

if the season is wet, this cannot be done, and the weeds take the nourishment that the mangels should get. Sow in drills twenty-four inches apart and thin to about 7 to 9 inches apart, according to the variety. Do not let the weeds get ahead of you, and one has to be on the alert not to let them do so, and as soon as the rows can be seen, use a wheel hoe and side hoe them and keep it going as long as is necessary or till the crop is ready to thin. I should have said to cross plough the land intended for mangels in spring (1) as deep as the plough will go and harrow thoroughly until perfectly smooth, then throw up the drills and roll with the lightest roller you have, to break the small clods. Mangels should be sown 3 (2) inches deep, because if the seed is lightly covered and it comes a dry time it will not grow well. Another point is to sow early. The best crops are generally the earliest sown and there is little danger of frost after the 15th of May. I purpose drilling my mangel land this fall so as to have it dry quickly in spring. Will harrow the drills down and plough and cultivate the land and will drill it and put a little well rotted dung in the bottoms, then split the drills and sow the seed. Mangels should be thinned with the hoe as it is by far the cheapest way to do it as a man can thin from $\frac{1}{2}$ to $\frac{3}{4}$ an acre per day. (3) It is a very slow way and very expensive to thin with the hand, pulling them out with finger and thumb and it is easy to learn to use a hoe. People differ in the quantity of seed you should sow to the acre, but I generally sow about 5 lbs. I use a Model seed sower, but I intend to buy one to that I saw working last year that drops the seeds about 6 to 10 inches apart and artificials can be dropped with the seed. Some sow on the flat, but I prefer drills harrowed down with a saddle harrow and rolled, because if sown on the flat you cannot thin them with the hoe. (4) Mangels are a profitable crop and if well done you can rely on having a heavier crop than of corn, and I prefer them for young stock, though I give occasional feeds to the milk cows too. As I said before, mangels should be sown as soon as you can, after danger of frost is past. I sowed mine this year about the 5th of May, and find I shall have the best crop I ever had, and it would have been extra if we had not had so much dry weather and grass-hoppers this summer. I should have said to put the cultivator through them as often as possible so long you do not break the leaves. If I had not kept the soil thoroughly broken this dry year, the crop would have been small I am sure.

(Signed) D. McLACHLAN.
Petrie Cote.

Notes by the Way.

"The Editor" would be very glad if any subscriber who has complaints to make about the non-reception of the Journal would address them to the

(1) In the fall.—Ed.

(2) One inch is quite enough.—Ed.

(3) No doubt about it, if he has been properly taught.—Ed.

(4) Oh, yes, you can, though we, too, prefer the drill for mangels, though not for sugar-beets or swedes, and if you try you will find it easy enough.—Ed.

Publishers, MM. Senécal & Cie Saint-Vincent Street, as the whole of the business matters of the Journal is in their hands.

FOOD IMPORTS INTO ENGLAND 1896.—During the nine months ending September 30th, 436,669 oxen were imported, against 300,832 in 1895. The United States sent 308,159 of these, against 200,660 last year. The beasts from Canada were 71,670, against 70,712. Of sheep and lambs, the States sent 235,497, against 321,892 last year; Canada sent only 56,446, against 93,418. Dead meat, from all quarters, was imported to the value of \$92,000,000, against \$85,000,000 last year. The butter, in value, was \$57,000,000, against \$52,000,000 and cheese \$16,000,000 against \$16,250,000.

NEW ZEALAND'S, grain crops seem to be pretty good in yield; wheat turning out 28 bushels an acre, oats 33, and barley 30. The late Bishop of Dunedin told the writer (his brother) that, on his first visit to his diocese, in 1868, he saw large fields of barley that he estimated at 72 bushels an acre!

WATER IN TURNIPS, &c.—People often sneer at those who value turnips and other roots, taunting them with the analyst's decision, that the best of swedes and carrots contain at least 87 p. c., of water. Well, and how about pasture-grass? Is that so much richer in dry matter than swedes? Not so very much, seeing that young grasses, from average pastures, contain 80 p. c., of water, and clover, before blossom, 83 p. c. ! Of the value of even the white-turnip as food for cattle no practical man can have any doubt. The great point in favour of roots is their perfect digestibility, so that even the small quantity of dry matter they contain is all of use. A glance at the men employed in any brewery will show that beer is fattening, and beer contains a great deal more water than the turnip. How about soups?

SHIRES AND CLYDESDALES.—Rather a taking team of Shires in Mr. Watney's waggon—v. p.—No wonder the Clydesdales breeders sought stallions of that kind to cross with their mares, hoping thereby to add weight and power to their progeny. Two sales took place this autumn, one of Shires and the other of Clydesdales; the average prices obtained were as follows:

Mr. Whinwright's Shires, 46 head, \$55.50.

Lord Londonderry's Clydesdales, 52 head, \$205.00.

No wonder the Scotch papers cry out against the folly of the adherents of the Clydesdales "in allowing the stock of Lord Londonderry to be sold for such disappointing prices, seeing that the Marquis has been a true, loyal, and powerful supporter of the Scottish national breed of draught-horses." A famous breed is the Clydesdale, and, in our opinion, not to be surpassed as a farmer's horse. But is that any reason why their supporters should bid them up at a public sale to a fictitious value?

THE WHEAT-CROP OF THE U. S.—The estimate of the Department of Agriculture at Washington sets the yield per acre of wheat for 1896 at 11.9 bushels of 60 lbs. The crop of the same cereal in England is estimated to yield 33.50 bushels of 63 lbs. an

acre. So the U. S., yield of wheat to the acre is, as compared with that of the English, as 100 : 295, or very nearly three times as great!

