

POTATOE.

(important assistance from George Wilbraham Esq of Delamere Lodge, a gentleman whose exertions for the promotion of agricultural improvement are highly worthy of general imitation)

The use of this vegetable has of late become so general throughout every part of the kingdom, that its culture is extended to a degree formerly unknown. Several causes have had their influence in producing this effect. The prejudice which once existed against potatoes, as a fit nourishment for man, is now entirely abandoned; and the modern application of them, as food for horses, cattle, pigs and poultry, has very largely added to their consumption. The rapid advance too which has taken place in the price of provisions, and particularly in that of grain, has obliged many to have recourse to this vegetable, who formerly disregarded and despised it as ordinary fare. There is probably no part of the kingdom where this crop is so general as in some districts of Lancashire and Cheshire; the potatoe constituting here not only a material article of food, but in fact the principal subsistence of the labouring people. As the result of particular enquiries made on this subject, I have found that, in numerous instances, six, or even seven parts in weight of potatoes to one of bread, are consumed in families which could by no means be reckoned amongst the lowest class of the community. In addition to the extensive domestic uses to which this vegetable is applied in Cheshire, its cultivation has been greatly promoted in this county, by the very great increase of population which has taken place, within the last century, in the southern districts of Lancashire; producing a proportional increase of demand for every species of agricultural produce, and more especially for this most useful species, the potatoe. The Manchester and Liverpool markets are very largely supplied with this vegetable from the northern parts of Cheshire; the former town principally from the neighbourhood of Altringham and Frodsham; the latter, in a great measure, from the hundred of Wirral. As the cultivation of the potatoe differs, in some respects, in these several districts, it will be necessary, in describing it, to make a more particular reference to each of them.

Potatoe culture at Frodsham.

(for the facts relative to the potatoe culture in the parish of Frodsham, I am indebted principally to the original report of the county and to the communications of Mr Antwis of Frodsham)

In the parish of Frodsham, situated at the mouth of the Weaver, potatoes are cultivated with as much success, and probably to as great an extent, as in any other district of equal size in the kingdom. It has been estimated that considerably more than 100,000 bushels of 90lb weight, have, for some years, been annually grown in this parish, of which by much the larger proportion is carried to the markets in the south of Lancashire. The situation of Frodsham is extremely advantageous for this purpose; the river Mersey, and the duke of Bridgewater's canal, which are immediately contiguous, affording a cheap, easy and expeditious mode of conveyance to these markets. A considerable depth of dry, light, or loamy soil is esteemed the most suitable to the cultivation of the potatoe in this district; though I am informed, that it may be grown on any description of soil whatever. The mode of culture usually pursued is the following. The land is ploughed before Christmas, to receive the meliorating influence of the frosts; in April, it is ploughed across, torn and pulverized with the harrow; after which, it is ploughed deeply into butts of three or four feet in width. At the latter end of April, or the beginning of May, it is prepared for setting; which is performed with a kind of dibble in the form of a spade handle, having a peg run through it, eight or nine inches from the bottom, to set the foot upon; and shod with iron for about five inches, that it may penetrate the soil with greater facility. The holes are made at the distance of eight or ten inches apart each way. Women and children are usually employed in doing this, so that the expense connected with it is very inconsiderable. About three weeks after this time, or as soon as the shoots begin to appear, they are covered with about two inches of soil, spread equally from a trench, dug between the beds; which operation is not only beneficial to the potatoe plants, by giving an addition of fresh mould, but has also a tendency to check the growth of, and indeed in a great measure to destroy, the couch grass and other weeds which may make their appearance upon the land. When the plants appear in full row, the ground is hoed, and afterwards kept clear from weeds by the hand, until the plants have covered the ground. The proper time for getting up the potatoes varies according to the description of land on which they have been planted, and the nature of the season. It may be remarked, in general, that when the branch is dead, the root is ready. In digging them up, which is usually done with a common three-pronged fork, great care should be taken to pick out all the couch grass, and to carry it off the field. If this be done properly, the land is, in general, left in a state of excellent preparation for a crop of either wheat or barley, if the ground has been sufficiently manured previously to the last ploughing for potatoes. The application of manure in the culture of potatoes, in this district, is a point which merits attention. Mr Antwis informs me that he never uses manure for a crop of potatoes, but is in the habit of laying down his land immediately afterwards; a method which he seems to consider as more advantageous than that of employing manure for potatoes with a view to a succeeding crop of wheat or barley. The latter mode of management is, however, very generally adopted in the neighbourhood of Frodsham. Indeed it seems to be the general opinion that this culture of potatoes has a tendency greatly to impoverish the land upon which this crop is grown; and under that persuasion the yard dung in Cheshire is too much lavished upon the potatoe ground; though,

