

the case. It is necessary therefore to guard against such a state of things, by having at command, and in a mellow-working condition, a portion of all the kinds of soils that are likely to be required. Those who have open sheds to protect their compost from rains should avail themselves of them; but those who have no such accommodation must resort to other expedients for keeping their soil dry. A few rods, with a piece of asphalt fastened over them, will throw off water; or even a few large slates, which can be moved at pleasure, will effect the same purpose. As potting is required to be done at all seasons, and in all kinds of weather, the absolute necessity of having soil in a condition fit for immediate use must be obvious.

It has been a matter of some dispute as to whether soil for potting should be used in a rough, half unbroken state, or in a perfectly reduced condition. In my opinion this will depend on the character of the plant to be potted, as well as upon the texture and constitution of the soil employed. If the latter is naturally of a free, turfy kind, it may be used in a pretty rough state, but if the contrary, it must be well broken up, and a portion of sand added to it, in order that roots, water, and air may pass freely through all its parts; for on this the well-being of all plants depends in a very material degree. As regards potting, no plant ought to be placed deeper when repotted than it was in the smaller pot; but a slight portion of the surface soil may be carefully removed, to make room for about half an inch of fresh material. This not only improves the appearance of the plant, but also acts as a dressing to it. It is sometimes injudicious to disturb the old ball much; but in most cases the roots may be slightly relieved, so as to give them a better chance of striking at once into the new soil; the previous drainage ought also to be carefully removed. *Pharo.*

Home Correspondence.

Gravel Walks.—In your article on gravel walks, you put the question, I think, too generally; and, besides, do not give Nos. 1 and 2 fair play, as there are two questions—Whether the convexity should be above the adjoining ground or not? and, Whether there should or not be a substratum of stones? The object of the convexity is to prevent rain from penetrating, and for that purpose cause it to run off as quickly as possible. It cannot do so unless either the convexity is above the adjoining sides, so that the water may run on to the adjoining soil, or there are every here and there drains along the sides to carry it off; or the adjoining soil is porous enough to carry it off without. Again, no gravel, however binding, is perfectly waterproof, and some wet will, in long continued wet weather, soak through; and the most essential point is, that that wet should be as quickly carried off as possible. In some soils the porousness of the soil itself will be sufficient; but not in clayey soils, unless there be a substratum of coarse materials in the form of No. 1 or No. 2 (both of which are equally good), with proper drains for carrying it off. The result is, as far as my experience goes—and it is the only part of gardening in which I have any experience—that in light porous soils, where good binding gravel is to be had, No. 3 is the best; but in our soil and bad gravel it will not hold at all. The wet that soaks through the gravel is retained as in a trough by the clayey soil, and the whole mass of gravel gradually sinks into the clay. Whether there be an understratum or not, wherever the edges of the convex surface are below the adjoining soil, there must in stiff soils be surface drains on the sides. *M.*

Descent of the Sap.—This seems to be a question upon which practical men very widely differ; without, therefore, entering into the *pros* and *cons* of the subject, I shall give the particulars and results of some experiments made by me on Vines—in the first place, to test the fact of the sap's descent, and in the second place, to ascertain the possibility of buds attracting sap from distant parts of the same plant; and, having stated these, I shall leave your readers to draw their own conclusions. In my first experiment I removed a circle of bark off a main branch of a Vine, half an inch broad, scraping every particle of the thin bark off the alburnum; this circle is only one inch from the fork or junction with another main branch, so that the descending sap (if there were a circulation) could easily find its way up that very short distance, to effect the annular deposit; but while the lip above the circle now measures 6 inches in circumference, the lip below it measures only 4½ inches in circumference; thus we find the annular deposits exclusively above the circle—none whatever below it. In my second experiment, I cut clear off all the swelling buds but two from a young shoot at the bottom or base, from whence a second young shoot also proceeded, the buds of which I also cut clean off; these two buds had each three young leaves, consequently they were able to exercise all the influence of swelling buds, such as attracting sap from above their position. I then cut one shoot to within 2½ inches of these two twin buds, and the other shoot within 6½ inches of the same buds, and these shoots, be it observed, were trained at an angle of 45°, so that the force of gravity would be in favour of the bud's influence. Well, the result was that each shoot kept "drop, drop, dropping," not for a few hours of one day, but for eight successive days; in fact, until bleeding gradually ceased in the usual way. Do these experiments and their results bear in any way upon the question of the sap's descent or the influence of "buds commanding the sap" in Vines? *J. C. Humphreys, Cork Abbey, March 10.*

