

I was obliged to lay it aside, thereby incurring a very serious loss, besides all the expense I had been put to in repairing the machine. The framework being totally useless I proposed that the maker should make me an allowance accordingly. This he has refused, and has placed the matter in the hands of the London Trade Protection Society, and as I do not wish to incur legal expenses I have paid the money with the additional charges. I believe, however, I should have done well to have resisted this claim, and exposed the imposition I have been subjected to. I do think that the farmers require a society to protect them from agricultural machine makers, and also manure vendors, from both of whom I and others have suffered; at any rate I should recommend farmers before buying root-pulpers to get some guarantee that they will stand the work required. *KINNAIRD, Veitch's Hotel, Edinburgh.* [We have omitted the name given in Lord Kinnaird's letter. This statement of his lordship's experience will be none the less generally influential, though we do not give its personal bearing.]

Home Correspondence.

Mr. Piper's Balance Sheet.—Mr Piper must not imagine I impute any intentional mis-statement to him in the tables he has published in the *Gazette* of the 24th October of his and the Reverend Mr. Smith's systems of Wheat growing, but I must think there does exist an error in the amount of produce put down to Mr. Smith's account—five sacks—can it be that it should be five quarters, which appears to tally more nearly with all Mr. Smith's former returns? I have not a later pamphlet of his than that of 1852, but up to that date, and I believe according to returns since published in periodicals, his returns have been from 34 bushels to 40, or even over; should there have been no falling off in the years 1855 and 1856 there would evidently be shown a large balance in favour of Mr. Smith's system. Half-a-ton of straw, too, is so very much under what Mr. Smith has usually had, that it throws further doubt on the statement. He used to have from a ton and a half to two tons. We must under such discrepancies, without casting any suspicion on Mr. Piper's honesty, be anxious to have Mr. Smith's own statement of these two years' products. It is barely possible that Mr. Smith's returns of these two years may have fallen short of those of former years, but, whether they have or not, Mr. Piper in giving his own averages for the last eight years ought also to have given those of Mr. Smith's for the same years. As far as my observation goes the returns of the two plans had previously been much upon a par. The two systems are of so much interest, bearing on two such opposite principles, both being conducive to the production of such vast amounts of our staple food, that their merits cannot be too much discussed. It is curious to find so small an amount of manure compensating for all the inorganic substances brought into play by the deep working of Mr. Smith. Mr. Piper's plan shows the mistake we are in, in supposing a change of crop necessary, at least in cereals; as constituting the staff of life this is a matter we should be thankful for, but then he is dependent on foreign supply of manures, which if his plan were brought into general practice might fail, while Mr. Smith's rests on those within the soil which thousands of years may not and cannot exhaust.—*J. M. Goodiff.*

Thin Seeding, Late Ripening, and Rust.—Thin seeding produces late ripening—true, it does delay the period of ripening and so do high manuring and deep working; but is it not jumping to a rather hasty conclusion that it is therefore a cause of rust, which generally attacks the Wheat plant long before the ripening process commences?—it will be seen even in Grass corn. The deep and well fertilised lands are always longer in bringing on plants to the ripening stage than shallow poor land; are we therefore to abandon high farming and our prime lands to other products and only sow Wheat on weak soils? Is not water at the roots a main cause of rust? Is not late sowing also, as Mr. Smith says, in producing a late and spring tillering, a further cause? Do the Hardys find their thin sown grain more liable to rust than their neighbours' thicker sown? Does Mr. Piper find his 2½ pecks more subject to rust or later in ripening even than his neighbours? Does not Mr. Smith produce a plump full grain of Wheat? But in Ireland Wheat is almost all sown broadcast and thickly sown—over two bushels to the acre—and yet for several years very immediately subsequent to the general attacks of mildew on the Potato crop, it so suffered from rust as to throw it very generally out of culture, the rust affecting the leaves when in Grass corn; and although at the same time I believe it prevailed very much in England we do not find that the Hardys or Mr. Smith or Mr. Piper were more severe sufferers from it than their neighbours. In the year 1850 a crop of Wheat was sown in rows four feet apart with Cabbages interlined on a wet, cold, undrained clay—this Wheat promised well but was so severely attacked by mildew that it became of little value; this was a nice bone for the thick seeders, but it unfortunately happened that at the same time another crop of Wheat about a mile off sown broadcast with a full complement of seed on a very superior land—a warm dry limestone soil—suffered so much from rust, that the owner of it, a strong farmer, abandoned sowing Wheat for several years after. The period in which mildew attacks prevail is so dependent on other causes, chiefly atmospheric, that it is very questionable whether we should ascribe it to a late ripening, and indeed during

