

Implements.

Potato-Planters and Diggers on Both Continents.

The old country farmers and implement makers are setting themselves to work with a will to perfect machinery for the planting and gathering of potatoes. On this side also, busy brains are at work in the same direction. The knowledge that these problems are being attacked on both sides of the Atlantic may spur up inventors of each continent. We have already given some particulars about the performances of the planters and diggers on this side. We now supplement them with the London *Agricultural Gazette's* account of the doings at the Highland and Agricultural Society's Show, this year, where many implements were brought into competition:

In a country where so much land is planted with potatoes it is not surprising that strenuous efforts should have been made to perfect machines, both for sowing sets and taking up the tubers. Both kinds of instruments abound, some being of rough workmanship, evidently designed by farmers rather than skilled mechanics, but, for all that, containing principles worthy of attention. We must confess to having been especially pleased with the potato-planting machine patented by Mr. William Dewar, Kellas, Dumfries. It is no easy task to construct a potato-drill, and one of the difficulties is the curious sizes and shapes of round and cut sets. In Dewar's planter, the potato is seized between a fixed shoulder and a spring gripper, and is carried round until, at a certain point, the gripper releases its hold and allows the set to fall to the ground. This automatic motion is done with perfect precision and ease, and, to our judgment, places Mr. Dewar's invention before his rivals', and considering that the whole idea is new, this instrument approaches pretty near to what is wanted. It will plant two drills at a time, and the distance both between the sets and rows may be regulated. Among other inventors who have the same objects in view, we must also mention Mr. Thomas Ferguson, who, in association with Mr. Robert Kid, of Compar Angus, has elaborated a working potato drill, which has this spring planted its twenty-one acres in three days. Mr. Alexander Guthrie has founded his implement upon the Scotch two row turnip drill, and his potatoes are delivered similarly to turnip seed, by means of large cups, each of which holds one; and lastly, Mr. Charles Hay exhibited a potato planter on a new and ingenious principle, in the form of a model.

The most effective potato diggers were exhibited by Messrs. J. D. Allen & Son, Cuthill, Dunkeld, and Mr. John Doe, of Errol. Both are constructed after Hanson's principle, with modifications. A strong cast-iron bent coulter turns out the potatoes, and Hanson's revolving forks scatter the earth, sending it through a "hake," or rack, while the potatoes fall on the inside of the same. The revolving forks are propelled by a spur and pinion from the travelling wheel. We also noticed a machine similar in many points made by G. M. Mollison, and exhibited on the stand of Doe, of Errol. A wheel on either side of the anterior portion of the drill causes it to advance mainly along the row, and prevents the machine from being thrown out of work by the revolutions of the distributing forks; the wheels are of wrought iron, and the arrangement of levers for raising and lowering in and out of work are very excellent.

To this we append the *Rural Home's* description of a potato-digger competition at the New York State Fair.

On Thursday, the various potato diggers on exhibition, with a few exceptions, repaired to a potato field north of the fair grounds, to show how their machines work in practice. The field was well calculated to test their qualifications for their work, ranging as it did, from light to heavy loam, quite stony, and in spots full of barren grass and tangles. The machines commenced on Early Rose, and the judges decided that each one should dig one row across the field, about thirty rods, and back again.

A wheeled machine, invented by H. Gilliam, with an endless-chain separator, led the way. It digs the potatoes clean, with a kind of scoop, passes them rapidly over the separator and drops them on top of the ground, leaving the surface raked smooth. It clogged several times, going across with stones stopping the carrier, and scatters the tubers so that it cannot return on the adjoining row without covering many of them. If it could be improved so as not to clog, should think it would do pretty good work. Price \$100.