in some instances, this practice is guarded against by a particular covenant between the landlord and tenant. That so heavy a produce, as is usually raised from land planted with potatoes, must have the effect of exhausting the land for the time, can scarcely be doubted; but many persons, fully competent to judge upon the subject, are of opinion, that the deep ploughings, the turning up the whole with the spade or fork, and the eradication of the couch grass and other weeds, completely counter balance any injurious effect of this kind, even though no manure be used. Mr Antwis states it as his opinion, that potatoes are not in any peculiar degree an exhausting crop; and that, under judicious management, a farm on which they have been made a particular object of cultivation, may be as little impoverished, as it would have been with a different course of culture. He likewise informs me that no crops are better adapted than those of potatoes for bringing marshy or barren land into a proper state for future cultivation. I may notice here a practice pursued at Weston, near Frodsham, in the culture of potatoes, which seems deserving of attention. At this place, situated close to the junction of the Mersey and Weaver, sea mud is used as a manure for crops of potatoes; twenty loads being the quantity usually laid on an acre. The ground thus manured not only gives a large produce of potatoes, but is in a state of excellent preparation for a succeeding crop of either wheat or barley. The adoption of this practice has increased very greatly the value of land about Weston. The quantity of manure used for potatoes, in the neighbourhood of Frodsham, varies from twenty to thirty tons on an acre. This is procured at the rate of six or seven shillings per ton, and is spread upon the land previously to the last ploughing. Three ploughings and one harrowing may be estimated at about 25s per acre. In planting, fifteen bushels to an acre is the quantity usually employed: the various processes of making the holes; cutting and putting in the sets; covering them; with the hoeing, weeding & c. afterwards, are attended with an expense of about 6d or 7d per rood of 64 yards; getting up the crop costs about 6d per rood. The average produce on good land, and with proper management, may perhaps be stated at 250 bushels, of 9 lb each, per acre. The price of potatoes in the markets is varied considerably by the season and other circumstances; the different kinds too bear different prices according to their qualities, some being better adapted for table use, others for feeding of cattle. 'When the Ox noble sells for eighteen pence a bushel, the Irish apple will sell for half-a-crown'. (Mr Antwis, It is at least as common a method to lay the sets upon the dung; and in this way they vegetate much more speedily than when laid under the dung. It now gets as high as eight or nine pounds per acre)

On shallow soiled land, potatoes are generally planted and soiled with the plough, a method which consumes less manure than that before described. In this mode of planting (the land being prepared as before) a furrow about four inches deep is turned; the manure is spread lightly in the hollowed space, the potatoe sets having been previously dropt at the distance of about eight or ten inches asunder; the same furrow is then turned back upon the set; the next row of sets is dropt, and covered with manure in the hollowed space of a furrow, which is turned towards the first row, at the distance of about eighteen inches from the first line of sets, viz leaving something more than two furrows width of soil untouched by the plough; the sets and manure are then covered as before, and the same method pursued till the whole of the ground intended to be planted is finished. Soiling with the plough is thus performed. As soon as the plants begin to appear, the ground which had previously been left untouched is split or turned to each side upon the young plants, with a long wrested plough, so as effectually to cover them. After this has been done, the crop is to be kept clear of weeds by the hand and hoe. Land for potatoes is very frequently hired of the farmers by gardeners or labouring people at from five to six pounds per acre and when it is considered that the interest of the hirer extends no further than for one year, it is not to be wondered at, if (as frequently happens on light and weak soils) the land is left, after a crop of potatoes, in a much worse state than it was before; on the contrary, if the crop is a good one, and the ground is properly worked and cleaned at the time of getting it up, the land may be made as clean from couch grass and weeds, as any other kind of culture can possibly make it. But the object of the poor man is to free the land of the potatoes, not of the couch grass, which it may contain, and it will generally be found to require a very constant attendance from the farmer, to see that the latter is properly effected. The kinds of potatoes most generally cultivated in the parish of Frodsham are Fox's seedlings, and Perrins, for the first crop. The winter potatoes are principally the Ox noble and Irish apple. The Kidney potatoe is now never planted in this district, though its cultivation was formerly attended to. When the crops are favourable, very considerable quantities of the potatoes raised about Frodsham, and particularly of the Ox nobles, are given by the farmers in the neighbourhood, to different kinds of stock; feeding cattle, milch cows, horses, hogs, sheep, & c. The success, which I am informed, attends this practice, and the extent to which in many instances it has been carried, renders it an interesting subject of enquiry. Mr Antwis informs me, that he frequently applies not less than 2000 bushels of potatoes in a year to this purpose, and states it as his opinion that it is as good, if not a better, food for cattle of every description, than turnips: this however is by no means the general idea on the subject. Some variety of opinion exists as to the most eligible manner of giving this root, whether boiled (which is done either in steam or water), or unboiled: both of these modes are practised, and have their respective advocates. Cattle are more partial to the food in the former state; to horses, however, potatoes are frequently given raw, among other provender, and answer extremely well in this way. An addition of chaff, or rough oats, is commonly made to counteract their laxative

