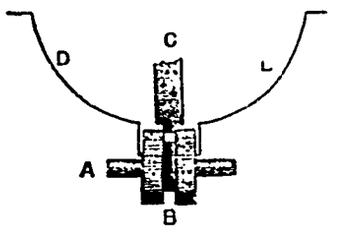
Its reputation is yearly increasing in Britain; and the same remark will, we trust, before long apply to Canada, for those enterprising British Seedsmen have already established a seed store in Guelph C W

TURNIP-SOWING MACHINES vary considerably in size structure, and complexity Some are small hand barrows, and others are large horse drawn implements. Some sow only one row, while others sow two, or several Some sow only seed, others both seed and manure. The accompanying illustration gives in perspective a double-rowed turnip drill, contrived by Mr Geddes Dumfries Scotland The machine in question is very popular in the Lothians, and from what we have seen of it, it appears to work very satisfactorily. We have, however, seen double-drill sowers that we like better, but we found it impossible to get a sketch of one, in time to appear with this article The accompanying machine may be thus described: *a a* is a plank, *b* are the pendants upon which the frame work is supported upon the axles of the curved rollers. The horse shafts *c* are bolted on the plank *a*, and the handles *d d* are jointed to it, and, being embraced by open guards, permit the elevation and depression of the coulters, by means of the chains, according to circumstances: *g g* are the seed-box frames; *h h* are spur-gearing, shown exposed, by which the seed axles are moved; and *i i* are the hind covering wheels.

The distributing apparatus in this machine is peculiar. The interior of the seed-box is formed into a semi-cylinder, of which the accompanying vertical section is an illustration, *d d* being the interior surface of the box In the bottom of this seed-box, an opening is made to receive a brass roller *b* having a groove running round it. The roller is mounted on axle *a* which is produced to a sufficient distance beyond the box for receiving the last wheel of the series already described, the connection with which gives motion to the roller *b*. A slider *c* is attached to the interior of the box, which is capable of nice adjustment by means of a screw or otherwise



In closing this article, we would earnestly impress on every farmer in Canada whom this sheet reaches, to see to it that he puts in a few acres of turnips or mangolds, or, if possible, of both. Nothing is better for purposes of cattle feeding in winter, and as every farmer knows, no kind of farm produce is more remunerative than fat stock.

Familiar Talks on Agricultural Principles.

AMENDMENTS

The word "amendments" is a convenient phrase for denoting the improvement of the soil, whether by certain operations upon it, or certain additions to it Thorough tillage alone will in many cases improve neglected or worn-out land. When ploughing has been but superficially and poorly done, it is an excellent plan to go down more deeply, and by the use of the cultivator and harrow, completely pulverize the soil. Too many persons regard ploughing and harrowing simply in the light of necessary preparations for the seed. They know it is of no use to scatter seed on a hard, compact surface, and that it must have a soft bed in which to take root and grow. But they do not appear to know that stirring the soil has other beneficial effects beside that of preparing a suitable bed for seed to grow in. The processes by which the nutritive material in the earth is prepared to the use of plants, require air and water. Without these, valuable stores of plant-food may remain locked up in the ground, and be of no service whatever. Tearing up the soil, breaking and crushing the hard clods, and thoroughly fining the land, give access to air and moisture, and thus makes fertilizing material available for the nourishment of growing crops. Beside this effect of stirring the soil, it must not be forgotten that the air itself is laden with fertilizing gases which are attracted and fixed by the soil, when it is in such a condition that air passes freely among it. In short, the ground has pores, as truly as the human body, which must be kept open, and free circulation secured, in order to health. The state we are accustomed to call "mellowness," is thus that which is in various ways most favourable to vegetation To bring land into this condition, and keep it so, should be a prime object with all cultivators. So useful is mere tillage, that by this alone, and without the use of manure of any kind, an eminent British agriculturist, Mr. Lawes, has had on a piece of ground used for experiment, an average of about sixteen bushels per acre of wheat for many years in succession, a better average yield than most farmers in this country can boast, who practice rotation of crops, and the occasional use of manure. A correspondent of one of the American agricultural papers recently said, "If I had a call to preach on gardening, my constant text should be, 'STIR THE SOIL.'" Not a bad text that for a lecture either on agriculture or horticulture. Let it not be forgotten, that in an important sense, *tillage is manure.*

The texture of a soil may be improved not only in the way above described, but by a mixture of soils of different qualities. Thus, stiff clay land is benefitted by the addition of sand, gravel, broken brick and plaster, in short, by anything calculated to render it more loose, open, and easily penetrated by air and water. In England, clay land is often improved by paring off and burning a thin sod, or by burning a portion of the clay and scattering it on the land. Burning has the effect of rendering clay more like sand, and so makes the soil more loose. Sandy land, on the other hand, is bettered by the addition of clay, marl, or any material which will have a tendency to give it more substance and cohesion. Coal ashes, lime rubbish, peat composts, marsh and creek mud, are valuable additions to the several soils to which they are adapted. In proposing by such means to improve land, it is necessary to consider the question of expense It will not pay to haul such materials a long distance, but if it can be had near at hand, and the expense of transportation will not be great, it will certainly pay well to adopt the methods above indicated It should be borne in mind in weighing the question of cost, and deciding whether a proposed course will pay, that some improvements, such for example as the addition of clay to a sandy soil, or of sand to clay, are of permanently good effect. When an amendment of this kind is accomplished, it is done once for all, and the land will never cease to profit by it. Such additions can never be wasted by exhaustion, though of course it requires more than improvement of texture, to make a given soil productive.