Pond Mud.—In reply to "Ruris Amator," I beg to state that I conceive it possible to make his "mud" a desirable addition to his "poor sands," by the addition of about 20 per cent. of lime and salt, in equal quantities. Of course the "mud" must be previously drained comparatively dry, and then well mixed with the salt and lime. Another correspondent refers this week to his pond as containing another kind of mud, which can be of no value except on "heavy clays." His difficulty appears in choosing the best method of removal. It occurs to me that he had better scoop it in one or more "lifts" into a trough, which could be made to lead to any necessary distance, or into a cart having the joints well "plastered" or "luted" with clay. As this mud, or rather "silt," is "all alive," the scooper, troughs, &c., may remain in the same position to the end of the job. Much of this trouble may be obviated by sinking a "catch pit," rather longer than wide, and shallow, with its length in the direction of the stream, and so close to it that its channel could be readily diverted into or rather through this pit, where the "silt" would have the opportunity of falling to the bottom instead of being carried on into the pond. Of course this shallow pond or pit could be easily emptied as soon as it gets full of "silt." *W. E. Gill, Truro, March 12.*

Disease in the Roots of Forced Strawberries.—I am forcing about 1000 pots of Strawberries, which were plunged in the open ground (gravelly bottom) during autumn and winter. In the beginning of February some were put in a Vinery upon a back shelf close to the glass; the rest were introduced three weeks later. They have had every attention paid them, and to the eye they look pretty well; but when they are turned out of the pots their roots are found to be decaying, mildewed, and to smell very mouldy. I have never seen or heard of any disease of the kind before, nor has my foreman—a man of long practice. It commences on the young roots in the form of small black spots, which soon spread and destroy them. We are quite at a loss to account for the evil, and can only attribute it to the soil in which the plants were potted, which consisted of rich light garden mould, mixed with some stiff loam or clay, the raised bank of an old hedge, which was turned over several times and exposed to the weather some months before using. I send some pieces of the roots for inspection, and shall be glad of your opinion on the subject. *Constant Reader, Deptford.* [These roots are dead and have a musty smell; that is all that we perceive.]

Amount of Rain which has fallen during these last five years at Bognor, Sussex.

	1845.	1846.	1847.	1848.	1849.
	Inches.	Inches.	Inches.	Inches.	Inches.
January	2.54	3.92	1.73	2.10	2.11
February	2.02	1.68	1.85	4.21	2.79
March	0.89	2.57	1.04	3.42	0.48
April	1.32	2.06	1.04	3.29	3.20
May	3.21	1.84	2.10	0.22	2.80
June	1.12	1.01	1.94	4.25	1.35
July	2.19	1.79	0.77	3.19	1.74
August	2.54	4.48	1.37	4.53	0.31
September	2.63	3.06	1.32	2.10	2.94
October	2.41	6.31	2.37	4.51	3.49
November	3.43	2.12	1.57	1.65	1.20
December	2.90	1.80	3.88	3.73	2.90
	27.20	32.64	20.38	37.20	25.31

It is perhaps worthy of mention that this place is within 250 yards of the sea, and that this part of Sussex is very level, being about 10 miles from the Downs. *James Graham, Bersted Lodge, Bognor.*

Rats: their Destruction by Phosphorus easy and certain.—Having already detailed at some considerable length, in your Paper of Feb. 9, the success—I may say the complete success—of my experiments in the destruction of a colony of rats by the use of carbonate of barytes, I will now, according to promise, tell you how to handle with unfailing effect, under certain circumstances, another fatal weapon—phosphorus. I publish this at once, and through the medium of your columns, for a most particular reason. Very considerable attention has been directed to the subject, by the quotation in nearly every paper in the kingdom of my two several contributions to the *Gardeners' Chronicle* of Jan. 12 and Feb. 9. This has brought me such a multitude of letters, every successive post adding to their number, and has involved me in consequence in so extensive and serious a correspondence, that I positively begin to despair of ever again being in *equilibrium*. I can only hope for repose by seeking the aid of the press, whose power of extending information I can, alas! but too feelingly vouch for; and which power I trust to their generosity again to accord me, seeing the peculiar "fix" in which I am placed. Their timely assistance will prevent the necessity for providing myself with an amanuensis, *Mais, revenons à nos Rats!* The phosphoric compound is as follows. I have purposely divided the materials into small quantities. According to the number of the enemy to be vanquished they must be lessened or increased. Procure of lard or dripping a quarter of a pound, of phosphorus 1 drachm, of spirit of wine 1 gill; place the whole of these in a pint wine bottle, thoroughly cleansed previous to use. This should be covered, up to its neck, or rather middle, with hot water, which may be managed by putting the bottle into a saucepan deep enough to hold it; and by gradually heating the water. When the lard or dripping is dissolved, remove the bottle from the water, cork it firmly, and shake it until the contents are thoroughly incorporated. When cool, pour off the spirit of wine. By this time, the