the prevalence of Wheat mildew in Ireland it was observed that the spring-sown Lammis Wheat suffered much less from it than the autumn sown; and this would probably be the case with late planted Potatoes did not the destruction of the tops prevent the growth of the tubers. While noticing the Potato crop I may observe that drilled and consequently thinly-planted Potatoes do not suffer more severely from disease than the thicker sown lazy bed. If to those causes which procrastinate the ripening of our grain we are to attribute a greater prevalence of mildew, we must, then, to avoid a chance danger, sacrifice a certain large produce, abandon high tillage, and be content with the scanty returns of our forefathers. But what are thick and thin sowing? Are they not relative? On poor land that would be thin sowing which on rich land would be thick. If the land is capable of giving a tillering of 80 stems to a plant surely it would be absurd to sow it as thick as land that would only throw up a single stem. But thick seeders like shallow drainers are all verging away from their old practices, few now would sow the quantities of seed they used to do; even the poorest lazy-bed tiller of Potatoes in Ireland eschews the nine-inch distances of his forefathers and plants his sets a foot or more apart, and who now thinks of making his *gridiron* drains but two feet deep? It looks very like a catching at straws this last resource of the thick seeders in mildew, but even were there some little more of liability to disease in thin sown crops the thin seeder rests his practice on so broad a basis, as not to fear its being upset by such a casualty. He finds reckless and wasteful extravagance in throwing into the ground more seed than will healthfully vegetate. He sees that a saving equal to about one-twentieth part of the entire produce of the country may be effected, and he maintains that it is the duty of the agriculturist of a state, which cannot produce sufficient for the demands of its population, to effect such a saving, letting alone his own individual interest in it. In poor land, however, thick seeding may be advisable, and in dirty ground it is absolutely necessary, that our cultivated intruders may keep down the denizens of the soil; the ground must be occupied by one or the other, and these dirty fields I willingly give up to the thick seeders and trust they will make the most of them, as they do in Ireland, and perhaps elsewhere.—*J. M. Goodiff.*

Acorns.—The crop of Acorns this season is in this neighbourhood unprecedentedly large. Many women and children have made large sums by selling them at prices varying from 1s. to 1s. 6d. per bushel. At the suggestion of my servant (Joseph Bowyer) I have tried boiling them for pigs, and find it very successful. Much of the astringency and acidity natural to the Acorn seems to be dissipated in cooking them. At first we boiled them till they burst into a kind of jelly; now we boil them about 20 minutes, till they resemble a cooked Chesnut, and then pound them, and having sifted some of the flour from them for the fat pigs, boil the other part again for the lean. We mix the flour, or powdery part, for the fat pigs with pollard. They eat it greedily, and then lie down, which seems to prove that it is good for fattening them. Many of my neighbours have tried this plan at my recommendation, with the same result. Can you inform me what are the principal constituents of the Acorn, and what should be added—Barley-meal, Indian Corn, bran, Pea-meal, &c., to make them most suitable for fat pigs and for lean and growing pigs respectively? *E. G., Runham Vicarage.* [We have no analysis of Acorns. The specimen of Acorn flour sent is sweet and palatable.]

Productiveness of Foreign Seed.—Will the writer of the highly remarkable article on weeds in your last Number have the kindness to state why he supposes that "there is too much reason to believe that foreign seed of an indigenous species is often more prolific than that grown at home?" Is it meant that the plant produced from the foreign seed actually produces more seed, or merely that the introduced stock is more vigorous than the native stock? I have no doubt that so acute an observer has some good reason for his belief. The point seems to me of considerable interest in regard to the great battle for life which is perpetually going on all around us. The great American botanist, Dr. Asa Gray, believes that in the United States there are several plants now naturalised in abundance from imported seed, which are likewise indigenous; and my impression is (but writing from home I cannot refer to his letter to me) that the imported stock prevails over the aboriginal. So again, Dr. Hooker in his admirable *Flora of New Zealand* has told us that the common *Sonchus* has spread extensively from imported seed, whilst the same species is likewise an aboriginal; the natives in this instance being able from trifling differences to distinguish the two stocks. Might I further ask whether it is now some years since the seed of *Sinapis nigra* was accidentally introduced on the farm described; and if so, whether the common Charlock still remains in lessened numbers owing to the presence of the invader, and without, as far as known, fresh seed of the invading *S. nigra* having been introduced?—whether, in short, it was a fair fight between the two species, ending in the victory of the Black Mustard? Would it be trespassing too much on the kindness of the writer of the article to ask whether he knows of any other analogous cases of a weed introduced from other land beating out, to a greater or lesser extent, a weed previously common in any particular field or farm? *C. Darwin, Down, Bromley, Kent.*

