

Now, since common salt and certain other salts are well known to stimulate the growth of Agarics, and since the spawn of this powerful plant is so cheap and moreover so active in its operation, would it not be worth while to put these two ideas together and set them to work upon some very poor upland pasture, just to till the land a little where the Grass has scarcely the power to subdue the stubborn materials? A heap of soil and dung fermenting so slightly as scarcely to be perceptibly warm, would in a few days (say 21), if spawned, become so impregnated with the spawn of the common Mushroom that it would not only produce Mushrooms where it lies, but if broken into innumerable pieces, and preserved from drenching wet, would retain its vital powers to an unknown period, and this heap of manure (say 10 tons) could be impregnated with about 1 peck of common brick spawn, the value of which at the ordinary market price from the nursery-men would be about 1s. 3d.

That a field should be spawned, or in other words, planted with Agarics, would only be doing on a large scale what is done every day on a small scale, and although in some cases it might not be desirable to impregnate Grass land with fairy rings on account of the patched and spotty appearance that it would give to it, still there is many a lone hill side and stubborn clay field that would take no harm from such a powerful decomposer as the Agaric passing his fairy ring through it; and should the seasons prove mild, the produce of Mushrooms alone, independent of the Grass, would be no mean recompense for the little outlay at starting; and, once established, the salt and wood ashes would stimulate the plant, not only to send up its Mushroom fruits, but to extend itself more rapidly, and thereby make green the pasture for sheep and horned cattle. *Alexander Forsyth, St. Mary's Church, Torquay.*

THE VINE DISEASE IN PORTUGAL.

We have received the following report from Messrs. Forrester & Sons, of Crutched Friars:—

The disease has been general in every part of Portugal, since the year 1853; and during the present year, its ravages have produced almost a total extermination of the fruit. From the river Minho to the Tagus, but especially in the wine districts of the Bairrada, Bucellas, and Lisbon, it may without exaggeration be declared that scarcely a perfect bunch of Grapes was produced this year; and that at the vintage season, instead of the vineyards being thronged with cheerful people gathering the fruit, in many parts we observed that goats, hogs, and cattle were feeding on the Vines. There is literally no wine for the ordinary consumption of the Portuguese people, neither is there wine in any of these extensive districts for distillation.

The stocks of old Lisbon wines are much reduced, and their value increased, at the lowest calculation, 100 per cent. Of Figuera wines the stocks are altogether exhausted, and the same may be said of the Muscat wines of St. Ubes. South of the Tagus, in the provinces of the Alentejo and Algarve, the Grapes were likewise destroyed. In the port wine districts the Grape disease developed itself in the month of July, and destroyed, between that month and the middle of August, about one half of the fruit, and the heavy rains in the month of September nearly completed the destruction of the remainder; so that according to our senior's calculation, not more than 8000 pipes of wine, and those of most inferior quality, were obtained. The wines accumulated in the Alto-Douro (or Wine-Company's district), consist principally of the vintages of 1854, and may be estimated at 6000 to 8000 pipes. These, without reference to their quality, cost the holders about three times the price paid for the superior wines of the vintage of 1851. The total stock of wines on the 1st of October last, for exportation in Villa Nova, hardly amounted to the one year's production of the port wine vintage of 1847. Of this stock a very large proportion consists of wines of the vintages 1850, 1852, and 1854, which, notwithstanding their very doubtful quality, cost the holders more than double the price at which far better wines were shipped from Oporto four or five years ago.

Choice old wines in general stock may be estimated at about 10,000 pipes, the average value of which in the Oporto market runs from 50l. to 80l. per pipe. This peculiar and limited stock of old ports, it is perhaps unnecessary to remark, can never be increased in quantity, but must daily increase in value, such wines being from 5 to 20 years old. Of vintage wines, for shipment as such (and these are principally of the year 1853), the quantity cannot be estimated at more than 15,000 pipes. The stock of brandy in Villa Nova on the 1st of October last, was reduced to one-fourth of an average quantity, and its value increased four-fold. As Alto-Douro wine growers, our own individual stock (with the exception of our choice wines of vintage 1853), is almost reduced to our reserves of former years. We, therefore, for the present, limit ourselves to the shipment of our ports of vintage 1853, and to the sale of our assorted stock of wines in bond.

As there were no Grapes in 1854 and 1855 worth our making into wine (either on account of their inferior quality or their high price), of course we did not venture to purchase wines made of such Grapes by others; preferring to continue to limit our business in ports, to wines exclusively of our own making. The distress in the wine districts of Portugal may be more easily imagined than described; and more especially so in the rugged and rocky mountains of the port wine demarcation, which being an exceptional territory—adapted almost exclusively to the cultivation of the Vine and the Olive, is incapable of producing corn. From this narration of facts the wine merchants of this country will be able to form their own opinion as to what may be the probable future state of the port wine trade.

We learn that a Silver Medal of the First Class has been awarded to Messrs. Forrester for their port wines exhibited in the Universal Exhibition at Paris.

Home Correspondence.

