is excessively cold. Hotbeds are examined and, where necessary, fresh ones are made.

ESSENTIAL POINTS IN THE PRODUCTION OF GOOD
 ASPARAGUS.

Although the details of the system of growing good Asparagus require some little space to describe on paper, the essential differences between that and the system commonly employed in England are so very clear that they may be shortly stated. Each plant is treated as an individual—as a vigorous subject requiring much space in which to grow, if strong growth and strong shoots are desired. Long experience has taught cultivators that smaller space than 4 ft. apart will not suffice to give the very best result. At first sight people in this country might suppose that this means a waste of ground, but it really is not so. At first, when the plantation is young, waste of ground is avoided by taking a light crop off between the lines—say one of Kidney Beans or of early Potatoes; but after a good year's growth, and when the Asparagus gets strong, its roots really occupy the whole space, and the result is so much more satisfactory than in the common way, that the ground affords a better and more satisfactory return. There are two principal ways of growing this crop—one, devoting a certain portion of ground to it, as usual with us; the other, alternating plants between Vines or small fruits, or placing a plant wherever there is room for one. This last way is important, because it may be carried out in small gardens everywhere, and by its means we should become more readily convinced of the

value of giving plenty of room. Single plants here and there in the open spaces between bushes, fruits, or dwarf pyramidal Apple or Pear trees, or single lines, wherever room can be found for them, would, from the sufficient space allowed to each plant, soon convince all of the value of the system.

Planting.—Healthy yearling plants are always chosen, and they are planted about the time, or a little before the time, when growth commences in spring. They are invariably planted in a shallow trench, somewhat like a Celery trench—not quite so deep and not manured as that is, supposing that the ground is in fair condition. In a trench about 8 in. deep the plants are placed on little low hillocks, and they are carefully attended to for the first year. The plants, be it noted, are 4 ft. apart in the line, and 4 ft. apart in the trench. It will be noticed that the second essential difference between the common way—that in use with us—and the way it is now desired to make known, is, that in garden soil of fair quality no manure is used at the time of planting. There are soils in which drainage and preparation might be required; but, assuming that the soil is as good as garden soil generally is, no preparation whatever is given beyond the opening of the trench and the planting of each root in a little fine surface soil; the great expense which has been supposed to be necessary in the culture of this plant is, at the commencement at all events, avoided. It is when the plants begin to get strong and well established that a little manure is applied. There is thus a great economy in two things—in plants and in manure, which under the usual system with us is used to the most wasteful extent—so much so, indeed, as to seriously limit production by causing alarm as to expense.

Staking.—A most important point is the regular staking of the plants, the stakes being firmly placed clear of the root and in a slanting position across the shoots of each plant, to which they are loosely, but firmly tied. The stakes are usually of barked Oak branches about 4 ft. long, and

calculated to last some years, but, failing these, any Hornbeam, Hazel, or stakes made from any other underwood will do.

Blanching.—The question of blanching it, more or less, is apart from the question of cultivation, and people may adopt the only true system of culture without blanching, if such be their taste. But a closer acquaintance with the subject will probably teach many that there is something in this despised system of blanching, which so many persons, lamentably ignorant on the subject beyond experiences of their own overcrowded and ill-grown beds, rush into the gardening papers to declare it to be an absurd practice. All good judges and good growers know that it is necessary in the highest culture, and to secure the most delicate flavour, and also to prevent the rising shoots breaking in warm weather into scales or leaves before they are fairly developed. The best foreign Asparagus is blanched by piling little mounds of friable earth over the stools in spring.

Home Culture.—Our markets are full of Asparagus in spring, grown in other countries, sometimes hundreds of miles from London. It is a vegetable which perhaps more than any other loses quality every day after it is cut. This is one reason why it should be grown in our own country. The soil and the climate of England, in almost every county, are admirably suited for the production of Asparagus. Nevertheless, not only do we not supply our own markets, but many possessing estates cannot get a good dish without sending to Covent Garden for it. All this is wholly unnecessary, for every farmer's garden and every cottage garden might grow it well. In large places, where a few beds formed on a costly and wrong principle now furnish a very limited supply of very poor Asparagus, there ought to be an abundance for everybody. Our markets ought to be supplied by our own people, the early supplies coming from the south and the late ones from our northern counties.

Forcing Asparagus.—In order to force Asparagus to produce a crop early enough to be quite out of season, it

may be grown either in the open ground or in heat. If for ordinary cultivation we ought to select the best varieties to be obtained, we ought to be still more careful in choosing our plants when we are going to force them. The strongest and healthiest-looking plants should be chosen for this purpose.

Forcing in the Open Ground.—Beds are prepared in the ordinary way of $3\frac{1}{4}$ ft. in width with a distance between them of from 2 ft. 2 in. to 2 ft. 4 in., the stools being planted about 1 ft. 1 in. apart in every direction, so that there are three longitudinal rows of plants in each bed, the outer rows being about $6\frac{1}{2}$ in. from the edge of the bed. The same care is bestowed on these plantations as on others, and when the third winter comes, we may begin to force the Asparagus planted in this manner. For this purpose, towards the end of October or the beginning of November, we dig out the soil forming the pathways between the beds to the depth of about 1 ft. 8 in., the trench itself being about 2 ft. 4 in. in width. In digging out these trenches we throw out sufficient soil to cover the stools to the depth of about 1 ft., in order that the forced heads may be of a good length, and may remain white. This done, we fill up the trenches with good fresh stable manure, beating it down evenly, after which we cover the beds with as many frames, with their accompanying lights, as they will hold to keep up the heat of the beds. The frames should be about 6 in. or 7 in. apart. If we place any stable manure inside the frames, it must be taken out fifteen days after it has been put in for reasons before explained. Every evening towards sunset straw mats are thrown over the frames to prevent chilling. If the cold is persistent, or increases in severity, the straw mats should be doubled, and if it be very intense we may even fill up the spaces between the frames with warm stable litter, and do the same with the trenches between the rows. Asparagus treated in this fashion begins to show above the soil in from twelve to fifteen days, according to the heat to which the beds have been subjected. If the weather is very cold, they