Mr. Innis, of Newburgh, N. Y., next went the bout with his machine, entered by Marcellus, Bros., Rochester, which is a large shovel-plough set more nearly horizontal than for ordinary use, with hooked rods dragging behind to work the tubers to the surface. It seems to move along easily, ploughing out the potatoes, and leaving them uncovered on the surface, except in passing through very thick bunches of grass, when it clogged, and shoved grass and tubers along in a bunch. It scattered too much to dig adjoining rows, unless the rows were three feet apart. We think it would soon save a large potato grower its cost—\$28.

The Knox Digger, entered by Wm. Woodham, of Rochester, a wheel digger with wide scoop for digging, and a shaking screen for separating the dirt from the tubers, and tadders for unclogging, next went through. It went its bout without clogging, and left the tubers bare on the surface, less scattered than by either the preceding. It dug adjoining rows, and could safely do it with rows three feet apart. Cost \$100.

The "Centennial," a new machine, made by James Norton, Hingston, N. J., represented by D. Voorhes, next entered the lists. It is a new machine, with two small ploughs for digging, throwing the potatoes together, when falling upon a rapid shaker, they were separated from the dirt and left bare pretty well on centre of row. It seems to move easily and quietly but clogged once or twice in thickest weeds. Price \$75.

George W. Kintz, of Henrietta, next tried his digger. It is a kind of plough, with wide mould-board and share, a wheel inside of landside, a hook ahead to straighten tops, and curved rods and straps to receive and separate the potatoes. It went through successfully, lifting out the hill, and leaving the tubers more in bunches, and a little more mixed with soil than did the others. It would be a great aid to a farmer in digging his crop, and worth the cost, \$35.

The diggers were then called to work in Peachblows, with rank, green tops. The Centennial first tried, clogged, and gave it up.

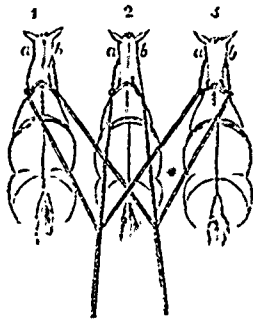
Knox's first put on the tongue, a long iron rod, with two hooks to straighten the tops, and went through without clogging.

Innis took off the rods, went through, clogging some, but not enough to cause a failure.

Kintz went through successfully, leaving the tubers on top of the ground, but adhering to the tops, which may be said of all of them.

Lines for Three Horses Abreast.

The saving in draught by having the horses attached close to the load is so great that three horses abreast will do as much as four in line or two-and-two. We have lately given some designs for equalizing the draught, and we supplement them with a sketch copied from the *Country*



Gentleman, showing a good mode of attaching the lines for driving. The lines run straight to the head of the middle horse (2), the side reins branching from these in the manner shown, and passing to the bit of each outer horse. This is a neat and compact arrangement.

George Geddes on Side-hill Ploughs.

Hon. George Geddes is not much in love with side hill ploughs. He says in the *New-York Tribune*:—The Geddes farm is fully supplied with side-hills, some of them quite steep, and we own a good side-hill plough, so called; that is, a plough that by being turned throws the furrow either way. This plough has stood idle in the tool room for probably twenty years, never once used, as we have found how to cut our side-hills and do our work without this side-hill plough. Some cases will not admit of our way of doing things, and a side-hill plough must be used; but they are, in my opinion, only to be used in cases where an ordinary plough cannot be. As to the dead furrows and back furrows made in the use of the single mould board plough, they amount to nothing practically. Any man that has done much ploughing will have ways of making the dead furrows so shallow and the back furrows so low

that they will hardly be noticed by the driver of the mower or reaper.