The Preservation of Corn and other Ricks.—How much better and cheaper would it be in the long run if a farmer had erections or sheds of a simple and inexpen-

sive kind under which ricks, whether of corn and other cereals, hay, &c., might be safely housed, and thus be free from the effects of storms, but also from incendiarism. There is little doubt that, despite the thatching, much of the rick corn is considerably deteriorated by its exposure, especially crops that are in an inferior condition in bad seasons. A farmer can have no difficulty in knowing how many ricks his acres will raise, and should allow housing accommodation for a maximum number. Lightning conductors might probably be more serviceable and effective if detached from buildings at the distance of a few feet. Wood erections are possibly the cheapest kind, but where present economy is not a primary object, cast iron girder houses (that will also admit plenty of light where desirable), after the system of Sir Joseph Paxton's, as seen on a monster scale in our Crystal Palace at Sydenham, but also successfully made use of in smaller buildings by him on the Duke of Devonshire's estate. Many hundreds, if not thousands, of quarters of grain, &c., are lost to the stock of our produce, the staple food of the majority of our population, from want of due care and management, especially in bad and wet seasons, as is seen in the large proportion of damaged and inferior grain and other crops. This to the farmer bent upon self-interest alone is a matter of indifference, as any deficiency of bulk is made up by increased price, but to the hard-working classes, generally underpaid, this is a matter of serious consequence. I hope the day is not very remote when some means may be devised by our legislature to compel farmers to take efficient means to preserve the hitherto abused bounties of Nature by having ricks under house covering, a system also beneficial in preventing crime by removing the liability to incendiarism from discontented men, who suffering, whether justly or unjustly, from want and destitution, in their ignorance purpose ruining the farmer, whereas they are injuring the community generally, and most of all their own class. I may add that I believe lightning conductors would be more efficient if the top were fluked like an anchor, and it would thus attract the electric fluid more certainly than by a single point. "*Scintilla.*"

Lead Pipes.—One of your correspondents wishes to know if a lead pipe to convey water to farm buildings half a mile would be reasonable at 100l. Instead of lead pipe I have used common 2-inch pipes of brick earth set in Portland cement, at one-third of the cost, and though I have not yet fully proved the work I trust it will answer, and be so much better than lead that there will be no danger of the water being poisoned. Does any one know of Portland cement having been previously used for a similar purpose? *W. E. H.*

Farmers' Clubs.

LONDON: The following are passages from the Rev. C. James's opening paper on the education of the agricultural labourer:—*The "position" of the British Farmer.*—I maintain that it is a high and dignified one, fraught with immense responsibility, both by precept and example, influencing for good or evil 800,000 families of labourers in husbandry, forming the interest that wields the power, originates the wealth, cherishes the manly freedom, and promotes the happiness of the entire people; and that it is from this interest that the greatest part of the public burdens are borne, and from which the State derives the greatest portion of her subsistence. As to "the holdings" of the British farmer, there are, it is calculated, 78 millions of acres, at a rental of 127 millions of pounds sterling per annum, in the area of these kingdoms; 14 millions of which are unimprovable waste, and 12½ millions uncultivated, but improvable land. The farms occupy two-thirds of the land of England. The number of farms is 225,318; the average size is 111 acres. Two-thirds of the farms are under this size; but there are 771 of above 1000 acres, the large farms abounding in the south-eastern and eastern counties, the small farms in the north. There are 2000 English farmers holding nearly 2,000,000 acres, and there are 97,000 English farmers not holding more. There are 40,650 farmers who employ five labourers each, 16,501 have 10 or more, and together employ 311,707 labourers; 170 farmers have above 60 labourers each, and employ together 17,000. What an enormous trust held by such a body of men, over such a multitude of workmen! And are they alive to their position? Do they know their duties—and, knowing them, dare to perform them? I answer unhesitatingly, for the most part, Yes; and desire to promote and advance the physical, moral, and intellectual training of the labouring classes. True there was a time when, in some parishes and districts of our country, the education of the labouring classes was viewed with distrust, and encountered opposition; but men now begin more fully to appreciate the words of the excellent Dean of Hereford, in his "Suggestive Hints on Secular Education." "The farmers," says the Dean, "and those of the same class in our rural districts, may rest assured that, until they get that education it is desirable they should have, and until they feel that interest in the labourer which is right, they only augment the evil which they dread. The one is advancing in intelligence; the other is standing still; and I cannot but think that, in a very few years, the employers of labour will be the class which, of all others, will take the greatest interest in those very schools of which they now think so little."

Need of increased Skill in the Labourer.—I say that the more artificial position of agriculture, arising from the progress made in machinery, chemistry,