

densely-frilled and richly-coloured centres alone remain above ground. Then they make masses of colour that are truly attractive on a sunny day in winter, though we must confess that on dull days they are not attractive. As for that, it may be observed particularly that crocuses are not worth looking at during "dirty" weather, so no wonder if the crimson cabbages are not quite so gay when hidden by fog as when illuminated by sunshine.

Having settled the matter thus far, we wrote to Messrs. Stuart and Mein, of Kelso, who are famous for their fine strains of fancy borecoles, and obtained a few samples. These proved to be several degrees better than our own samples grown on poor soil in the coldest spot we could find for them, and we conclude therefore that the climate of Scotland is better adapted than that of the south of England, to bring out the decorative qualities of the plants. From the samples received we have selected four as the most striking, and the best for both bedding and garnishing, and possibly to help out in winter decorations within doors. The large leaves in the plate represent small varieties of cabbage, characterized respectively by deep crimson and delicate cream-coloured leaves. The finely-frilled leaves, of a rich purplish crimson and clear cream colour, are examples of Ragged Jack, a celebrated kitchen-garden vegetable in Scotland, in this case transformed, as if for the celebration of Christmas, and prepared to keep the best of company. Besides those four beautiful varieties, we received from Messrs. Stuart and Mein a sample of a proliferous variegated kale, which produces crimson and purple frills on the midrib of every leaf, and a sample of variegated Scotch kale, the leaves of which present a variety of colours, and are most elegantly frilled and edged with green. Many of our readers, who cultivate poor soils in bleak situations, will, we hope, give these kales a trial, for ours is a long winter, and if we can increase our sunshine by growing some of it, we may expect to be the happier for the experiment.

S. H.

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### THE CULTIVATION OF BEANS.



THE Garden Bean is one of the most nourishing vegetables known, and although it does not enjoy universal favour, for many people regard it as both vulgar and uneatable, this is compensated by the enthusiasm of those who proudly rank themselves amongst eaters of "bean feasts." It is unfortunate for this noble esculent—for such, with your permission, we regard it—that it is often served in a vulgar manner, and the most constant lover of beans will admit that when allowed to grow old, and then badly cooked and served with coarse bacon, the bean is not a thing to be desired, except in case of a famine, or to afford a fat pig a change of diet, and an experiment in cannibalism. Let us do justice to the bean, that we may see it on the table as green as grass, tender, and slightly meally, without being in the least old, and accompanied with real parsley-butter as

green as the beans, and with the true flavour of the parsley preserved to the utmost.

The bean requires a good soil, and it is an extremely exhausting crop, and therefore should be prepared for, or at least followed by, liberal manuring, for it takes out of the soil tremendous quantities of potash, phosphorus, lime, and sulphur. The seed is sown from November to the end of June, and consequently soil and situation must be selected to suit the several sowings. Those sown to stand the winter should be on a somewhat light and dry soil, and in a sheltered situation. Those sown in February and March will do better on a deep heavy soil, as they will be in bearing in the hottest part of the summer. In any case, the ground must be well dug, and sufficiently manured, and although shelter will assist the autumn and winter-sown crops, beans will never thrive under trees, or in any half-stifling spot, where air and light are deficient.

It is a waste of seed, of ground, and of quality of produce, to sow the seed too thickly. It is usual to sow in double rows, thus—



The small-growing sorts, such as the *Fan*, may be in double rows two feet apart, and the drills may be two-and-a-half inches wide from *a* to *b*, and quite two inches deep. The large-growing sorts, such as *Windsor* and *Longpod*, may also be in double rows, but the breadth from *a* to *b* must be four inches, the distance from double row to double row must be three feet, and the seed must be set full three inches deep. Of late years we have practised sowing in single rows, as we grow for summer use only the largest varieties of *Windsor* bean, and we are satisfied that the extra space afforded the plants is amply repaid in the increased abundance and fine quality of the produce. As to distance apart, we never could get our men to sow thin enough, and so in our early morning walks in spring we go through the rows and pull half or two-thirds of the plants out, and leave them on the ground to perish. The amateur who manages things in his own way entirely, will find that the largest sorts of beans will pay well in single rows, three feet apart, and the plants eighteen inches asunder in the rows. If they come up too thick it will always pay to transplant them; but they must be carefully lifted with a trowel when they have made three or four rough leaves, and the work should be done in dull or showery weather.

