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[OLD SERIES]

Nec araneorum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.

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From Hogg's Instructor.

VEGETABLE KINGDOM.

The various methods which nature employs to disperse the varieties of seeds over the earth are truly wonderful. Many plants, when the seed is fully ripe, discharge it from the seed-cover or *pericarp* with a jerk or elastic spring. The common oat is thrown out in this way; and the loud crackling of the pods of the broom in a dry sunshiny day, which is caused by their bursting and scattering about the contained seeds, must have been frequently noticed. The cones of fir-trees remain on the tree till the summer succeeding that on which they grow; when the hot weather commences, the scales of which they are composed burst open, and the seeds are scattered to a considerable distance. Then, there are the downy appendages which buoy up the smaller seeds, as the thistle and dandelion, carrying them through the air to great distances—the currents of rivers, floating down seeds from one district to another—and even the tides and currents of the ocean, which bear along the germs of vegetation from separate regions of the globe. Birds, too, by feeding on particular seeds, carry them to great distances, where being often voided entire, they vegetate. This is particularly the case with stone fruits, as cherries and plums.

The seed of a plant, as the common bean, consists of the outer skin or covering, within which is contained a starchy substance divided into two halves, called *cotyledons*. At the place where these two join, just opposite to the outer eye or black spot of the bean, is situated the germ or rudiment of the future plant. When the bean is put into the earth and subjected for a few days to heat, moisture, and air, it begins to germinate. The starch of the cotyledon is converted into sugar, and affords a nutritious juice for the sustenance of the germ, till this latter is old enough to push out roots into the soil and provide for itself. The cotyledon, thus resemble the white yolk of a bird's egg, or the milk supplied by a mammiferous animal. The springing germ consists of two parts—the rootlet, which invariably takes a downward course into the earth, and the leaf-bud, which as invariably aspires upwards. This is an admirable provision in nature; for in whatever position a seed may fall into the soil, the leaf always reaches the surface, and thus is preserved, and vegetates; whereas, had it not received this fixed determination, it might have remained in the soil and rotted.

Some seeds have only one cotyledon, as the common oat, while the germinating buds or *sporules* of the inferior classes of vegetables cannot be said to possess a true cotyledon at all.

Besides propagation by seeds, many plants may be raised from slips or cuttings, roots, and buds, taken from a parent plant and placed in the soil. The reproductive power of most plants is generally very great. Some, it is true, produce only one, two, or three seeds, but others again an inconceivable number. A single capsule of tobacco often contains a thousand seeds. The head of the white poppy has produced eight thousand; and the capsule of the vanilla from ten to fifteen thousand. A plant of elecampane will produce altogether three thousand seeds; and a plant of the great cat's tail ten thousand; while a single stalk of spleenwort produces a million.

CULTURE OF THE POTATOE IN SCOTLAND.

Pratherhall, Midlothian, August, 1845.

To the Editor of the *Albany Cultivator*:

I shall now detail to you, the most approved practice, in regard to the cultivation of the different crops, and shall devote this letter to that of potatoes, which may be regarded as the commencement of the rotation in the district in which it is reared.

The land, which the previous season had been under oats, is plowed before the

winter frosts set in, with a furrow varying in depth from eight to nine or ten inches. In giving the first furrow for any of the fallow crops, it is considered good practise, to cleave down the ridges, taking care, however, to preserve the original furrows if the land is not thoroughly drained. The advantages of this plan are, the levelling of the field, thus rendering the subsequent cross plowing more perfect and more easily accomplished. It also affords greater facilities for the escape of sudden and severe falls of rain on undrained or retentive soils, and more perfectly exposes all parts of the soil to the action of the frost during winter. The land having been plowed in the manner already described, and that when it is not too much saturated with moisture, the furrows at the headlands and the water courses are cleaned out, so as to prevent any water from lodging.