will take a much longer time in making their appearance. In the latter case we must redouble the precautions we have taken to keep in the heat, heaping on stable manure with a lavish hand, stopping up every nook and cranny in the frames and preventing the snow from melting on them. By this means we obtain perfectly white heads, but if we wish to have them tinged with pink we must take off the straw mats whenever the sun is warm and clear, and we shall find that they will be rapidly coloured by the action of the light. The heads should be cut every other day, and the cutting may be kept up for a couple of months. The following winter, the manure surrounding the frames and in the trenches is taken away, and the plantation is allowed to rest quiet until the second winter, when the same operations may be gone through. We may thus continue to force every other winter until the quality and quantity of the Asparagus show signs of lowering. In the spring which follows the winter during which the forcing has taken place, we must, of course, refrain from gathering, otherwise we shall endanger the future safety of the beds. Forcing every other winter is as much as the plants will bear. In order to be able to force every winter, we should have two or four plantations, one or two of which should be used for the purpose turn-and-turn-about. As each bed ought only to be used for two months, a quadruple set is advisable, so that we may be kept supplied during November, December, January, and February.

Forcing in Heat.—The Asparagus grown in heat is known as green Asparagus, and is eaten with white sauce or as a garnishing with green Peas. This method of forcing is carried on from the month of November until the month of March. Each bed only yields for a month. A hotbed is made in the usual way and is covered with $2\frac{1}{2}$ in. or $3\frac{1}{2}$ in. of rotten manure, after which the frame and lights are placed in position. When it has cooled down sufficiently, that is to say, in about eight or nine days, the stools are planted. The plants chosen for forcing ought to be three years old, well grown, and provided with a full allowance of roots. The

roots must be gathered together and their extreme ends clipped. The stools are then placed in the bed in such a way that they may touch and support each other. They are so arranged that their heads are all level. Rotten manure is then thrown in between the roots, leaving the eyes uncovered, and the lights and frame are so arranged that the heads will find sufficient room between the bed and the glass to grow to their proper length without being bent. Under an ordinary light we may thus plant four or five stools, each of which will begin to yield at the end of ten days or a fortnight, and will last a month. This mode of cultivation produces very small and short Asparagus, and it does not possess the fine flavour of the other kind. These beds want a good deal of looking after to avoid all danger of chilling. Fresh manure must be added immediately the heat begins to decrease. The frames must be kept carefully closed, and the straw mats must be taken away and replaced according to the state of the weather. This method of forcing, like the preceding, may be commenced in October and November, and by using several sets of beds, may be carried on during December, January, and February. Some growers have attempted to force old Asparagus plants, but they soon had to give it up, owing to its yielding such bad results. We are consequently obliged to fall back on the young plants brought up in the nursery for this special purpose ; it is, in fact the only way to obtain good and abundant crops.

THE ENEMIES OF THE ASPARAGUS.

The principal enemies of the Asparagus are the Asparagus beetle (*Crioceris asparagi*) and the white worm or grub of the cockchafer.

Crioceris asparagi is a small beetle, long in the body, and of a red colour, speckled with grey and white spots. The larvæ are somewhat cylindrical, narrower towards the head, and are of a dirty olive-green colour, fleshy and shining. It only lasts in the larva state for about ten days, but during that time it commits the most formidable ravages. It deposits its

eggs on the tenderest parts of the Asparagus, which are speedily attacked by the young larva as soon as it comes out of the egg. These destructive insects will devour a whole plantation in a brief space of time if their ravages are not checked immediately they are perceived. Incessant war must be made against both beetle and larva. If there are only a few they may be crushed between the finger and thumb. They must especially be looked for during bright sunshine, which is the time they generally make their appearance. If they are too many to be destroyed in this way, we must take a bowl or other vessel full of water, and holding it under the Asparagus, tap the stems lightly, so as to shake off the insects into the water. As soon as they feel the blow their instinct teaches them to imitate death and drop off the shoot. When all have been caught the water may be thrown on the ground and the insects crushed to death with the foot; or, what is better still, the cold water should be strained off and boiling water poured on them. The Asparagus beetle lays twice a year—in the spring and in June or July.

The Mole.—The mole does not feed on the Asparagus plant, but it damages the roots by displacing them in forming its subterranean galleries, generally laying the roots bare by lifting them above the soil. The presence of the mole is easily discovered, and as soon as it is perceived, immediate measures for its destruction must be taken. We must either use mole traps, or else watch for its appearance hoe or spade in hand, so as to dig it out the moment it is seen lifting the surface of the soil.

The White Worm.—The white worm or cockchafer grub is one of the most dangerous enemies with which the gardener has to deal. The warmer the weather the better its appetite. If you see an Asparagus plant beginning to look withered without any known or apparent cause, gently turn up the soil at the foot of the stool, and the chances are that you will find a cockchafer grub feeding on the tenderest parts of the root. There is only one way to destroy it effectually, and that is

to dig for it and crush the life out of it with your foot. Lime, sulphur, and other insect poisons have apparently no effect on it. Some growers sow Lettuces, in order to attract the cockchafer grub from the Asparagus, but the remedy is worse than the disease, for these pests flock into the Asparagus plantations from all parts of the garden, and attack the Asparagus as well as the Lettuces.

A P P E N D I X .

PRIZES FOR ASPARAGUS.