"charm" will have nearly been "worked." Little more remains to be done. Procure some Wheaten flour, and having rubbed sugar into it, warm the contents of the "charmed" bottle, and pour sufficient from it to make the whole into a paste of ordinary consistence. Flavouring the above is the "seventh bullet," the master-piece. To this much attention must be paid. Get some oil of rhodium and some oil of aniseed, both powerful oils; and dividing your dough into two portions, "charm" the one half with rhodium, the other with aniseed. The quantity of oil requisite is very trifling. Having made up the paste into a number of small globular pieces (like marbles), place them carelessly wherever the rats abound, and the existence of the latter will soon become a mere "matter of history." I need only add, that when rats are running about, and revelling in an abundance of animal food, the barytes only must be used in conjunction with garbage, fish, the entrails of rabbits, poultry, &c. These, if untouched by the human hand, are subtle emissaries, and deal destruction right and left. Where, on the contrary, the rats have little to prey upon in the form of flesh, phosphorus, cooked as per receipt, will be esteemed a dainty luxury, worthy of our own Soyer, and they will sit down to it with the appetite of a London alderman. Would, for their sakes, that their digestion were equally good! I should be glad to have it in my power to ratify the fact. *William Kidd, Sanders' Cottage, New Road, Hammersmith, March 13.*

Diseased Apple-tree.—What had I better do with a young Apple-tree, the trunk of which has been pierced, as I suppose, by some insect immediately below the branches, where there are two or three small holes about the size of a common quill pen? My attention was first directed to it last autumn by seeing a glutinous reddish matter on the ground immediately under the tree, and casting my eyes upwards I observed a small hole in the trunk where this reddish matter was oozing out. I bound the wounded part over with tow dipped in oil; but on removing this bandage the other day, I observed that a fresh hole had been pierced immediately above the bandage, and that a dry dusty substance was escaping by this aperture. The tree notwithstanding is now opening its buds. *A Subscriber, Hackney.* [If the case was ours we would take off the bark, destroy the grub or insect whatever it may be, and then carefully replace the bark, binding it down and claying it over like a graft. The bark, if thrown into milk-warm water while this is doing, will take no harm, and will join the wood again in a short time.]

Glass Water Pipes.—Can any one inform me if glass pipes have been laid down for the conveyance of water anywhere with success; if so, by whom? and also the amount of pressure they will bear on the square inch. *N. E. A., Bath.*

Moths (see p. 152).—Mr. Westwood having stated in your last Number, on the authority of Mr. Curtis, that the Tortrix nigricana (not nigritana) of Haworth, is synonymous with the Endopisa pisana of Guenée, I beg to say that this is an error. Tortrix nigricana of Haworth is identical with Endopisa nebritana of Guenée. The larva of this species probably feeds upon the seeds of some Vicia or Lathyrus, the perfect insect being generally found where these plants grow. Endopisa pisana of Guenée is probably identical with the Tortrix proximana of Haworth; but as this can perhaps never be ascertained with certainty, it will be better to adopt Guenée's most appropriate name. The larva of this insect feeds upon the seeds of the common Pea, and in some seasons is very destructive. When full fed, it descends into the ground, forming a cocoon of small particles of earth, in which it remains till May of the following year, when it changes to a pupa, and the perfect insect appears in about three weeks. It is very similar to E. nebritana, but smaller, paler in colour, and has whiter palpi. Several other species probably occur in this country, feeding upon the seeds of various Tares. *Henry Doubleday, Epping.*

A word or two on the Qualifications of Gardeners.—As some discussion has lately arisen in your columns respecting gardeners being entitled to the term professional, may I beg your insertion of the following suggestions, as a mode whereby a line may be drawn between gardeners properly so called, and that large class of individuals embraced by the term, "gardener." I have no wish to undervalue the services of a body of men, a large portion of whom have many qualities in common with gardeners of a high grade, but would make education, as in other professions, the standard whereby to judge of a man's abilities. At present young men as gardeners obtain situations more frequently through interest than merit, and stand their chance of succeeding afterwards, by trusting to expedients, which if gentlemen knew of them, would not be tolerated for a moment. I shall not allude to this more particularly now, but proceed to explain my plan, which would both protect gentlemen seeking gardeners, and the really deserving gardeners themselves. Here it is. All young men who have been educated as gardeners, and have undergone the usual training, to be examined by a board sitting sometimes in London, something in the way in which young men are examined in the Society's gardens, and (modified to suit the case) similar to that practised by the College of Surgeons or the Apothecaries' Company, the board to consist of an equal number of scientific and practical men. The examination to be carried through every branch of science connected with gardening, and through the detail of each practical operation. All persons passing this examination to the satisfaction of the board, and