When the drying winds of March have fairly set in, and the land is relieved of that excess of moisture which usually prevails through the winter, the field is harrowed so as to pulverize the surface, and is then plowed in a direction across the ridges. This furrow is generally eleven or twelve inches in depth, or as deep as the plow will work. It is then harrowed with four or five turns, and rolled if found necessary; after which it again receives a double turn of the harrows, and the root weeds which have been brought to the surface, and freed of adhering soil by the different operations, are carefully collected into heaps by bands of women and boys, and removed from the field. Should these various operations not have rendered the soil clean, or of sufficiently fine tilth, it is either grubbed with Finlayson's harrow, or again plowed, harrowed, and rolled, and the weeds collected as before. If the land has been allowed to become foal, or is of a very stiff nature, it is sometimes plowed a third time, so as to render the soil very fine, and absolutely free from weeds. I have found it an excellent plan in cleaning foul land, to give it (prior to the spring plowing) a turn of the Finlayson harrow to the depth of four inches, then to harrow, roll, and collect the weeds brought up. The advantage of this is, that a considerable portion of the weeds are removed before they are mixed through the large quantity of soil stirred by the deep spring furrow; and that portion too, which being then laid undermost by the plow, is most difficult to be got rid of afterwards. In preparing clay land for green crops, I have tried the following plan with success: As soon as possible in autumn, I plow and otherwise work the land, then open the drills, and allow it to remain in this state till the time of planting. The plow is then passed along the drills, for the purpose of removing any soil which may have fallen from the sides of the ridgelets by the action of the frost; the manure and seed are then deposited, and the ridgelets split by the double mould plow. A fine "crumb", is thus placed over the manure and seed, excluding the air and drouth, and affording a suitable nidus for the young plants; and this in a soil, which any amount of labor, by the ordinary method in dry seasons, would hardly reduce finer than a mass of clods the size of road metal. The saving of spring labor effected by this plan, is also an important item in its favour.

But to return from these digressions. The field having been properly worked, in the way which I have endeavored to explain, two plows, each drawn by two horses, proceed to open the drills which are usually twenty-seven inches wide. The manure, which has been turned about eight days previously, and allowed to attain a slight degree of fermentation is then carried out and deposited in heaps, commonly in every fifth drill. A person follows the cart dividing the heaps equally among them, while five spreaders with small forks or "grapes," distribute the manure regularly along the drill. These are followed by an equal number of planters with the seed which they drop seven inches apart. After the plows have opened fifteen drills, they return and co-

ver two of those first opened, in which the manure and seed has been deposited; they then open two in going, and cover two in returning, and so on; thus there are never more than fifteen drills open at once. By the method detailed the seed and manure are but a very short time exposed to the sun and air, while I am satisfied that there is no plan more economical of labor, for if there are a proper number of men at the dung bill, not an instant of the time of any individual in the field will be lost. Thus, if the dung hills are conveniently placed; two plows, three carts, three men filling manure, one boy driving, and one man dragging out the heaps, in addition to the field workers already mentioned, will finish in the best style, three Scots acres per day, supposing such were to receive forty tons of manure, about the average quantity allowed. The planting of each field is concluded by working and planting the headlands, cleaning the hedge roots, or bottoms of walls, and planting by the spade, the corners, as well as all other places not accessible to the plows. The beginning of May is as late as it is considered prudent to plant.

The potatoes used for sets or seed as they are termed, are for the most part brought from some of the high, cold districts, where the land has been lately reclaimed from a state of nature. Those from moss are most esteemed. Peebleshire and the upper ward of Lanarkshire furnish a large portion of those used in Midlothian. As the price generally exceeds the ordinary market rates, while the Lothian farmers themselves do the half of the cartage, the raising of potatoes for seed, has of late years added very much to the resources of the farmers in these bleak moorland districts.

Few subjects have attracted more attention in the agricultural world, than the cause of the failure of the potatoe crop, but it still seems hid in impenetrable mystery. It is now a well ascertained fact, that potatoes grown in the potatoe districts of the Lothians, will not reproduce themselves in a healthy manner. I observe in a late number of the "American Agriculturist" what I have heard also stated in this country, that the application of manure in the drill, tends to increase the destructive effects of rot. This I must take leave to doubt, as on the only farms in this parish, which have entirely escaped this scourge, the manure is never applied in any other manner. It is of the utmost consequence, that the seed should not be kept in large heaps, neither before nor after cutting, as fermentation is easily induced, and I am aware, has often taken place when little suspected. The quantity of seed used for an acre is four-fifths of a ton.