WITH a view to improve and extend the culture of *Asparagus* throughout the United Kingdom, it is proposed to give a series of annual prizes, extending over a period of seven years. These prizes will be given in London, Edinburgh, Dublin, and the north and west of England in consecutive years. They are given with the object of having thoroughly tested in all parts of the country the plan adopted near Paris of planting far apart, and without much extensive preparation. This system may be carried out in the smallest gardens, in fields, or fruit gardens, without the considerable preliminary expense and preparation usually considered necessary for the formation of *Asparagus* beds. The competitors will, however, be free to adopt whatever plan of culture they may think most suitable to their soil and locality. It is, however, wholly impossible to produce *Asparagus* of the first quality by the crowded system of planting in use in private gardens throughout the United Kingdom, and there is reason to believe that much rich manure given before planting is not only needless, but injurious. In the Paris system little or no manure is given at the time of planting. The plants—one year's seedlings—are planted in shallow trenches, 3 to 4 ft. apart in the line, and the lines about 4 ft. apart. There is no loss of space under this system, as a light crop is taken off the ground between the lines when the plants are young. In free, loamy soils of fair quality many excellent growers make no preparation of the ground before planting. In England the plantings may be best done in April and in May, according to locality. Manure is not usually given till the plants are established, and then only over the roots. *Asparagus* is also grown as single

plants, and also in single rows. As large single plants it is often grown in the Vineyards, or here and there among small fruits, or in any open spots of ground. In these cases the plants are often several yards apart, or sometimes quite isolated. Equally suitable places are offered by our squares of ground occupied with small fruits, not to speak of many other positions. In single rows is also a good way, the plants in this case being 3 ft. apart. The first year's prizes will be competed for at the Bath and West of England Society's show at Tunbridge Wells in 1881. In the sixth and seventh years of the series, viz., in 1886 and 1887, the competition will be held in London, and will be open to American, French, Dutch, and all other Continental growers in addition to those in Britain. An account of the mode of culture these prizes are designed to encourage, with particulars as to places of meeting, dates, &c., is in preparation for distribution, and will be duly announced in the horticultural and agricultural journals. The prizes are offered by Mr. W. Robinson.

The following are notes from various correspondents concerning the seven years' prizes offered for improved Asparagus culture :—

That many of our notions about Asparagus culture are out of date I have long been convinced, and I am of opinion that all our efforts as respects improvement must lie in the direction so clearly marked out in *THE GARDEN*, and which should, with thinking men, require no arguments to prove or enforce. If any are dubious about this matter, let them plant half-a-dozen plants 4 ft. apart each way, and watch the result. It is some years now since my eyes were opened to the importance of this by watching the growth of a single Asparagus plant that had sprung up from a chance seed in a shrubbery. Asparagus is a moisture-loving plant, but the site must be well drained; and I am told, although I have not seen it, that it grows wild in the Lincolnshire fens. I should much like to see the Argenteuil system tried on some of the sewage farms where the soil is of a sandy character. Some of the drier parts of the fens would make an excellent trial ground on a large scale, in connection with other crops of early vegetables that might be cleared off and marketed before the time the Asparagus growth filled all the space, which would be in July. The plough should then be introduced to stir the surface freely, and be followed by frequent soakings of sewage. To have fine produce the stems must be strong and tall, to nurse and develop the future crowns; and therefore I think it is during the growing period, after the cutting is finished, that liquid manure, or even water itself, would do so much good. But in a thickly-planted bed, no matter how deep or rich the soil may be, there is not room for the growth to expand sufficiently to develop a thicket of sturdy and vigorous crowns.

Ramsey Abbey, Hunts.

E. HOBDAV.

— In certain soils the Argenteuil system is open to objection, it being inapplicable to districts where clay, heavy marl, or other compact soils prevail; and such soils extend far and wide over England. Asparagus growers in such localities have found by long experience that, in order to obtain a successful result, it is necessary to prepare special composts, and to raise beds above the general level of the ground, so as to keep the roots from penetrating into the cold subsoil, and to secure the increased warmth such elevated beds afford. Asparagus roots will travel 3 ft. beneath the soil, and, reaching clay, they soon decay or fail to act beneficially. The best examples of Asparagus I meet with amongst cottagers and amateurs, where no special care is taken in the preparation of beds, is invariably in districts like Lincolnshire where the soil is light and deep, much of it gravelly sand or light loam resting on gravel. After trying the several plans of surface cultivation, the raised flat-topped beds, and the simple ridge raised from a 3-ft. base, and planted with one row of plants, I have proved that for the soil I have to manage (a modified clay) the last-named is far the best plan. It occurs to me also that as your prizes are offered for the largest heads of Asparagus, and not for the amount of produce over a given surface of land, they will reach those who can afford the most space and manure, or will be confined to localities enjoying natural advantages. Could you not restrict the extent of ground, or the number of plants, and make a distinction between Asparagus grown in favourable and unfavourable localities? The economical production of every vegetable should always be made a consideration.

Belvoir Castle Gardens, Grantham.

W. INGRAM.

[What is here proposed is desirable, but cannot be carried out. We must do what is best in the interest of all. Suitable soils occur in many localities in every county. Few would expect to produce the best result on unsuitable soils. We have seen good results from the adoption of the thin-planting way

on the stiffest and deepest clays in England, though we should not advise anyone to compete for prizes under such circumstances. But the object is to let people throughout the country see that the wretched little spindly shoots grown in many gardens has nothing in common with good Asparagus. This once clear no one will be satisfied with the present mode of culture.—ED.]

— A rich, deep, friable, sandy loam is doubtless the best soil in which to plant Asparagus, and when this is in a high state of culture manure, at the time of planting, is unnecessary. I look upon surface manuring with far more favour than the more general method of working in so much raw manure at the time of planting, an idea which has done much to deter the public from attempting Asparagus culture so fully as its merits deserve, except in the gardens of the rich. Any ordinary soil, with but little care as regards culture, will produce good Asparagus. Doubtless soils and situation, &c., have much to do with its perfect success; still, our system of cultivation is much at fault.

Witley Court, Stourport.

GEO. WESTLAND.