effect; about two quarts of this provender being usually mixed with six pounds of potatoes, and so on in proportion. It has been remarked to me, by a gentleman whose opinion on this subject is entitled to great deference, that, if eaten raw, potatoes are much the most nutritive when they have begun to sprout. This certainly holds good in the instance of barley, and malt; and, in all probability, may be further extended to other vegetables secreting a saccharine juice at this period. Mr Antwis has noticed to me a practice connected with the potatoe culture in the neighbourhood of Frodsham, which is worthy of mention from its singularity. In this district it is customary for the farmer to make a sort of contract with his labourer; the former pays the rent of the land; the labourer finds the sets, plants them, attends to them while in the ground, and gets them up; for which, instead of wages, he receives one half of the produce. The quantity of land usually allotted to one labourer in this way, is about two statute acres.

Potatoe culture in Wirral.

(with this account of the culture of early potatoes in Wirral, I was favoured by the Rev R Jackson of Bebbington). From the situation of the hundred of Wirral, between the estuaries of the Mersey and Dee, the climate of this district is mild and temperate, and peculiarly favourable to the cultivation of potatoes. The immediate vicinity of Liverpool, creating a large demand for this vegetable, has given rise to an improved mode of raising the early kinds, which deserves the attention of the practical agriculturist. The following is the method pursued. The potatoes designed for the sets are got up in September or October, or even before; the sooner after they are mature, the better; and in November are laid up in a warm dry room, where they are spread rather thinly, not more than two, or at most three potatoes in thickness, and covered with wheat chaff, or dry sand. They are further protected from frost, whenever it is necessary, by a blanket or rug spread over them. By this mode of management, they are generally well sprouted by the month of February or the beginning of March; if this should not be the case, the sprouting is accelerated by sprinkling them from time to time with a little water. A potatoe is said to be well sprouted, when it has a shoot from two to four inches long, as thick as a small quill, and terminated by two little leaves. In this state they are planted whole; all the shoots being cut off, excepting one, as early in February as the season will allow; they are set not more than five or six inches asunder, the tops just within the ground. As long as there is any danger from an exposure to the frosts, they are carefully protected by a covering of straw or pease-haum; which is taken off in the day, unless the weather be extremely severe, and put on again at night. By this management, potatoes are now as plentiful in the Liverpool market, in the middle of May, or even sooner, as they were before it was practised, in the middle of June. At the same time, the culture of this vegetable is productive of very considerable profit to the farmer; a second crop being, in almost every instance, raised from the same land in the same year. The land is always manured for potatoes in Wirral, except where a naturally rich spot, or one that has some time before been well manured, is allotted to the early crop. Under these favourable circumstances, both this crop, and that which is allowed to come to maturity, are generally much better in kind than is otherwise the case. The early kinds of potatoes, held in most estimation in this district, are the early Manleys; the Fox's seedlings; the Broughton's dwarfs; and some other sorts; all of which it must be remarked never blossom: the kinds usually grown for the winter crop are the pink eye, the ink eye, the Scotch white, the Oxnoble & c. Besides these, there are some very good sorts ripe in August or September, and continuing fresh till Christmas: to these, various names are given, but it seems probable that they were all originally from the same stock; and that any difference now found among them, is the result of differences in the mode of their culture, or of varieties produced from the same species. The crop of those potatoes, which acquire their full growth, varies in this district, from 150 to 250 bushels of 9lb, each, on a statute acre. The pink eyes generally give the smallest, the Oxnoble the largest produce. Considerable quantities of the early potatoes are sent to the Manchester and Chester markets, as well as to Liverpool. Good eating potatoes sell for 1s. 6d, 2s and in the spring for 3s per bushel; the Oxnoble for 1s or 1s 6d. The early potatoes vary very much in price. When they are first brought to market, they are sometimes as high as 2s 6d per pound; and, as the season advances, sink gradually down to 1d. The practice of giving potatoes to cattle, & c. in Wirral, is not so general as, of itself, to afford any inducement to their culture. Where they are given, it is generally in the raw state: sometimes however they are boiled by steam for this purpose.