Soon after planting, the drills are rolled with a light roller, and when the stems are within a short distance of the surface, they are saddle-harrowed. By this means the annual weeds which may have germinated are destroyed, and before another braud can make its appearance, the crop is ready for the hoe. Whenever the rows can be distinctly traced, a drill grubber is passed down between them, being adjusted by means of its screw, to go as close to the young plants as is consistent with their safety. They are then immediately hand hoed, and in the course of ten days, they are again horse and hand howered, and slightly moulded with the double mould plow. The growth is now very rapid, and just before the stems from the contiguous drills begin to meet, the grubber is again passed between the rows, this time narrowly set, and drawn by two horses, so as to loosen the soil to as great a depth as possible. They are now finally earthed up, and if the crop is good the stems soon begin to interlace, and in a week or two present an unbroken surface of leaves and bloom.

Early in October, the crop is raised either with the fork or plow, and stored partly in houses, and partly in long conical heaps on the surface of the ground, which are slightly covered with straw and then with earth to the depth of six or eight inches. The earth for this purpose, is obtained by digging a trench along the

sides of the heap, thus forming a drain which prevents any water from lodging in the interior. These heaps or "pits" as they are termed, are generally from five to five and a half feet in width, and four feet in height, and are occasionally of great length, containing sometimes 6000 bushels.

The yield of this crop varies from eight to fourteen tons, but there have been instances of eighteen and twenty tons per Scots acre, of marketable potatoes being raised.

In the district around Edinburgh, the potatoe crop is of the first importance. This will be readily understood, when I mention that here four contiguous farms have always 200 or 220 acres under it, and as the manure when brought to the field does not cost less than 7s. per ton, it will be seen, that if to this we add rent, seed, and labor, a sum little short of £1200 is involved in the growth of fifty acres, exclusive altogether of any profit. The price which has been obtained for these two years past, was 45s. per ton, but some years it has reached 60s. and 80s. The moderate price of late years, has been in a great measure owing to the low price of oatmeal, and a considerable importation from Ireland.

The use of portable manures is gaining ground greatly as an auxiliary to the ordinary manure. Guano on any soil at the rate of three or four cwt., per acre, and rape dust on strong soils, at the rate of six or eight cwt., sown on the drills above the dung, are found to yield a very remunerating profit. Mixtures, containing the elements of the stem and tubers, have also been applied with great success, and as chemistry advances, they will no doubt be much more commonly used. As our scientific knowledge becomes more perfect, and more diffused, those unsuccessful attempts at the application of principles to practice will be more rare, and when they do occur, instead of throwing discredit on science, and producing doubt and hesitation, they will be referred to the true cause—the errors or want of knowledge of the operator.

I am, &c.

JNO. GIRDWOOD.

DESTROYING ALDERS AND OTHER BUSHES.

Editor of the *Cultivator*.—Sir—On the receipt of your August number, I noticed the article on "Killing Alders," and your invitation to others for facts on that subject.

Mr. Jefferson somewhere suggests the importance and utility of perpetuating the experience of old men, and agriculturists depend so much upon facts for what they do, that I am induced to state my own experience on this subject.

In the town of Salem, Washington county, N. Y., where I have resided for more than forty years, I have been in the habit yearly of cutting all kinds of brush that sprout in the open and cleared fields. This has been done in the months either of July or August, in the old of the moon, when the sign is in the heart; and when it has been done on the day the moon changed, but before the change, the sign being in the heart, it has never failed, to my recollection, to destroy the brush.

JOHN CRARY.

Salem, August 18, 1845.

The Moon out-generalled.—A lady of our acquaintance, lately fairly out-generalled the moon. In making soap (over which the moon and the witches seem to have great power, according to some,) she was particularly unsuccessful, though her ley was strong, and every thing else apparently right. She was promptly informed by an experienced neighbour that she had undertaken the business exactly in the wrong time of the moon. A young chemist, who happened to be present discovering that the ley effervesced strongly in acids, and was therefore not caustic enough, applied quicklime in small quantities to the obstinate and half-made soap, when in a short time all lunar influence was withdrawn, the planet struck its colors, (if it ever had any,)