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OLD SERIES]

Nec aranearum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.

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From the London Mark Lane Express.
EXPERIMENTS

ON THICK AND THIN SOWING—ON THE
BEST METHOD OF FEEDING SHEEP—ON
THE POTATO CROP.

Sir,—Believing it to be the duty of every man to contribute to the common stock of information whatever his experience may have placed in his power deemed to be of importance, or his position in society has enabled him to collect from the experience of others, I request the insertion in your useful paper, of the following articles on subjects of stirring import at this time, hoping they may be received in the same spirit and feeling as they have been communicated to, and are now contributed by me, and then, I am sure, great good will result every way.

The subjects which I propose bringing under the notice of your readers are—

Experiments on thick and thin sowing, by broadcast, drilling and dibbling. On the best method of feeding the largest number of sheep in the shortest time, and at the least expense, taking into the account the value of the manure, and of the succeeding cereal crops.

On the potato crop; the causes of failure to so large an extent in the present year, with suggestions for preventing a recurrence of the evil.

EXPERIMENTS ON THICK AND THIN SOWING, Communicated by a member of the Society of Friends, residing in Essex:—

"I remember that last year thou took an interest in some experiments I made to ascertain the produce of wheat from different quantities of seed. I believe I told thee that I intended to pursue the matter a little further; I have done so; and now enclose thee a statement of the result, thinking thou mayest wish to see it. I was quite convinced, from the issue of last year's trial, that the smaller quantity of seed then used (viz., four pecks per acre) was insufficient, and therefore did not try that quantity again, but limited myself to a comparison of the produce between six, seven, and eight pecks of seed per acre. A perusal of the accompanying statement will show a similar result to that of last year, viz., that the greater quantity of seed produced the largest amount of corn, and that the produce decreased in a larger proportion as the quantity of seed was lessened. Thus—

	qrs.	bush.	pkts.	qts.
No. 3. Having eight pecks of seed to the acre, produced	2	2	3	5½
No. 4. Having seven pecks of seed to the acre produced	2	2	1	5½
Difference	0	0	2	0¼
Equal to one bush. per acre.				
No. 4. Having seven pecks of seed to the acre produced	2	2	1	5½
No. 5. Having six pecks of seed to the acre produced	2	1	2	0¼
Difference	0	0	3	4¼
Equal to 1 bush. 3 pkts. 1¼ qt. per acre.				

"I consider the autumn of 1844 was a very favourable one for the planting of wheat, I might say unusually so for the description of heavy stiff land which I farm; and, therefore, the trial was made under circumstances propitious to a small quantity of seed; and I, accordingly, sowed less by one peck per acre than I generally do; the working out of the above result is, therefore, such as satisfies me that less than eight pecks should not be sown. I, however, by no means intend to say that a greater quantity may not often be beneficial; I have long entertained the opinion that different soils and different seasons require a difference in the quantity of seed. I think to follow this matter no further, but will just add that, having just before harvest had an opportunity of looking over the crops of J. J. Mechi, who, perhaps thou art aware,

has obtained some notoriety by his agricultural projects at Tiptree Hall, I there saw specimens of thin sowing, viz., four pecks to the acre, side by side with eight pecks to the acre. A large party of agriculturists who were present were unanimous in estimating the thin sown as far below that which had a more liberal quantity of seed.

"From the accompanying paper thou wilt see that I took the opportunity also of making a comparison between wheat sown by hand or broadcast, and that sown by the drill; the quantities of land as well as of seed being equal, the result shows in favour of the former as compared with drilling in rows six inches apart, but against it as compared with drilling in rows nine inches apart. The difference of produce between nos. 2 and 3 has surprised me, having previously held an opinion that the plants could not be too equally distributed over the surface; and, therefore, that smaller intervals between the rows was best. With the view of trying if this was occasioned by any accidental circumstances, I propose to repeat the experiments of Nos. 1, 2 and 3.