— With the view of improving Asparagus culture in this country, I am of opinion that planting should not be done till May at the earliest. March is decidedly too early in this country, and April, too, in many places. Great blanks would be certain to occur in the beds; and, as by the Argenteuil system very wide planting is recommended, the loss of ground would be great. Certainly, if no preparation of the ground be required at the beginning, it would be a great saving of time and money compared with the old plan, as deep tilth and plenty of manure have always been considered indispensable from the beginning.

Wortley Hall, near Sheffield.

J. SIMPSON.

— The cultivation of *Asparagus* is a subject to which considerable attention has been devoted in various parts of the kingdom, but, so far as I am aware, always upon the thickly-planted system, whether grown in beds or in lines. The results in the majority of instances are, therefore, the reverse of satisfactory, considering the great expense incurred in the shape of labour and manure in making a plantation. I have already planted some on the principle advocated in *THE GARDEN*—that is, single plants or stools amongst lines of Gooseberry bushes. I added no manure, but I intend giving heavy top-dressings. My reason for doing so was to let the sun and air in about the plants, to see if I could get them to stand the winter better, as we suffer badly here from their rotting off at the collar during that period. I have tried many plans to prevent this; wide planting in unprepared ground is the last, and I hope it may prove successful.

M. D.

— With regard to the cultivation of *Asparagus*, I have not the least doubt that the system which you wish to introduce is the best for obtaining large specimens, but I fear it would not answer in the case of market gardeners who have to pay high rents for their land. I consider that my success is partly owing to thin planting compared with that of my neighbours. Last week I paid a visit to a neighbour here who had planted some fresh beds, and who had got three rows in 2 ft. of space, which, of course, is too much crowded. It may answer his purpose for a time, but the beds will soon wear out. I shall plant a few single rows in two different gardens and soils in the manner which you suggest. In America they often grow *Asparagus* in single rows, but of course land there is much cheaper than here. I have always thought that our plan of growing *Asparagus* was both troublesome and expensive, and, to avoid the facing or earthing up the sides every year, I planted two beds about 18 in. below the surface, so that now I have nothing to do but just fork them.

I get as many heads in number, but they are not nearly so large, although they have just the same manure as the others. There is also another objection, and that is the cutting, which is a very back-aching job, as both hands must be down on the ground at once. I have not the least doubt that very good Asparagus will be the result of the prizes offered.

St. Peter's-street, Colchester.

A. J. HARWOOD.

— I have grown Asparagus on the Argenteuil system for several years, and, although I grow it on both systems—that is, in beds and single lines—I consider that that cut from the latter is the strongest and best. I always plant one-year-old seedlings, never older. I leave 4 ft. between the rows and 2 ft. plant from plant, but I think that 3 ft. between them would be better, a distance that I am now trying. As our soil is stony and naturally poor we trench the ground, incorporating with it at the same time some manure or good loam; we plant in April. As to after treatment, when the plants are established, we apply manure over the roots in autumn and a dressing of salt in spring, when the plants are in active growth, and in dry seasons we give them occasional waterings with liquid manure from a farmyard tank; last, but not least, we have to take great care to support them against wind-waving and breakage, which we do by running a line attached to stakes at proper distances up one side and down the other. This keeps the stems secure.

Bloxholm Hall, Sleaford.

D. LUMSDEN.

— I like your proposition with regard to the improvement of the culture of Asparagus; there is great room for it, as the majority of gardeners are content to follow in the footsteps of their forefathers, and adhere to the old bed-and-alley system. I have long been of opinion that that system is not calculated to realise the most profitable results, but my aspirations have not gone beyond single rows 3 ft. apart and the plants 18 in.

asunder, a plan under which a marked improvement on the old bed system is observable in the size and quality of the heads. It appears to me that the Argenteuil system which you insist upon differs from this only in the greater distance between both plants and rows. As I have not access to any description of the Argenteuil system, I presume the manure is applied annually by way of surface dressing, and is not pricked in, but allowed to decay, so that eventually it will form a superstratum of decayed manurial matter of a considerable depth, through which the young heads appear in due season. Results which are, however, perfectly easy to attain in some localities cannot be obtained in others, with double the labour and expense, owing principally to sub-soil and situation.

Redleaf.

JOHN COX.

— Your proposals respecting the culture of Asparagus, of which I much approve, touch one of those cultural points in which I feel myself very deficient, having never got out of the rut of the old thick-set bed system, which gives quantity, but not quality. The only suggestions I have to make to your printed remarks are, that you might mention the depth of the trenches, and also whether or not there is any variety more suitable than another for this mode of culture. I happen to have two rows of one year's seedlings of Connover's Colossal, and those I have planted out in shallow trenches 3 ft. by 4 ft., as you suggest. I have no experience of this variety, and would rather it had been the Giant or Battersea. Your offer of prizes will do much good towards the improvement of Asparagus culture—more so, perhaps, amongst private growers than in market gardens around London and the Vale of Evesham, where it is grown pretty well.

Combe Abbey, near Coventry.

W. MILLER.

— Your plan of making the growth of Asparagus more popular is a very good one, and likely to answer the purpose intended; in truth, there is a great deal of ignorance displayed

in the cultivation of that vegetable. It is a very common thing, particularly in private gardens, to pile up a great ridge of earth and plant three rows of two-year-old roots on the top of it, thinking that that is the right mode of culture, forgetting that in a few years they will have to pile up more and more, because all those plants which form a number of crowns keep getting to the surface. I believe that growing Asparagus in single roots, about 3 ft. by 4 ft., is the best for many reasons, and one is that it will apparently last for many years if well attended to. I do not agree with some that it is a waste of manure to give it a good supply at the time of starting, and I also think the ground can be too good. The seed should certainly, however, be sown on a piece of the best land, as the stronger the young one-year-old plants are the better. They should not be more than from 4 in. to 6 in. from plant to plant. By this means one gets good strong plants, which will have a good start.