Effect of Salt-water on the Germination of Seeds.—As you have published notices by Mr. Berkeley and myself on the length of time seeds can withstand immersion in sea-water, you may perhaps like to hear, without minute details, the final results of my experiments. The seed of Capsicum, after 137 days' immersion, came up well, for 30 out of 56 planted germinated, and I think more would have grown with time. Of Celery only 6 out of some hundreds came up after the same period of immersion. One single Canary seed grew after 120 days, and some Oats half germinated after 120; both Oats and Canary seed came up pretty well after only 100 days. Spinach

germinated well after 120 days. Seed of Onions, Vegetable Marrow, Beet, Orache and Potatoes, and one seed of *Ageratum mexicanum* grew after 100 days. A few, and but very few, seed of Lettuce, Carrot, Cress, and Radish came up after 85 days' immersion. It is remarkable how differently varieties of the same species have withstood the ill effects of the salt water; thus, seed of the "Mammoth White Broccoli" came up excellently after 11 days, but was killed by 22 days' immersion; "early Cauliflower" survived this period, but was killed by 36 days; "Cattell's Cabbage" survived the 36 days, but was killed by 50 days; and now I have seed of the wild Cabbage from Tenby growing so vigorously after 50 days, that I am sure that it will survive a considerably longer period. But the seed of the wild Cabbage was fresh, and some facts show me that quite fresh seed withstands the salt water better than old, though very good seed. With respect to an important point in my former communication of May 26th, permit me to cry *peccavi*; having often heard of plants and bushes having been seen floating some little distance from land, I assumed—and in doing this I committed a scientific sin—that plants with ripe seed or fruit would float at least for some weeks. I always meant to try this, and I have now done so with sorrowful result; for having put in salt-water between 30 and 40 herbaceous plants and branches with ripe seed of various orders, I have found that all (with the exception of the fruit of evergreens) sink within a month, and most of them within 14 days. So that, as far as I can see, my experiments are of little or no use (excepting perhaps as negative evidence) in regard to the distribution of plants by the drifting of their seeds across the sea. Can any of your readers explain the following sentence by Linnæus, pointed out to me by Dr. Hooker, "Fundus maris semina non destruit"? Why does Linnæus say that the bottom of the sea does not destroy seeds? The seeds which are often washed by the Gulf Stream to the shores of Norway, with which Linnæus was well acquainted, float, as I have lately tried. Did he imagine that seeds were drifted along the bottom of the ocean? This does not seem probable, from the currents of the sea, at least many of them, being superficial. *Charles Darwin, Down, Nov. 21.*—P.S. In my communication on Charlock seed lately printed by you, there is a misprint of "6 plants" for "6 plots of ground," which makes nonsense of the sentence.

The Late Winter in South Devon.—I have not given my experience of the past winter until now, because it seemed doubtful what plants would ultimately recover or yield to the effects of the cold. Among the latter is a magnificent *Eucalyptus glabra*, which was the pride of my shrubbery; it was more than 50 feet high, with a trunk upwards of 3 feet in circumference. It never lost a leaf from frost before, and was covered with flower buds, but must, I fear, be numbered with the dead, for though it has thrown out numerous weak shoots from the main stem, they are all withered. *Eucalyptus radiata*, a few yards off, about 30 feet high, is unscathed, as is a fine *Acacia dealbata*, still taller, which braved the frost and bloomed beautifully; it is now a mass of flower buds, and is one of the most graceful trees I ever beheld. A smaller plant of this species has also survived, yet *Acacia mœsta*, against a south wall, is all but dead. The Indian *Rhododendrons* and hybrids did well, and flowered finely, especially *Arboreum roseum*, and a fine variety of *Cinnamomeum*. A large plant of *Dracæna indivisa* appeared unaffected by the winter, but declined during the summer, and is now quite dead. The *Chusan Palm* is evidently quite hardy. One plant of *Phillipodendron regium*, in a shrubbery border sheltered from the east, is unharmed; while another trained against an east wall was much injured. On a south wall the Chinese *Clerodendron foetidum* has proved perfectly hardy, and bloomed freely, but though interesting it does not merit the eulogy of M. Van Houtte, at least in my opinion. *Habrothamnus fascicularis* on a south wall has also stood well, and *Mitrisaria coccinea* has existed. My numerous Orange, Lemon, and Citron trees on south walls, protected by wooden or straw frames, stood the winter well, a few unripened shoots only being hurt, and they have all grown luxuriantly this summer; one rather rare species, the Egg Orange, was injured, but is recovering. Among the few new Pines that I possess, *P. Russelliana* is dead, and in a very high part of the grounds, open to the east; insignis became very brown, but all the plants have now recovered their verdure. *Cupressus macrocarpa* is certainly an unrivalled species, being alike indifferent to wind and frost; and on a high exposed terrace my plants, which were raised from the seed imported by the Horticultural Society, are strikingly beautiful. *Tasmania aromatica* and *Garrya macrophylla* are both safe, while plants of *Phormium tenax* are much injured. Many things that we deemed as hardy as our Snowdrops and Primroses have manifested their exotic character by disappearing altogether from our borders; among them may be specified a large collection of *Gladioli*, *Lobelias*, &c. This can scarcely excite surprise when our common shrubs, such as the *Arbutus* and *Buddlea* were injured, and whole tracts of *Furze* were killed to the ground. *A Devonian.*