CARROTS AS A DIURETIC.—Some years ago, Mr. Harvey, the well known hotel-keeper at Lachine—to whom we present our compliments—told us that he had always found carrots a perfect cure for any horse troubled with retention of urine. Since that time, we have tried carrots for that troublesome complaint in several cases, and have always succeeded in mitigating, if not of completely doing away with the ailment.

SOIL ANALYSIS.—We have more than once expressed our opinion in this periodical that very little good could be derived from the analysis of soils, seeing that, although the dose of each of the constituent parts of the soil might be very satisfactorily determined, it had not been possible to settle how much of the manurial constituents were in a soluble condition and, therefore, in a fit condition to supply plant-food to the crops.

It seems, however, that Dr. Bernard Dyer, a well known agricultural chemist, has invented a process by which he asserts that it is easy to determine the amount of "available" phosphoric acid and potash in any soil, (1) and, from the result of the late Reading (Eng.) experiments on manures for the potato, we are inclined to think that there is a fair prospect of this "vexata questio" being settled at last; a question that has been under discussion since the days of Sir Humphrey Davy.

In the experiments at Reading, the unmanured plots gave most marvellous yields of potatoes, so great indeed, that they in many cases completely destroyed the value of the experiment in relation to the effect of certain artificial manures. In fact, neither superphosphate nor potash salts appeared to have had much, if any effect, in increasing the already high average yield of the unmanured plots; and the reason of this result is, clearly, due to the large proportion of soluble plant-food already present in the soil.

Now, the soil of the experiment-field was analysed by the College chemist, and found to contain, among other ingredients, 0.1 p. c., of nitrogen, 0.37 p. c., of phosphoric acid, 0.17 p. c., of potash, and 0.8 p. c., of lime; of which Dr. Dyer found 0.54 p. c., of phosphoric acid and .024 p. c., of potash present in a soluble, and therefore available condition.

Hence, we are bound to conclude that in this case, the analysis of the soil showed beforehand the result that the experiment proved to be correct, namely that the addition of either phosphoric acid or potash salts to the soil in question was good material thrown away.

"The use of nitrate of soda, on the other hand, seems on the average to have produced good and useful results, and it would appear that the soil is less rich in available nitrogen than in available mineral plant food. The total percentage of nitrogen in the soil is, it will have been noticed, only 0.1. On this soil probably the best and most economical yield of potatoes would have been obtained by the simple use of nitrate of soda, without any other manure at all, a mode of manuring which, on ordinary farm land, would be exceedingly rash and undesirable as a treatment for potatoes. As a rule, it

(1) But not of nitrogen.—Ed.

is essential that nitrate of soda, or sulphate of ammonia, should be accompanied by phosphates and (on many soils) potash, when used for a potato crop; but on this rich land at Messrs. Sutton's trial grounds this is not the case, as indicated both by analysis of the soil and by the results in the field."

The determination of the available, as distinguished from the total, phosphoric acid and potash, was described, by Dr. Dyer, in a lecture before the Chemical Society in 1894, and is simple enough: the solvent used is a dilute watery mixture of 1 p. c., of citric acid, a solution approximating in acidity to the average acidity of the root-sap of plants. This, if carried out, would put an end to the use of "mixed fertilisers", by which many a thousand dollars are wasted in the purchase of manurial matters that are not needed by the soil to which they are applied. It will be observed that Dr. Dyer especially points out that, potash for instance, is not required on all soils.

DRAINING—A very sensible, though short article on "land drainage, by Mr. Thomas McMillan, of Senforth, Ontario, appears in "Farming" for October. One very useful observation is the following: "No rigid rules can be followed in the draining of land; the nature of the soil and sub-soil, and the inclination of the surface must be taken into consideration. We must also find out, if possible, whether the wet is caused by surface-water or springs."

"Some writers, says Mr. McMillan, 'advocate the use of instruments for levelling purposes; but to the intending drainer I would say: the most practical method, that of actually seeing the water running, is the simplest and the best.' We have drained; and most successfully too; several hundred acres of the 'London-clay' formation, and never used a level of any kind, always having found it sufficient, in the absence of water in the drains, to pour a few pails into the drain, which is exactly the plan advocated by Mr. McMillan.

We cannot agree with the author of the article that the reason why certain three-foot drains were ineffective was that they were too deep. On the very heaviest clays in England, we always laid the drains, on an average, four feet deep. The stipulation of the government's advance of money for drainage purposes was that the general depth should be 4½ feet, and we have seen the work done at that depth answer perfectly on the 'Oxford-clay,' a soil so stiff that no one who has not seen it would believe that it was pervious to water: nothing like it on this side of the ocean.

Why use pipes 2½ inch bore, the smallest Mr. McMillan mentions, when, except in the case of springs, 1½ inch is amply sufficient? (1) Again; why lay the pipes 'standing on the last laid one' when it is an acknowledged axiom in draining that no one should set his foot on the bottom of the drain. (2) If the semi-cylindrical 'bottoming-tool' is properly used, followed by the 'draw-scoop,' and the pipe carried on a spike at the end of a 5 foot rod, it can be perfectly laid by a man standing on the land 'a straddle' the drain, and

(1) And if the side drains are not too long—say not more than 20 or 25 rods—2½ inch bore will be wide enough for the mains.—Ed.

(2) Except, of course, in cases of the pick being required to extract stones.—Ed.