Little Sutton.

FRANCIS N. DANCER.

— The prizes offered for Asparagus grown on the Argenteuil system will give a great lift for the better cultivation of that delicious vegetable. At present the greatest bulks of it is grown in beds where the roots are huddled together, and where it is not possible for them to spread so as to produce large heads. I particularly observed a single plant of Conover's Colossal that I planted in the garden here, and which, by keeping it well staked from the time it was a year old till four years, produced very large heads, like the best French-grown Asparagus. The soil was rather stiff, and no extra depth was given it, but well-rotted manure was put on the plant every winter. Since my experience with this plant, I planted in 1876 some in rows 4 ft. apart, and 2 ft. between each plant, and I expect to cut good heads in 1879. I am not an advocate for cutting blanched Asparagus with only the tips green, but it is the fashionable way of eating it at present.

Welbeck.

W. TILLERY.

— I have for many years been of opinion that people poison their Asparagus with manure, and many people will not grow it on account of the supposed expense attending its production. I quite agree with the distances apart, plant from plant and row from row, given in *THE GARDEN*, and think it high time that cultivators and others did away with the fallacy that Asparagus requires any more attention than a plot of Cabbages or Broccoli. Periodical saltings and annual diggings of deep trenches between the beds do no good. The principal thing to be observed in growing Asparagus on the Argenteuil system is the preparation of the ground. Asparagus being a permanent crop, the ground should be dug or trenched at least 2 ft. deep, and never moved with the spade when in a wet or unfriable condition. Of course, in alluvial or sandy light soils the trenching just spoken of may be dispensed with, but depend upon it in about three parts of the soils of great Britain a preliminary trenching will ensure success. I have tried Connover's Colossal and find it only the ordinary form of Asparagus when treated under the usual conditions. I have no doubt that larger kinds than any yet grown may be produced, by means of selection, in localities where the plant grows best. I have noticed that Asparagus grown on the oolite in Northamptonshire is very green, and the tops not over large, but delicious in flavour. Some years ago, when living at Burton-on-Trent, some Asparagus sowed itself adjoining the kitchen garden in a piece of waste ground of a gravelly alluvial character, and this came much larger and finer than the same kind under cultivation buried 6 in. deep in strong pig manure. Ever since then (twenty years ago) I have seen the disadvantage of using so much manure. I do not agree with disturbing the surface Asparagus beds any more than is sufficient to ensure the destruction of weeds. All clayey soils should be trenched, preparatory to planting, but this may not be always necessary in the case of light ones.

Stapleford Hall, Notts.

W. ELLIOTT.

— There are few places inland that can compare with the soil at Argenteuil; besides, the land about Argenteuil is full of Paris night soil before the Asparagus is planted. The same system is practised by Dutch bulb growers. They work into the ground green cow manure to an extent unknown for any crop in England, and first take Potatoes off it. Moreover, there is no soil that I know of in the three kingdoms so light and easy to work as that of Argenteuil. Asparagus is a gross and deep feeder, and can scarcely be too strongly manured. It also likes black, rotten, sea sand. One of the Messrs. Dicksons, of Chester, grows it of very superior quality; but it is grown on one of the reclaimed farms from the estuary of the Dee, in salt sand. It also succeeds, under similar circumstances, in the Lothians; and, indeed, any sea-coast place should produce good Asparagus. I cannot help, while upon this subject, expressing great regret that a vegetable so very wholesome and easily obtained should be so completely ignored in cottagers' gardens. A good bed will continue to bear fairly well for fifty years with a little help. If we consider the quantity generally got from even a small amount of ground, say during some six weeks of the year, no other crop of any sort can compare with it. Surely cottagers now-a-days want something else besides Cabbages and Potatoes?

Cliveden.

J. FLEMING.

[There are many places in England where soils exist quite as well suited to the culture of Asparagus as those of Argenteuil. We also know, from careful examination of the mode of planting at Argenteuil, that there is nothing whatever in common between it and the Dutch mode of planting bulbs; the fact is, that many of the best growers use no manure at planting time. The bulb ground is, on the other hand, lightly enriched. In this connection we may refer the reader to the preceding statements of Mr. Tillery and Mr. Elliott, that chance Asparagus, in waste or unprepared places, did much better than that sown in carefully prepared beds.]

FRENCH ASPARAGUS.

WITH reference to the common error that "only 1 in. of each piece of the French Asparagus can be eaten," it is necessary to repeat that long experience shows that when French Asparagus is good, fresh, and properly cooked, from 3 in. to 5 in. of the shoot are perfectly edible—and even a greater length than that. Unfortunately, most of the so-called French Asparagus is both stale and tough, from the fact that it is gathered long before it reaches the consumer in London. It does not come solely from Argenteuil, near Paris, where it is so well grown, but also from greater distances. We have lately been trying some samples from Toulouse and Madrid, from both of which places great quantities lately came to the London markets. Although good in appearance, their flavour was far from pleasant or natural. Asparagus very quickly spoils when exposed to the air, and one may judge what it must be after being collected in the Madrid market, sent all the way to London, transferred from the wholesale to the retail dealer there, and finally having several days or a week's airing in a greengrocer's window. We do not see why we should eat stale and stringy, if large, Asparagus from Madrid if we can have it both large and fresh in this country. This can be done, we know, and we have offered the prizes for the encouragement of the simplest and best mode of culture. Up to the present time Asparagus has suffered in English gardens through seven to twelve plants being usually placed where one ought to be, and from the needless and costly practise of taking as nearly as much trouble in making an Asparagus bed as in the foundations of a house. As to the question of Green *v.* White Asparagus, that is quite apart from the mode of culture. Those who do not like it blanched have merely to cease blanching it. Our own idea is that Asparagus for eating at

table (not that used in cookery) is in its most perfect state when blanched, as at Argenteuil, and also to a slightly less extent in the market gardens round London. The shoots are gathered when about an inch of the top peeps above the little mounds of earth covering each root. In this way the upper portion of each shoot is of a pinkish colour, and the flavour, when fresh, most delicate. This is not our opinion only, but that of good judges who have tried it in all forms in France as well as in England.