Vitality of Seeds.—Observing in several recent numbers of your Paper speculations on this subject, I beg to offer you the following facts, which came under my own observation, and for the truth of which I can vouch. Our parish church, which is a very ancient structure, was, previous to the year 1830, in a sadly dilapidated state, and the earth of the surrounding graveyard had accumulated against its south wall to a depth averaging rather more than 2 feet. Such had

been its state for generations. At the above date it was taken in hand and thoroughly repaired, and it fell to my lot to superintend and direct the repairs of the graveyard, one part of which was to remove the accumulated earth from the wall of the church to the depth already mentioned, and to lower the adjoining ground to a corresponding natural-looking condition. Afterwards I was surprised to see on the surface of the ground, after the removal of the superabundant earth, that an immense number of plants made their appearance, which at first I mistook for common Tobacco: when they had time to develop themselves a little further, however, they turned out to be the common Henbane (*Hyoscyamus niger*). Now, from whence came these seeds? or how long had they been buried? They had doubtless been below ground for generations, no plant of the kind growing in the locality. Again: immediately outside this same graveyard, near its north-west corner, some five or six years since, a large old Oak was uprooted by the wind, and raised an immense mass of earth with its roots when the tree was removed, and the hole levelled in. It is also produced a crop of Henbane. Now the seeds must have been there before the tree, at least it seems so, for how else could the circumstance be accounted for? As to the many instances mentioned of Charlock making its appearance, I would beg to remark that Charlock is, I believe, an oil-producing seed, and all seeds containing oil, if buried away from the air, will retain vitality a long time. I have myself raised Melons from seeds which I had kept for ten years. *Quercus.*

Larches.—The distance at which Larch of about 45 years' growth should be left apart to grow to the greatest profit per acre must be decided by the situation and present state of the plantation. If the locality is high and exposed the trees may not have attained the dimensions that would have resulted from more favourable circumstances, and therefore they would require to be left nearer each other than those of greater size. My system of thinning is to regulate the distance apart by the height of the trees, leaving a space between each, varying, according to situation, of from one-fourth to one-third, or little more, of the height of the trees. The distance at which Larches may be left apart at 45 years' growth may vary from 12 to 20 feet. "R. G. C." also asks if it would be advisable to have the trees "primed up." If pruning be what he means, it is decidedly objectionable to do more than clean off thoroughly all the dead branches. The quality of the wood is much improved by removing all branches as soon as they become deadened, and they should be attended to during all the stages of the growth of the plantation. *A. Patterson, Maristown.*

Protection of Frames, &c., from Frost.—Among other protecting materials one of your correspondents has lately accorded the preference to a covering of boards; but I am, however, inclined to think that there is a more effective material than any he has referred to, and to which the covering of boards itself in some degree, perhaps, owed its efficiency, as well as to its own non-conducting properties. The material I mean, is an enclosed stratum of still air, between the glass and the external covering; and if the stratum of air be 6 or more inches in depth, I doubt whether a more effective and desirable means of excluding frost is to be found. In the practical employment of this medium, it is requisite that the external covering should be close and impermeable by the surrounding air, in order to prevent any current or motion being introduced into the enclosed air, through crevices or other communications with the external atmosphere, by which its temperature would be speedily reduced to that of the latter. The covering material might be either wood or glass, according to choice or circumstances; but apart from the question of expense, the latter would certainly be preferable, as the glass covering might be kept on night and day throughout the entire winter, by which a great deal of labour would be saved, and the plants would never be deprived of the natural light of day, as they must be during periods of hard frost if a boarded covering be adopted. *J. H. H.*

Star of the West Cucumber.—Mr. Ayres speaks of this variety in terms of disapprobation. Being the raiser of it and having successfully competed for three years against other good sorts, at the horticultural show at Plymouth, I am led to suppose that some difference in the treatment of the plant must be the cause of Mr. Ayres not having more success. Being, like himself, much interested in the culture of Cucumbers, it would give me pleasure to compete with him at any show in London, Plymouth, or elsewhere, as it is only by comparing ourselves with others that we can discover where we excel, and where we fail. I have within the last week cut fruit 27 inches long, of uniform thickness, with flower attached, young, crisp, and well flavoured; but such fruit as described, 20 inches long, if uniform, and only 1 inch in diameter, I should very much like to see. *Richard Lynch, Port Eliot.*

Dioscorea Bataias.—After what I formerly stated concerning this Yam, I think it no more than right to send you the result. It may be remembered that I had but one plant, a tuber about the size of a finger or nearly so. It was started in the spring in a very moderate heat, and when pushed a considerable length it was turned out (I have forgot the date, but not early). To give it depth of soil, which I understood to be a requisite, I raised a sort of flattish hillock on a garden border, and turned the plant out on the top of it. The stems were tied to a 3½ feet stick, but had no other care except on two occasions, when a soaking of water was given to