Much time, money, and inventive skill have been expended in the attempt to make a double mould-board plough that would do as good work at the same cost of ploughs on level land as with a single mould-board plough, but this is probably a mechanical impossibility. I have been over this matter till I think I understand it, and have served on committees that have made very full tests, and this is my conclusion. I will be told by all the makers of double ploughs that they have each and every one of them a plough that they know does just as good work anywhere as the best single plough ever made. I am entirely willing that they should enjoy this satisfactory opinion, if they will not send me any of their ploughs to try, and I will not object to any means, thinking that the avoidance of dead furrows and back furrows is of sufficient importance to justify poor work and heavy drawing of the teams over all the field—if he is a man that holds the plough himself—but if he is but a farm owner that earns his living by some other means than ploughing, I will venture to suggest to him a journey among grain raisers—practical men—and see how many of them use side ploughs on level land before he invests heavily in reversible ploughs.

IRON PIPES.—The following rule for strength of iron pipes is based upon the fact that a 10-inch pipe, one inch thick, will stand the pressure of 100 yards head of water. The coincidence of one inch of metal to every 10 inches diameter and 100 yards pressure should be remembered. For every inch in the diameter of pipe, increase or deduct 1/10th of an inch, and for every yard of pressure, increase or deduct 1-100th of an inch.

A NEW HORSE-POWER.—A Pennsylvania man has invented a new "level tread railway horse-power," which is spoken of in terms of decided praise. It is said to be a great improvement on the inclined-plane tread, being much easier to horses, who are not placed in an unnatural position in which they are liable to be strained. The same man has also invented a new horse-power "governor," which can be attached to any horse-power; a simple little machine by which the speed of the horse-power can be regulated at will.

SPARING THE BACK.—A correspondent says: For picking stones where they are plenty, I know of no better implement than a pronged hoe, or potato digger. To loosen those that are partly imbedded in the soil, to save wearing the skin of the fingers, to save bending your back all day, and perhaps for many days in succession, as I have done when a boy, I think makes a light job of one that I used to think was the most disagreeable in all the routine of farm labor. With the potato digger I can pick them up and throw them into small heaps much faster than I could with my fingers, and much easier, and after they are all loosened and thrown into piles, it is comparatively but a small job to throw them into the cart. You avoid the necessity of keeping the team in the field all the time, as you would if you were to pick directly into the cart, which is an important saving.

MANAGING BELTS.—A mechanic gives the following directions for managing belts. He says: "I have for the last twenty-five years on every Saturday evening turned the inner side of my engine-belt outside, let the engine run slowly, and washed the belt well with warm water and soda, applied with cotton waste. Next I take a piece of sheet-metal and scrape the belt well, then wash with clean warm water and dry off. I collect the waste oil from the shafting and apply as much of it to the belt as possible. The washing must be done as quickly as possible, so as not to dissolve the glued parts. I let the belt stand on the pulleys till Monday, then give another scraping and turn the belt as before. I keep the pulleys very clean. I have long been surprised at the economy I have effected with very little trouble. I have not bought a new belt for the last ten years. There is an engine near me 14 inches by 36 inches (mine is 12 inches by 36 inches). I have nearly double the shafting and belt, and my neighbor cannot run with less than thirty-eight pounds of steam when all the belts are on the loose pulleys. Mine will run at full speed with five pounds."

TO CLEAN A RUSTY PLOUGH.—Take a quart of water and pour slowly into half a pint of sulphuric acid. The mixture will become quite warm from chemical action, and this is the reason why the acid should be poured slowly into the water, rather than the water into the acid, and let it remain on the iron till it evaporates. Then wash it again. The object is to give the acid time to dissolve the rust. Then wash with water and you will see where the worst spots are. Apply some more acid and rub on those spots with a brick. The acid and the scouring will remove most of the rust. Then wash the mould-board thoroughly with water to remove all the acid, and rub it dry. Brush it over with petroleum or other oil, and let it lie till spring. When you go to ploughing, take a bottle of the acid water to the field with you and apply it every bout to any spot of rust that may remain. The acid and the scouring of the earth will soon make it perfectly bright and smooth. If all iron work be washed off with petroleum as soon as we put our tools, implements, and machines aside for the winter, it will keep them from rusting, and save a great deal of trouble and annoyance, to say nothing of depreciation and loss.