Potatoe culture about Altringham.

Of the early kinds of potatoes the Fox and the green seedling are those principally cultivated in this district; some farmers giving the preference to one kind, some to the other. Several other early sorts are known in the neighbourhood; but, as they are not in general such free bearers, their culture is not much attended to. Of later kinds, the white and red champion are those most generally planted, being good potatoes till the month of August, and bearing well. The latest kinds for winter are numerous; but the potatoe, called from the darkness of its colour the sweep, is now that the most frequently planted: it bears very plentifully, and continues good during the whole of the winter. The time of setting potatoes, in the neighbourhood of Altringham, is from February to the beginning of June; according to the sorts planted, and the time they are intended to be got up. A dry sandy soil, and tolerably warm situation, is always preferred for the early sorts; but for the later kinds, a cooler bottom is more generally chosen, provided it be not a stiff clayey soil. The usual mode of setting them is in drills, either with the plough or

spade, according as the land is more easily kept clean by horse, or hand hoeing. There is a great variation in the produce three hundred, bushels an acre is however esteemed a very fair crop. The principal market is Manchester and its neighbourhood; but in seasons when the crop is plentiful, large quantities of potatoes are mixed with other provender, and given to the cattle; a practice which Mr White Legge informs me, has been pursued with great success and profit by the farmers in this district.

Common potatoe culture in Cheshire.

Independently of the particular districts, which have been mentioned, the cultivation of the potatoe is carried on to a great extent in every part of Cheshire; both on the more considerable farms, and on the small spots of ground attached to the cottage of the labourer. Where potatoes are set by the cottager for the early supply of the market, a bank sloping to the east, or south east, is usually selected for this purpose; and much pains is taken to guard the crop from the spring frosts, which, in the course of a few hours, will frequently blacken, and destroy every leaf that has appeared above the surface of the ground. Probably if a southern, or south western bank, was substituted, which would be less exposed to the influence of the morning sun, the frosts would be less destructive, and the crops earlier and more abundant. It is with vegetable as with animal life; effects highly injurious are produced by sudden changes in the action of the vessels, whilst no evil is experienced when such changes are made by a more gradual operation. (On the same principle, when potatoes have been exposed to a sharp frost, the best method of counteracting its effects is to cover them with mats, or straw, before the morning sun can have any influence upon them: they will thus be secured against a too sudden transition from cold to heat. Water poured on them would have nearly the same effect; for, however cold, its temperature would always be considerably above that of the frozen dew which hangs on their leaves; and it would gradually restore a healthy action of their vessels. The mortification of a frozen limb would be the inevitable consequence of a too sudden exposure of it to warmth; whilst the circulation is restored, and the life of the part preserved, by immersing it in snow, or bathing it with the coldest water which can be procured.).