NOTE ON BLANCHING.

This question is really not an open one at all. When we are told of hard sticks with an inch of green at the top, etc., then one's patience fails in presence of the facts which are easily accessible to anyone who takes the trouble to look for them. Throughout the whole of Continental Europe this vegetable in its best state is blanched, but perfectly edible to as great a length as anyone cares to go. In cooking, the tips are left one inch out of the water while the thicker stem is softened. The perfect cookery of this vegetable is common everywhere abroad. Go into the best house in Covent Garden and ask a good judge for the best flavoured Asparagus that can be bought, and he will furnish you with what is all blanched, save a purplish tip. The man would choose the same for his own table. Such stuff as is now grown in the majority of our gardens, if sent by chance to any market, is sold with difficulty, and if sold at all, is cut up for soup or the like. It would take pages to refute the fallacies that have been written against blanching, but this much may be said here, that the French would not supply the markets of Europe with the *best* 'Grass' if they did not blanch. More green 'Grass' comes from France than England to the London market, but it always falls into the second quality as compared with the blanched Asparagus from Argenteuil. There is not a flavour or a phase of the matter which has not been thoroughly studied by the people who grow the best Asparagus near Paris, and they have as good reason to blanch their Asparagus as they have to leave their Spinach green.

FINE ASPARAGUS AT GUNTON PARK.

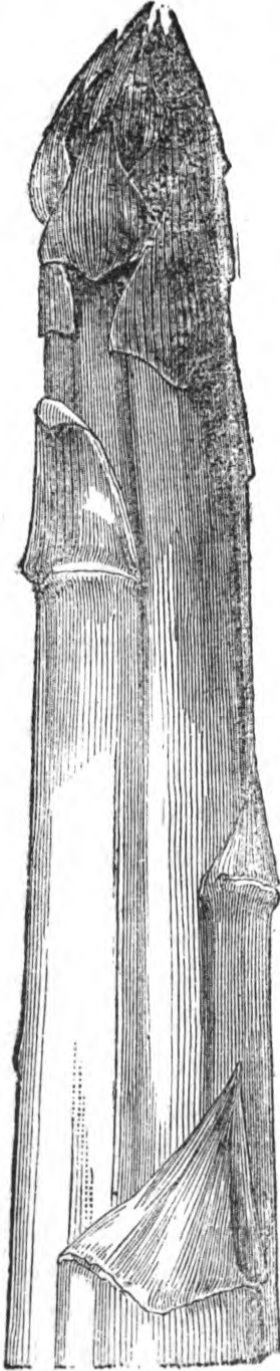
I HAVE sent you fifty heads of Asparagus grown on the French system, as described in the "Parks and Gardens of Paris." The fifty heads weigh about 7 lb. When I came to Gunton in 1867, I found the Asparagus beds all on the old system—4 ft. wide, and the produce of the poorest description. Notwithstanding heavy manuring and salting, it improved but very little. The soil is a sandy loam, resting on wet sand, and the drainage sluggish, owing to the gardens being flat and low. In 1869, having read the chapter on Asparagus culture, I concluded that the plan was the right one, and at once planted seven rows, 102 ft. long. When three years old the beds had done so well that I began cutting freely, and the following winter I lifted the whole of the old beds and forced the plants, and since that time we have grown no Asparagus, except in what I may call the new style. Four years ago I made another plantation, 114 ft. by 30 ft., and now we always have an abundance of excellent Asparagus. I, like Mr. Fish, thought when we had our old beds that our soil was not suitable for Asparagus culture; and even now I believe that there are soils much better adapted for the purpose. But what to me proves so conclusively that the French method is the best is the fact that my present beds were raised from seeds saved from the old plants. In saving the seed I always, however, selected it from the plants that threw up the strongest stems, and before planting I allowed the young plants to grow a few inches, in order that I might select those with the fewest and strongest shoots, as I always find that a plant which, in its young state, throws up a quantity of small young shoots, maintains that habit in succeeding years. A plant of the above description will increase in size rapidly, but will continue to throw up a cloud of small spray, and never by any chance a vigorous shoot. I sowed last year a packet of Connover's Colossal, and have this season planted out two rows, each 102 ft. long

and 3 ft. apart in the rows, in order that I may be eligible for your prizes. In my other beds the plants stand $2\frac{1}{2}$ ft. apart in the rows, which are 4 ft. asunder. I have always thought them rather too close, as at the end of the summer they become a complete thicket. I found amongst Connover's Colossal just the same peculiarity as regards growth which I have described in reference to plants raised from seed saved here. Some of the one year's seedlings of that kind produced some six or seven small shoots, while others had two or three sturdy ones characteristic of the plant. I always maintain that to this matter of selection too much attention cannot be given, if fine Asparagus be the object in view. It may be thought that I allow the Asparagus to get too far through the ground before it is cut, but we like a little more green than the French, as a rule, allow.

Gunton Park, Norwich.

