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## The Field.

### New System of Potato Culture.

At a recent meeting of the Society of Arts in England, Mr Shirley Hibberd, a distinguished authority in all rural affairs, read a paper on the cultivation of the potato, which propounded a new and singular method he had been led to adopt, as the result of considerable thought concerning the nature and habits of this important esculent, and long-continued experiments in growing it. In giving the substance of his views, we shall omit altogether a somewhat lengthy discussion of the various theories which have been suggested by way of accounting for and preventing the potato disease, the continued prevalence of which in Britain is the great difficulty farmers and gardeners have to combat in their endeavors to grow the potato. Suffice it to say, that Mr. Hibberd traces the disease to excess of moisture and lack of heat. He supports his hypothesis by a description of the soil and climate of those regions where the plant is found growing in a state of nature, and also by a comparison of seasons, going to show that the best crops have uniformly been obtained in those years when dry, hot weather has most prevailed, and the poorest ones when there has been special humidity of atmosphere, and a low average of summer heat. He refers to the fact, that the potato is a native of the warm, temperate regions of the Western continent; and that it is never found growing wild, in either a sub-arctic or a tropical climate. The mean annual temperature of those countries of which the potato is a native is from 62 to 72 degrees, that of London is under 50 degrees. The plant evidently needs the best climates of the South of Europe, and accordingly, in those localities, the disease is hardly known, and the tubers grow to an immense size. In the course of 47 years, during which a careful record has been kept at Chiswick of the average temperature during the five growing months, it has been ascertained that the mean is rather more than 59 degrees. In the year of the potato famine in Ireland, the temperature was unusually low, reaching only a little above 56 degrees. In the year 1860, when the sun was obscured for months together by rain-clouds, the mean temperature was about a degree less, and, during that season, disease well-nigh extinguished the potato plant. Not only was the sun hidden for long periods during that summer, but the rain-fall was excessive. In 1868 and 1870, the weather was very dry and hot for England, and, those years, the potato crop was good. An extended series of comparisons tells the same tale, though not so strikingly. Looking at these considerations, and believing that the potato is dependent for health and fruitfulness on continued solar heat, Mr. Hibberd reasoned, that if artificial sunshine could be maintained above the

surface of the ground, and artificial sun-heat below, the crop might be ensured when natural sunshine fails, and the ground is disastrously cooled by super-abundant rain. The practice, so common, of ridging potatoes on heavy land, in order that their roots may get a maximum of ground heat, and be quickly drained of superfluous moisture by means of the troughs between the ridges, appears to have suggested to Mr. Hibberd the method he was led to adopt, which we will allow him to describe for himself.

"It will be obvious that the advantage of the ridge and furrow system would be considerably increased were we to pierce every ridge with a tunnel, for this would ensure beneath the roots of the plant a body of imprisoned air, the non-conducting property of which would render it a store-house of solar heat, maintaining the temperature of the soil nearly at the point it had attained before the weather changed, and while favoring the rapid escape of surplus moisture, acting mechanically as well as nutritively to sustain the health of the plant. I shall endeavor to show how this may be done. In the year 1864, having reasoned out the case in much the same way as I now place it before you, I prepared a plot of ground for an experiment, to test the value of my conclusions. I procured a quantity of common roofing tiles, laid them in lines on hard ground, laid potato sets on them, and then covered sets and tiles with prepared soil, so as to form a long ridge covering a shallow tunnel. The result was a remarkably heavy crop, the texture finer than the average, and without a trace of disease. I then resolved to improve on the plan, by providing a better tunnel than was possible with the nearly-flat roofing tile. The result was the adoption of a tile made expressly for the purpose, and known to the few friends who have taken an interest in my proceedings as the 'Hibberd potato tile.' It is a foot wide and fourteen inches long, the form that of a low, flat-topped arch, four inches deep in the centre. I obtained a supply of this tile from Messrs. Seales, of the Potteries in the Green-lanes, Stoke Newington in 1865. There was no stint of clay or fire in making them, and they prove to be capable of wear-and-tear to a surprising extent, considering that they have to be roughly handled. The best way to use this tile is to lay down lines four feet apart, on hard ground; and as the sets are laid on the tiles, they are moulded over with earth from the intervening spaces. The result is a series of rounded ridges, so far separated that the potato plant enjoys abundance of light and air, lodgment of water is impossible, and in the event of a sudden lowering of temperature, when the tubers are ripening, the storage of earth-heat below the roots takes the crop over the time of danger, and prevents that engorgement of the tissues which constitutes the first stage of the disease in the nursery for the fungus. As a matter of course, the intervening spaces should be deeply dug and liberally manured, and planted with suitable crops. They must be such as will not rob the potatoes of air or light. The cultivator will have no trouble in determining how to utilize the furrows. In the garden they will be found admirably adapted for celery, late dwarf peas, broccolis, and winter greens. In farm practice it would probably be best to leave the furrows open, because the sort of potatoes selected would profitably utilize the light and air, and in strong land really meet across the furrows. Here, of course, we encounter the question, *What is it pay?* It must be confessed that the Hibberd potato tile is a costly thing, for Messrs. Seales cannot now produce it at a lower rate than from £6 to £8 per