The mode of potatoe culture usually pursued by the cottager varies but little from that described as practised in the parish of Frodsham. A space is left between the beds, proportioned to their width and to the depth of the soil, that the plant may be covered as soon as it appears above the surface. This is generally done by the cottager with a spade, and is esteemed of the most essential service to the crop: it preserves the early kinds from the frost; and by adding soil to the beds, gives encouragement to the potatoe to form near the surface, where the best are always found. For eradicating the couch grass a fork is usually employed, being less apt than the spade to divide the creeping fibres of the couch. Where the cottager is in possession of a pig or cow (which is now much more generally the case than formerly), the manure obtained from these is put upon his potatoe ground; or, if he lives near a high road, his children are employed in collecting the dung from the passing horses; in short, every article that can be scraped up is applied to his crop of potatoes. Turf ashes, I am informed, have been used with considerable success in a moist season; but they are apt to make the potatoes scabby: pig dung is esteemed one of the best manures for this crop. The common method of keeping potatoes, during the winter, is to pile them up into heaps of considerable size, for which a foundation has been previously secured by a small excavation made in the ground. These heaps are covered with straw and mould, and sods are laid over as a superficial covering to the whole.

The contracts made by the cottager, for the land on which he cultivates his potatoes, are of various kinds. In some instances, he has it rent free for the year, on condition of laying on a sufficient quantity of manure: in others, the cottager furnishes the manure, which is carried, and the land prepared by the farmer; the former planting and attending to the crop while in the ground, and paying a higher or lower rent, according to the value of the land. If these agreements are properly adjusted, no better or more profitable system of husbandry can be pursued. The cottager is accommodated with land for potatoes (a circumstance which adds materially to the comforts of his situation); while the farmer has an excellent preparation for a future crop, either of wheat or barley, without the necessity of an unprofitable fallow.

General remarks.

The various kinds of potatoes which were formerly known, and cultivated in this county, are now almost totally lost; and other kinds have been substituted by raising new varieties from seed. In doing this, some mystery is pretended; but I am clear, that there is, in truth, none. The potatoe apple is gathered when ripe, and is kept dry during the winter; the seeds are sown in spring, and the plant transplanted, after it has obtained a certain size. The varieties thus produced are infinite; but their value is never perfectly ascertained during the first year or two at their cultivation. It has been observed that the produce from seed partakes frequently of the qualities not only of the mother plant, but of other kinds which may have been propagated in the neighbourhood. A singular idea is prevalent among many who cultivate potatoes in this county, that by planting the green tubers, which sometimes proceed from the stem, the sort is renewed, if wearing out; but, upon enquiry, I find no facts sufficiently substantiated to confirm this opinion. A gentleman of very superior information on this subject expresses it as his decided opinion, that no benefit can possibly arise from the pursuance of this practice. In answer to a query put to the same

gentleman, by Mr Wilbraham , whether artificial heat might not be of use in raising potatoes from seed, as this plant was originally, a native of a warmer climate than our own; he states it as his practice to raise them in a hot bed, to harden them by degrees, and plant them out in May; by which means he has had a very considerable produce even the first year, he further adds, that he has discovered a method of making the early kinds blossom and bear seed, which they do not generally. This is effected by planting cuttings from the roots at the foot of a strong stake, and washing away the mould from the base and the stems, whence the tubers would have sprung. A conjecture is offered by him, that varieties of the potatoe, still earlier than those now in cultivation, may be obtained; and that it might be expedient to attempt this by the insertion of the farina into a larger, and moderately, early variety, with the view of producing an early kind of a larger size. If success attended this experiment, its utility would be very great; as in the event of a failure in the corn crop, the planting a small additional portion of land with potatoes would afford a very seasonable relief during the months of June, July , and August, when the corn is usually at its highest price .

Another remark made by the same ingenious gentleman is, that the disease of curled leaves appears to be occasioned by moulding the plant; and that the way to prevent it, is to allow the potatoes to remain in a moderate heat during the winter: somewhat late in spring they begin to shoot; let the young shoots be taken off, when two or three inches long, from the tuber, and planted as sets, and the plants these afford will be entirely free from the curl. I am aware that these remarks have appeared in the Philosophical Transactions, in a paper of the Society of Arts, and in a communication to the Horticultural Society: some apology may therefore seem necessary for repeating them to the Board; but as this Report may possibly fall into the hands of some, who are interested in the cultivation of potatoes, and in the raising of this plant from seed, and who may not have had access to these publications, I trust my wish to let such persons profit by the ingenious and useful remarks, I have been permitted to communicate, will be a sufficient excuse for their insertion.