Draining is a most important and valuable amendment so much so, that it deserves a fuller and more distinct notice than can be given it in this "Talk." At least one article must be devoted wholly to its consideration. In this connection, however, it is well to remark, that deepening the soil by means of a subsoil plough secures not a few of the advantageous results of draining. When the surface has been run out by bad farming, or where a "hard-pan" exists below the shallow depth to which the plough has been in the habit of going, subsoiling is a most wise and necessary operation. It not only secures some of the good results of draining, but by admitting air, moisture, and fertilizers more deeply into the ground, gives a more roomy bed for the seed to grow in, and provides a larger supply of food for the growing plant. Cases have been known in which the subsoil plough has been the means of producing excellent crops from cold white sand and clay, previously very unproductive. While, however, subsoiling in some instances has to an extent a like beneficial effect with draining, it is always necessary in low and flat land that draining should be done before subsoiling, otherwise an injurious wetness may be the result. A fuller consideration of subsoiling will naturally come up, when the subject of ploughing is under notice.

Next to the description of amendments which have been enumerated, comes improvement by means of manure, a fruitful topic, with the bare mention of which we must content ourselves at present.

Thin Sowing.

In a late issue of the *Mark Lane Express* we find the following interesting communication from that clever agriculturist—Ald. J. J. Mechi: –

SIR, Let us keep our minds unprejudiced in this matter, and open to conviction, by small and continued experiments, which will give us safe ground to act upon. I wish that it were possible that all agriculturists could see my experimental half-acre of wheat, dibbled with one peck per acre, in all the stages of its growth. I see it daily from my window, and it suggests no end of reflections. There are the four stetches, looking in the distance like a bare fallow; while the rest of the field, sown with four pecks per acre (my usual quantity), is as green as a grass-field. Judging from its appearance, I should at once condemn it as a failure, and yet we know from past experience, and feel confident, that these bare lands will, at harvest, produce a crop more abundant than the green mass that surrounds it.

It would be most interesting to record, by short-hand notes, all the feelings engendered by an inspection of those bare stetches by practical agriculturists during the various stages of the wheat's growth—from positive disbelief and doubt, passing, in gradation, to the admission of surprise and conviction at the result, so successful but so unanticipated. But so it is, and we felt it ourselves more than once. There are the little plants from single kernals, at intervals of 6 inches by 4½, and on looking closely at them we see peeping out of the tiny but numerous shoots that are to radiate horizontally, and cover the ground with strong and reedy stems, so that the field will look as though it had been rolled with an immense roller, and every stem almost glued to the soil. In due time those horizontal shoots will take an upward movement, having at the time that admirable and useful curve of resistance which enables the plant to hold its erect position, regardless of winds and storms. How different at harvest from the laid and injured crops which, owing to crowding, are compelled to go up at once vertically without the curve of resistence! How small the kernals and dull and soft the straw of the thin-sown, whose plump, well-developed kernals give unmistakeable evidence of a more natural and proper proceeding!

When harvested and "traved," or shocked, the contrast in the straw is most striking and convincing. By this thin-sowing you get more straw (tested by weight), as well as more corn, than by thicker-sowing, besides the absence of mildew. Said a Wiltshire man to me, just before harvest, as he was closely examining each plant or bundle of growing stems: Well, Mr. Mechi, you might have written all your like about this, but I should never have believed it I had not seen it. And it certainly is very wonderful that the stems from each kernel should range from 10 to 30, but so it is, and this does not depend upon the quantity of the seed sown, but upon the quantity of nutritious matter in the soil available for the growth and full development of the plant. Twenty times as much seed would not produce a crop where there was not available food.

I will now describe the whole of the facts quite irrespective of mere opinions. On one clover lea yearly, when I have drilled my usual quantity—4 pecks of wheat—I dibble in, on four lands, or half-an-acre, half-a-peck of wheat, which is one kernel in each dibble hole, 6½ in. by 4 in. apart. It is dibbled at the same time as the rest of the field, sometimes in October and sometimes in November, so as to be a fair comparative trial. The land is strong clay land. I have not yet tried so small a quantity on the light land, although I shall do so next year. I fear, however, it might not answer so well on light land, on account of birds, and other reasons. The yield from this peck an acre was in 1864, 58 bushels per acre, and 2¾ tons of fine straw. This last year, 1865, the yield was 58 bushels per acre (straw not weighed). In both years the yield exceeded the remainder of the field by 2 bushels per acre, and the straw in 1864 was also more abundant. This year (D.V.) I shall duly report the results, which I have no doubt will be the same; and yet with these facts so patent I lack the courage to reduce my quantity from a bushel generally. By these repeated trials I shall, however, gain confidence, and probably drill an acre or two in each field with 2 pecks. Last year I thought it impossible that the thin-sown could equal the bushel, for it went in badly, and altogether looked like a failure.

The peck of thin-sown red wheat only equalled the thicker-sown red in 1865, but the white beat the thick-sown white by 2 bushels In 1864 both red and white thin-sown carried the day over the thick-sown. All