W. ALLAN.

[With the above communication came fifty heads of the best Asparagus which we have yet seen grown in England. This Asparagus was blanched for a considerable distance up the stem, but not quite so much as the French samples, there being, on an average, about 1 in. more green. There was, however, such a great length of blanched stem, that the Gunton Park samples may serve to throw considerable light on the question of blanched *v.* green Asparagus. The portions cooked were about 7 in. long, and each was edible to its base. For $1\frac{1}{2}$ in. of the lower part of the 7 in., where the outer skin was tough, the interior was quite tender and perceptibly of a more delicate flavour than that of the upper part. The flavour of the whole was excellent, and the samples well served to show how delicate large and well-grown blanched Asparagus is when cooked fresh. The heads were not so large as the enormous "giant" specimens seen in Covent Garden; but these large heads are often hollow, and sometimes "monsters," owing to two stems growing together. Mr. Allan's observation about the different growths of the seedlings is a very in-



*Specimen of Asparagus
grown at Gunton Park.*

(Tip of shoot.)

teresting one. We would recommend his trying the early and late varieties, so much in favour with the Argenteuil growers, and testing their relative value in England. As regards the blanching, it may be noted that it is only a question of degree between the French and English growers. All good Asparagus that we have seen in either the Paris or London markets is blanched, the best English market-growers' produce being simply blanched 1 in. shorter than that of the French. We believe that there is good reason for this blanching, and that it is not, as many suppose, a mere matter of fashion. It may be remarked that in all well-grown Asparagus, as soon as a shoot gets into the free air, the scales begin to unfold and the head to open out, which, of course, must be avoided, even if flavour be not considered. Specimens such as those from Gunton Park, with a small portion of the top green, and with 4 in. or 5 in. below that white and perfectly tender, are the most delicate in flavour of all. No distinction can be drawn between these and specimens from the best French growers, in which the head is not allowed to show more than 1 in. above ground before gathering, and which have also from 4 in. to 6 in. of tender blanched shoot below the pinkish or green apex. It may be noted here that Dutch Asparagus is often blanched to a much greater degree than the French.—ED.]

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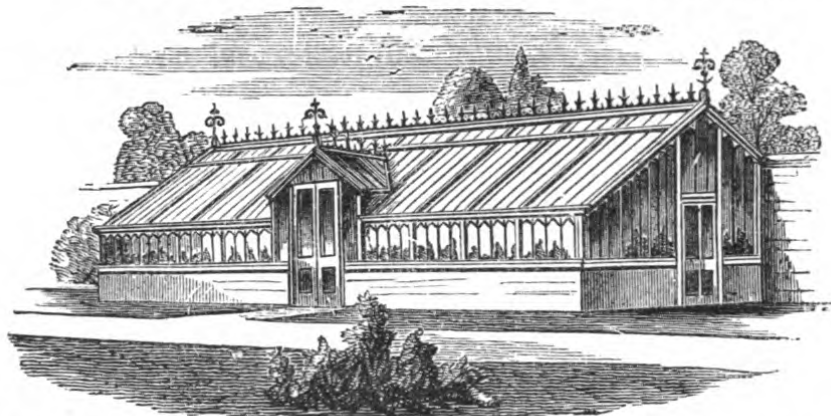
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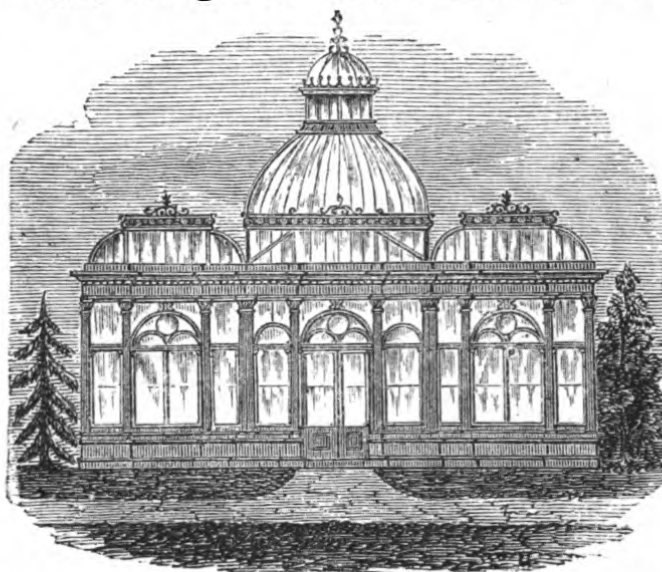