The production and quality of beans are greatly enhanced by a proper course of culture, and the sowing of the seed is to be regarded as only one step towards success. When the plants are two inches high, the ground between them should be sown with gypsum and then hoed over, care being taken to avoid injuring the young plants. About a bushel per rood of gypsum will suffice, and its effects will be almost magical, more especially on ground that was previously well prepared by deep digging and manuring. It is not a good practice to give water to the growing plants, but in the case of long-continued drought it might be wise to open narrow V



shaped trenches between the rows and fill them with water every evening for a week, or even a fortnight, at the time when the plants are advancing into flower, and then to close the trench and give no more. As the flowers open, the black-fly will probably appear. Strange to say, although this fly sucks the juices of the plant, it is not often injurious to an extent to cause anxiety, although, of course, we prefer to be altogether without it. As the fly usually affects the top of the plant, because we may suppose of the tenderness of the tissues there, it is a good practice to pinch out the tops and burn them. It is usual to pinch out the tops as soon as the plants are fairly in flower and the young beans are visible at the bottom; but, if there is no fly present, the pinching is not necessary, and is even objectionable when rudely performed, as it often is. The object of the topping is to prevent the production of an extravagant number of beans of comparatively poor quality, which may be expected if all the flowers are allowed to open and fructify. The books say, "two or three inches of stem should be broken off;" but it would be better to say, pinch out the tops as far down as they can be severed with the thumb nail, as soon as pods are seen emerging from the lowest of the flowers. This will take off about an inch and a half, and the plants will remain vigorous. Severe topping lowers their vigour, for the leaves are their lungs, and the "hacking" process that all Cockneys and rustics believe in, is always guarded against by the prudent gardener.

If beans are required at the earliest possible moment, and the season for early sowing out-of-doors has been lost, we must have the aid of glass, and sow for transplanting. A gentle hotbed will start the seed nicely, but a strong heat will produce weak plants scarcely worth putting out. Sow on grass turves, laid grass-side downwards, or in boxes or pots, taking care to let the young plants have plenty of light and air, to keep them stubby from the first. The roughest of contrivances for shelter will suffice to push the seed forward and help the plants until the time comes for putting out. Select for them a warm south border; get them out as early as possible, choosing mild, showery weather for the transplanting, and plant them in shallow trenches, filling in round their roots with old rotten manure in a powdery state, or old leaf-mould, or whatever else of a similar nature may be at hand, to coax the tender roots into action speedily.

The green plant is a first-rate fodder for milch kine, and therefore if an extra breadth of beans is grown, they may be drawn as needed to amuse the cows, and give the grass land a better chance for haymaking.

On several occasions we have had a second crop of beans from the same plants, having encouraged the suckers to rise by cutting down the stems that bore the first crop. It is only in a long, hot, showery season that the suckers rise sufficiently strong to produce anything, and then, so far as our experience enables us to say, they make but a poor return for the ground they occupy. It is well, however, for the cultivator to know all that may be done, and it is a

fact that in a favourable season a second crop may be taken from the same plants.

As remarked above, the bean is rich in phosphates and alkalies, and hence is an exhaustive crop. There is nothing better in the way of manure than good stable dung, half-rotten, and the ground should be deeply broken up; but guano may be employed with advantage, and the best mode of procedure is to sprinkle a little at the bottom and on the sides of every trench as the digging proceeds. The gypsum or plaster of Paris recommended above should be spread on the surface and hoed in amongst the young plants. In one thousand pounds weight of beans, which we may reckon as the produce of half an acre of ground, there will be of mineral matters; phosphoric acid, 10 lbs.; lime, 3 lbs.; magnesia, 2 lbs.; potash, 14 lbs.; common salt,  $\frac{1}{2}$  lb. It follows, therefore, that a heavy loam or clay land, rich in alkalies and phosphates, is the proper soil for beans when a large and fine production is required; but almost any soil may be rendered suitable by judicious manuring, and, as a rule, the best special manure available is phospho-guano.

In selecting sorts it is well to remember that there are some very bad ones in the market. The *Red Seeded* and the *Red Flowered* are about the worst that we are acquainted with, and we caution the amateur against the latter in particular, because it is occasionally advertised as an ornamental plant, producing an abundance of the most delicious beans. The truth is, it is one of the ugliest, least productive, and obnoxious-flavoured vegetables that ever found its way into an honest man's garden. For early production, *Dwarf Fan* and *Mazagan* are the best, and, being small growers, they may be sown in rows, closer together than other varieties. For mere production, the *Longpods* are the most profitable, and answer admirably where beans are grown for sale, the true *Johnson's Wonderful Longpod* being of excellent quality and tremendously productive. Having tried all the sorts many times, we have adopted two, and never grow any others. These are: *Early Mazagan*, to sow in November, January, and June, for early crops of delicate beans; and *Green Windsor*, to sow in January, February, and March, for supplies of the handsomest and best-flavoured beans obtainable. We give the last-named plenty of room, and put the rows four feet asunder, and never fail to have a long-continued and abundant supply of the finest beans in the world.

S. H.

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THE STRUGGLE FOR LIFE AMONG PLANTS.—Each plant endeavours, almost consciously, to destroy his neighbour, to occupy his ground, to feed upon his nutriment, to devour his substance. There are armies and invasions of grasses, barbarian inroads and extirpations. Every inch of ground is contested by the weeds; the forest is a struggle for precedence; the wars of the roses is a perennial feud. The serenest landscape, the stillest woodland, are the mortal arena of vegetable and animal conflict. The last number of the *Popular Science Review* contains an interesting paper on "The Battle of Life among Plants." Experiments are described where numbers of plants were placed together in the same bed, and certain plants, after a few years, alone remained, the others having succumbed. One of the most persistent was found to be the couch grass; and in general plants with a large root area showed most vitality in all soils.