

ments he had made by steeping grain in liquid manure, so as to coat them over with it, previous to their being sown. He states his plan to be to make every seed carry with it to its bed in the soil some good manure, which has an immediate effect on the growth of the plant, and greatly increases the crop. The experiments were tried on some small plots of land near Glasgow, and the manures used were a solution of lime in water, a solution of barn manure, fowls dung and water, the deposit obtained from city sewerage, and a mixture of soot and water. He does not state which of these mixtures was the most successful, but gives the increase from 20 to 35 per cent over seed not so prepared. As an addition to either mixture he recommends a small quantity of sugar, and he proceeds to show that saccharine matter is an ingredient in wheat and other grain and contributes mainly to the nourishment of the young plant. An experiment with guano was not successful, but few of the seeds germinating.

The mode of applying the liquid is as follows:—Take a tub about 30 inches over and 20 deep; empty into it a boll (four bushels) of wheat; take two pounds of sugar, bruise any lumps there may be in it, and sprinkle it on the top of the seed in the tub. Take another smaller tub, put into it six gallons of water, and mix soot with it until it is as thick as good cream—a man rubbing the soot and water against the side of the tub with a stiff broom will mix it in a few minutes—then with a jug distribute the solution slowly on the top of the sugar

and wheat. The liquid will then be about two inches above the top of the wheat; stir the whole with a wooden ladle several times within the first four hours, but not after that; let it remain in the solution not less than 24 hours, by which time the seed will have absorbed all the liquid, and although in a damp state, it will be ready for sowing; but if the weather is not favorable, the seed may be left in the manure for forty, fifty or sixty hours, every seed will then be black with soot. Other manures and other grain to be treated in a similar manner. The whole of the seed thus prepared sent up a large number of stems. From one root, the seed of which was coated with hen pen, there were — ears, the produce being not less than 1100 grains, but it was on garden ground and good soil. Of the plants of wheat sent up, not one was thrown out of the ground by the alternate frosts and thaws of winter because the roots were large and had a good hold of the ground.

The plan was afterwards tried on the estate of the Earl of Eglinton on a larger scale. The wheat was coated with soot and sugar and the results were that the grain appeared sooner; it tillered better; it covered the clod sooner; it grew more luxuriantly; it burst into ears sooner; the flower on it was earlier; and when cut it produced fully one fifth more stocks than the rest of the field.

Beans and peas treated in the same manner gave 47 per cent. greater increase than the seed sown without the coating of manures.

## Literature.

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