

of manures, each of which differed more or less from the other. This experiment has now been going on for several years, but I propose to give merely the result of a comparative examination made at the end of May of the present year.

Before going into the field I decided on classing the various crops under three heads:

1. Good: which should represent a fair agricultural crop.
2. Very good: where the produce was much in excess of an ordinary crop.
3. Bad: where the produce was much below that of an ordinary crop.

Each crop had, so to speak, thirty-four chances, having the opportunity of producing a good result under any one of the thirty-four manures.

The whole of this portion of the field has been under experiment since 1848, its condition therefore with regard to manures is well known. Since 1854 no dung has been applied and, upon certain portions of the land, no substance containing nitrogen has been used since the commencement of the experiment in 1848.

The result of the examination brought out the following facts: Five of the different crops grown, sainfoin, tares, Bokhara clover, lucerne and trifolium, under every one of the thirty-four different manures, came under the class described as good, or very good. Four of the other crops have the large majority good or very good; four have the majority bad, but the only crop which is bad throughout the whole of the thirty-four varieties of manuring is the ordinary red clover.

It so happens that this red clover adjoins the sainfoin which is a good or a very good crop under every variety of manuring. In no case is the sainfoin less than 18 inches high, while in several cases it is between two and three feet high and very thick upon the ground; the red clover, on the other hand, is not more than two or three inches above the ground, and although the plant is not diseased there is no active growth.

Passing from this field, let us now go into another where an experiment on an ordinary four-course rotation of turnips, barley, clover and wheat, was commenced in 1848, and has been carried on, *without any application of manure to the soil, from that day to the present time.*

The third crop in the rotation was clover and a very large produce was carried off, but as usual when the attempt was made to repeat the crop *after an interval of four years* it failed. Beans were then tried in place of the clover, and they were repeated every fourth year until 1873, when red clover was sown with the barley. The crop was not diseased in any way and it stood the winter, but there was no active growth; and the hay, which was cut three times, only weighed $1\frac{1}{2}$ ton per acre. A crop of beans was taken in the fourth following year, and red clover was again tried with the barley in 1881; the crop as on the previous occasion, stood the winter well, and there is an excellent plant at the time I am writing, but the produce is very small and would hardly pay for the expense of cutting.

In another experiment in the same field where the turnips in the rotation have received a very liberal application of artificial manures every fourth year from the commencement, the clover is an exceedingly large crop.

When this land was first put under experiment in 1848, it was in what we should describe as rather high agricultural condition; *the failure of the clover crop when repeated in the seventh year from the commencement, could not therefore be due to want of food in the soil*, as in the interval between 1854 and 1874 the removal of twenty unmanured crops must have greatly impoverished the land, yet we still obtained a crop, though a very small one, and

even eight years later than this date we got a crop without disease. We have therefore before us the singular fact that disease is not due to poverty of the soil; and that it is not due to richness of the soil is proved by our having succeeded in growing continuous clover crops upon a rich garden soil.

Here I may observe that the remarkable circumstance of other leguminous plants growing luxuriantly where clover would not grow must not lead us to conclude too hastily that we can *continue* to grow them; after a few years they may in their turn fail just as the red clover has failed.

I have not referred to the numerous analyses which have been made of both soils and crops in connection with this subject; nor even to the elaborate operations carried on by Dr. Gilbert on his small beds, in which he placed the various manure ingredients in layers, several feet below the surface.

My object is to point out to those of my American readers who are interested in the subject, and to the lady—who I am sorry to find has so low an opinion of the farmers and scientific men of England—that here, at least, some attempts have been made to investigate the causes of clover sickness; and it is not from any sparing of time or money bestowed upon the subject if the results have not as yet proved altogether successful.

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THE MANAGEMENT OF BROOD MARES.

At this season of the year, the greatest care is necessary in managing mares in foal, and especially during such a winter as we are now experiencing. The pregnant mare should always be kept in a loose-box, or, where that is not convenient, in a large stall, so as to avoid risk of injury from being cast in a narrow stall.

If she has been accustomed to work, she should be kept at slow work up to within two or three months of foaling. She should never be driven fast, nor made to draw heavy loads; sudden starting and rapid pace are to be avoided. Deep snow and *cahots* are apt to lead to straining and jerking, which by injuring the foetal membranes, induce abortion, a matter of serious loss to the owner; consequently, pregnant mares should only be driven on well beaten, smooth roads. It is well known to all breeders of horses that a drink of cold water taken by the mare will cause the foal in the uterus to kick; this plan is often resorted to as a proof of pregnancy. The movements of the foal in this instance are due to the chill caused by the cold water producing pain or uneasiness, hence, we infer that cold water in quantity is injurious to the foal. The water should always be allowed to stand in the stable, or have the chill taken off it by the addition of a little warm water, before a pregnant mare is allowed to drink it. It is important that she be kept in good condition, but high flesh should be avoided.

It is necessary, too, that the food should be easily digested, and not too bulky; unless regularly worked, dry grain is not advisable, crushed oats and bran, carrots, boiled oats or barley, with bran and hay, constitute good feeding for them; but corn, oats, and such stimulating food must be avoided.

A costive condition should be counteracted by a pint of raw linseed oil occasionally.

Some mares are apt to swell in the legs, and under the belly, during the last two or three months of pregnancy. Such mares should have a large straw-yard to run in: it is often more alarming in appearance than in reality.