1,000, and, for the sake of a datum, we may reckon that the cost would be £7 per 1,000, or, if laid in lines four feet asunder, £66 3s. per acre. The cost of the common ridge tile at the present time is £3 10s. per 1,000, but this is only 12 inches long, and the saving is less than appears. It would be good practice, however, to lay these a yard apart, the cost in this case amounting to £51 9s. Those who raise or speculate in new varieties, and who are familiar with the difficulty of obtaining a stock quickly, to ensure a high price in the market, will not regard the tile system as costly, provided only that it affords substantial help to save the crop in a bad season. As a matter of fact, if the tile system is properly carried out, it will in a run of years produce full double the weight of potatoes that would be produced on the same land without its aid; and it has this peculiar advantage, that by saving the crop in a bad season it provides the cultivator with something to send to market at a time when prices rule high, and potatoes are regarded as articles of luxury. But we must test the tile system on the land of the man who grows potatoes for market. With a good season, good land may be reckoned to produce potatoes at the rate of eight tons per acre, which, at 120s. per ton, will be worth £48. If we estimate the crop on the tiles at sixteen tons, the total value will be £96, from which we must deduct £6, being 10 per cent. of the cost of the tiles for interest on the investment, which reduces the value of the crop to £90. This shows a balance of £12 per acre in favor of the tile system. But suppose we estimate the crop at twelve tons, the value will then amount to £72, showing a balance of £18 in favor of the tiles. It will be observed that, in a hot and dry season like that of 1870, the difference in bulk and quality between a crop grown without and another with tiles will be trifling, so as to show the least advantage of the tile system; while in a season characterized by a copious rain-fall, the difference will be the greatest, for as a matter of fact, when disease prevails and there is said to be no crop, there is usually a prodigious production of tubers, and the misfortune is that the majority of them are worthless. It is in such a season the tile system will tell its proper story. The heavy rains that spread disease on every hand will benefit the crops that are protected by tunnels, and the enormous production that follows upon thunder weather in the height of the season will be saved for our use, when, if not so aided, they would simply rot and make the very atmosphere offensive. Let us then suppose that we have a forward, genial summer, occasionally interrupted by electric storms and days of tropical heat and rain. In such a season the potato crops on well-drained fertile sandy soils are usually great, while on the heavy lands they come to nothing. But if on these heavy lands we employ tiles, we may expect to dig twenty tons per acre. The contrast in such a case may be put thus: Produce of one acre on the flat, nothing, produce of one acre on tiles, 20 tons at 120s., £120. When a proper reduction has been made for interest on cost of tiles and loss by breakage, the balance will prove the potato to be one of the most profitable plants in cultivation."

We have not drawn attention to this novel style of potato culture, with any expectation or desire of its being adopted by Canadian farmers. It is questionable whether it will eventually be found to pay English agriculturists even with their far cheaper labor and much better prices for produce. As in most cases of the kind, the calculations of Mr. Hibberd are based on the supposition of the best success being realized as a constant thing—a supposition which