"If thou thinkest the statement at all likely to interest any of thy friends, I wish thee to use thy liberty in showing it.

"Account of Produce from equal Quantities of Land (about half an acre) sown with different Quantities of Wheat, or in different Manners.

	qrs.	bush.	pkts.	qts.
No. 1.—Sown broadcast, at the rate of eight pecks per acre.				
Wheat, best	2	1	2	7
tail	0	0	2	5
Total	2	2	1	4
No. 2.—Drilled in rows, six inches apart, at eight pecks per acre.				
Wheat, best	2	1	2	0½
tail	0	0	2	4½
Total	2	2	0	5
No. 3.—Drilled in rows, nine inches apart, at eight pecks per acre.				
Wheat, best	2	2	0	7½
tail	0	0	2	6½
Total	2	2	3	5½
No. 4.—Drilled in rows nine inches apart, at seven pecks per acre.				
Wheat, best	2	1	3	0½
tail	0	0	2	5½
Total	2	2	1	5½
No. 5.—Drilled in rows nine inches apart at six pecks per acre.				
Wheat, best	2	0	2	4½
tail	0	0	3	4½
Total	2	1	2	6½

"N. B.—The comparison between Nos. 1 and 2 is in favour of broadcast sowing over the narrow drilling.

Between 1 and 2 is in favour of wide drilling over the broadcast. 2 and 3 is in favour of that drilled at greater distance. 3, 4, and 5 is in favour of the greatest quantity of seed.

"That dibbling should be preferable to drilling experience has long shown, could the difficulty be overcome of irregularity in the quantity of grains deposited; whoever shall discover an instrument that will produce that regularity will be a benefactor to his country, and would no doubt be well rewarded by the Royal Agricultural Society, as at least two pecks per acre of seed might be saved with benefit to the crop."

REPORT

OF THE COMMISSION OF AGRICULTURE OF THE PROVINCE OF GRONINGEN ON THE DISEASE AFFECTING THE POTATO IN THE NETHERLANDS.

1. Causes and Nature of the Disease.

The Agricultural Commission is of opinion that the disease is not occasioned by any direct cause, but rather that various circumstances have combined to give the disease this year an extraordina-

ry impulse, it being in the opinion of many scientific persons not a new scourge.

The primary cause may be attributed to the extremely wet summer of 1845, and to the heavy rains which fell at the moment of the formation of the tubers. It is probably owing to this circumstance that many plants did not germinate. In the second place, the commission is of opinion that the growers do not sufficiently attend to the preservation of the potatoes used as plants, so as to keep them from all damp. It is also very probable that the intense cold in the month of March much injured the tubers.

The more direct causes are probably as follows:—

1. The too rapid development of the plants this year. It is well known that those plants which spring up too quickly, and the grain sown on an over-matured soil, are subject to such diseases as ergot for rye and other cereal grains and rust for wheat, and the presence of cryptogamous plants

2. The intense heat in the early part of the summer of 1845, and which amounted on the 13th of June to 87 Fahrenheit, on the 3rd of July to 87 1-2, and on the 7th of July to 91 1-2, necessarily had the effect of drying up the ground excessively; and the rain which fell at intervals during the hot weather, and was soaked in, had the effect of scorching, as it were, those plants and potatoes which, not being very deeply planted, were exposed to the action of the heated water.

3. This intense heat was succeeded by cold and rainy weather, which lasted from the 15th of July to the end of the month of August. This damp weather, and the total absence of the vivifying rays of the sun, caused a kind of rottenness among the pithy plants, and especially developed the cryptogamous plants.

4. On the 21st and 22nd of July, an extraordinary fog was perceived in many places, which spread a disgusting smell. Soon afterwards, on the 28th of July, the first symptoms of the disease were discovered in the provinces of Groningen and North Brabant; and it is more than probable that this fog, which was epidemical was intimately connected with the disease.