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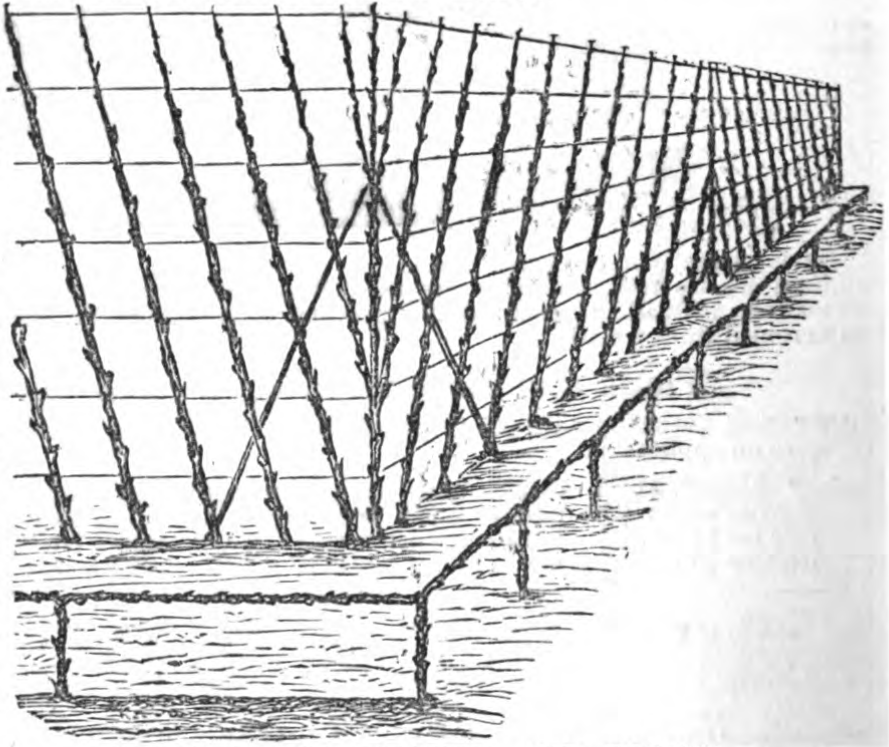
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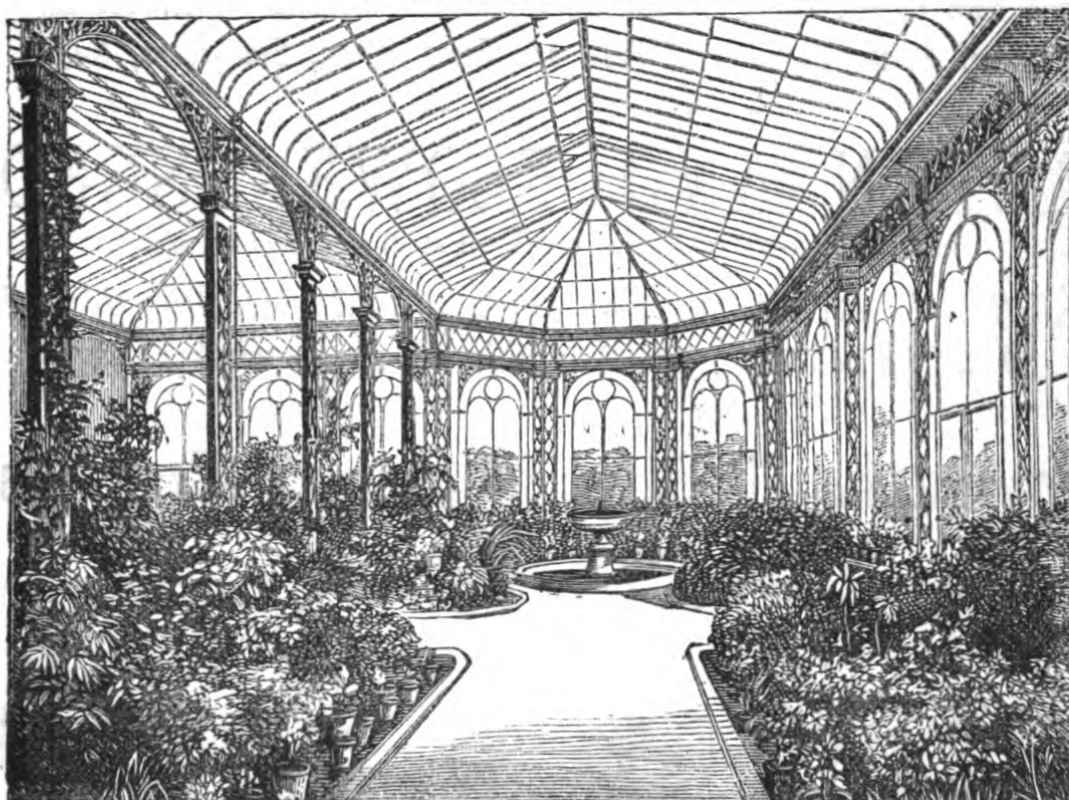
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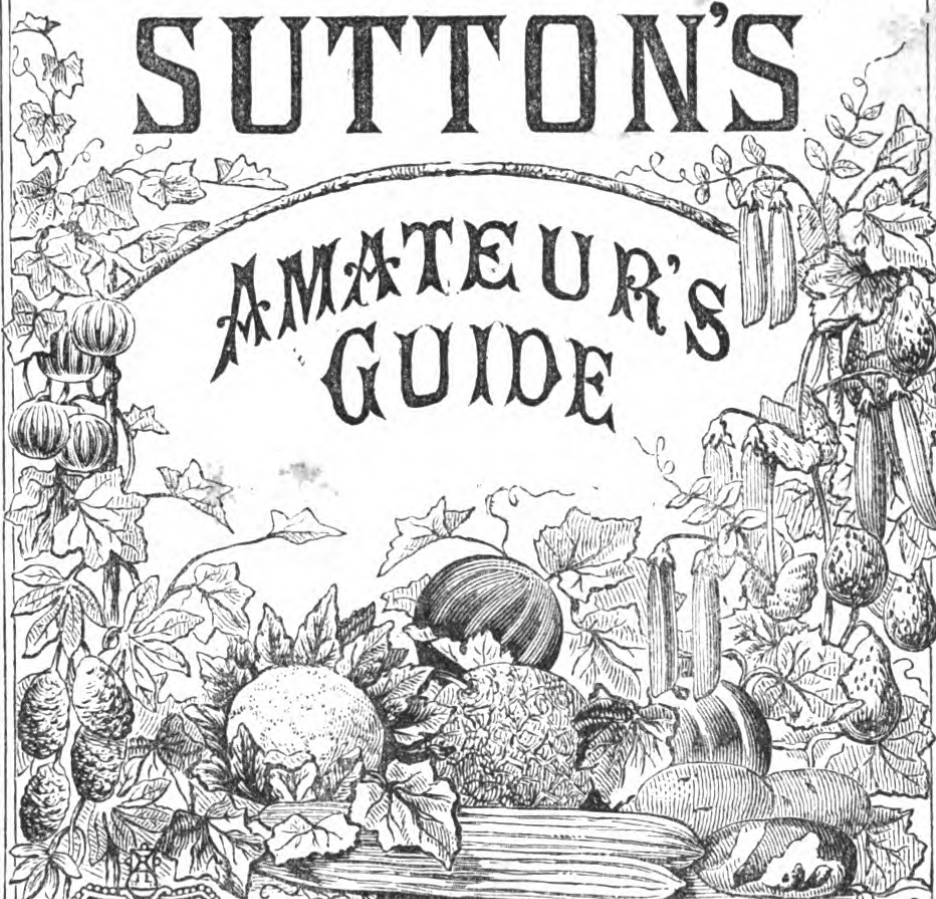
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