According to all the experiments and descriptions made of the disease, it appears that it commences on the upper part, and then attacks successively the leaf, the stalk, and the tuber. This is fully confirmed by an experiment made at Groningen. As it is the upper part of the stock which is generally first attacked, it is probable that the disease originates in the leaves, descends the stalk by means of the peel, and communicates with the part below the ground.

5. On the leaves spots have been perceived, and also a kind of fungus described in the work of MM. Maleschott and Baumhauser, and classed by M. de Martins among the *fusisporium salani*. These fungi are similar in every respect to those drawn by the above gentlemen.

It is very probable, then, that the above enumerated circumstances have been simultaneous causes of the plant rotting, and of the fungi which are observed thereon. It unfortunately happens that these fungi, which are extremely minute, are quickly propagated to an inconceivable extent, favoured by the dampness of the atmosphere.

But the principal cause, or rather the character of the disease, is a kind of gangrene or mouldiness in the leaf, which occasions a hurtful and even mortal decay to the plant. The dangerous influence of the cryptogamous plants has long since been shown by the example of the rust (*uredo rubigo*) in corn.

As soon as the rust spot develops itself on the leaf of the wheat or oak plant, it is observed that the leaf turns yellow, and withers at the spot where the rust shows itself.

No traces of the fungi have been found in the interior of the stalk or in the tuber. The commission, therefore, considers that the disease of these parts results from that of the leaf.

It is very probable that the disease has

long existed in this country, but it has never hitherto sufficiently developed itself to attract serious attention. Having been fed for two years by a moist temperature, it has increased this year to a frightful extent, and become a real calamity. The commission is, however, of opinion that the disease, as now known to us, has never been treated of by naturalists. At any rate, it is far from resembling the cancer described by De Martins, or the scurf of potatoes, as these two diseases arise in the tuber, and not in the leaves.

2. Remedies for the Disease.

The disease itself, its character, and causes, having now been sufficiently considered, it is necessary to consider the remedies for the disease, of which the commission points out three different kinds:

1st.—A means which, unfortunately, it is not in our power to adopt at pleasure—that is, a drier atmosphere; for if it be damp that has caused the mouldiness of the leaves, and has propagated it among the plants, it follows that dry weather would put a stop to the ravages of the disease, and even result in entirely destroying it.

This observation applies to the measures which science may propose, now that the disease has probably reached its period.

2nd.—To prevent the return of the disease, it is necessary to take the following precautions:—

1. To leave the potatoes in the ground until very dry weather occurs. Experiments having shown that their decay is accelerated by being taken up, it is advisable to leave them in the ground at first, in order to get dried, and afterwards to lay them out over the field. This would have the double advantage of rendering the vegetable more wholesome, and of preserving it.

3. The withered leaves of diseased potatoes, which are of no value, should be immediately burnt; and the same should be done with the rotten potatoes, which cannot be of any use. Nothing should remain of them.

4. It is necessary to avoid as much as possible planting potatoes in the same spots where they have been planted this year, for it is most probable that the seeds of the fungi have remained in these places, and there would be great risk of the ensuing crop being similarly attacked. It is also necessary to manure the land with lime after the potatoes have been taken up, and then to clear it; and if the land be employed for produce which need not be planted before winter, it is better not to harrow it, and so allow the air and cold to penetrate it. In the spring the lime manure should be renewed as much as possible, and the land may be watered with diluted sulphuric acid, one part of sulphur to 100 of water.

5. Next year the potatoes should be planted in dry land, all damp places should be avoided, even places shaded by houses or trees. It is once more repeated that great care should be used in selecting the tubers, and they should be planted at a little distance from each other, so that the earth round each plant may be raised, that the air may penetrate everywhere.

6. The commission does not agree with those naturalists who think that the origin of the disease may be attributed to the race of potatoes having gradually deteriorated, owing to their being seldom reproduced in fresh soil. The report mentions that in the commune of the Marum (province of Groningen), among other instances, is to be seen a field of potatoes, the produce of only three years' culture, equally attacked by the disease; and an infinite number of similar cases