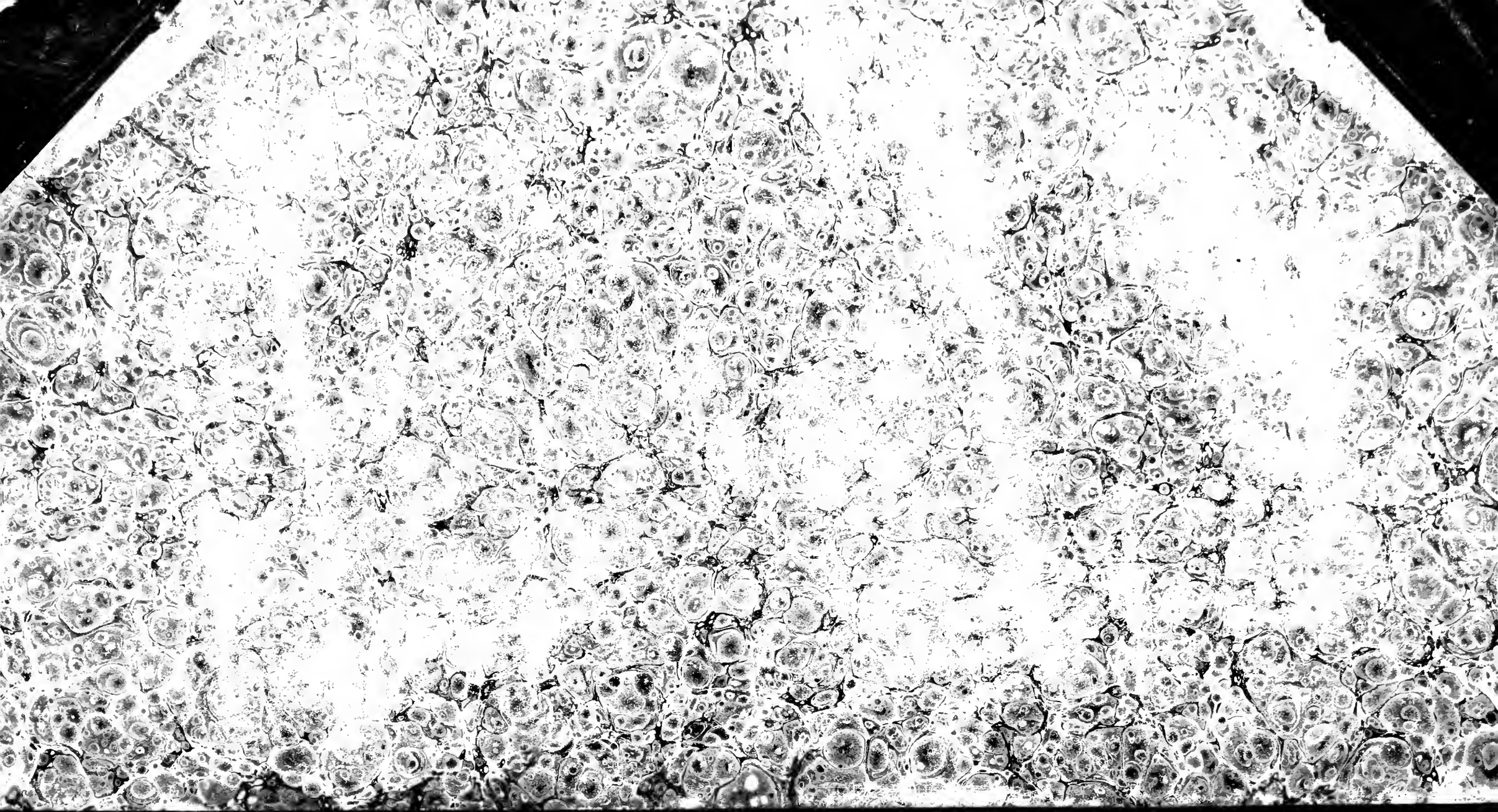
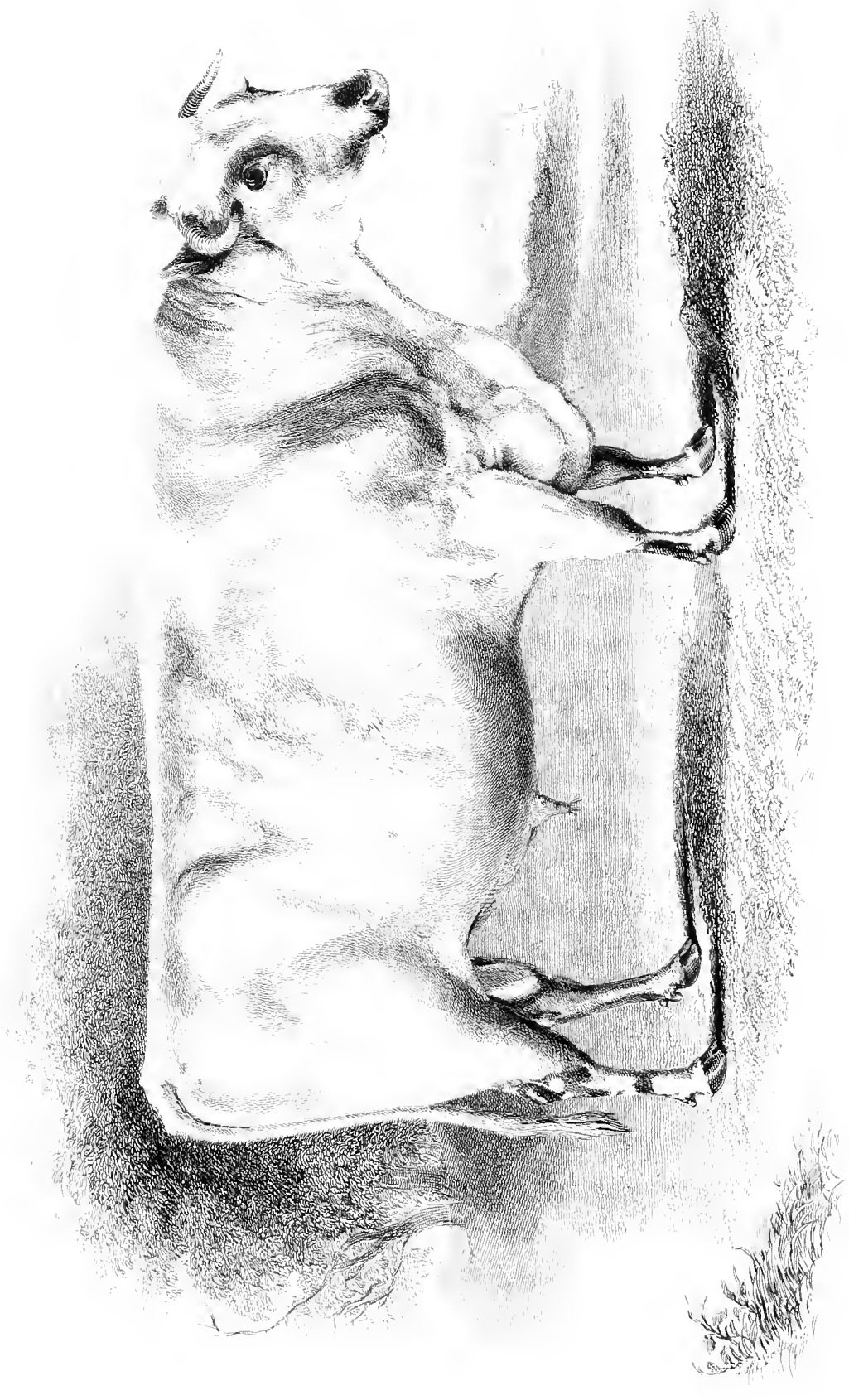




THE FARMER'S MAGAZINE.

VOLUME THE EIGHTH.

(SECOND SERIES.)

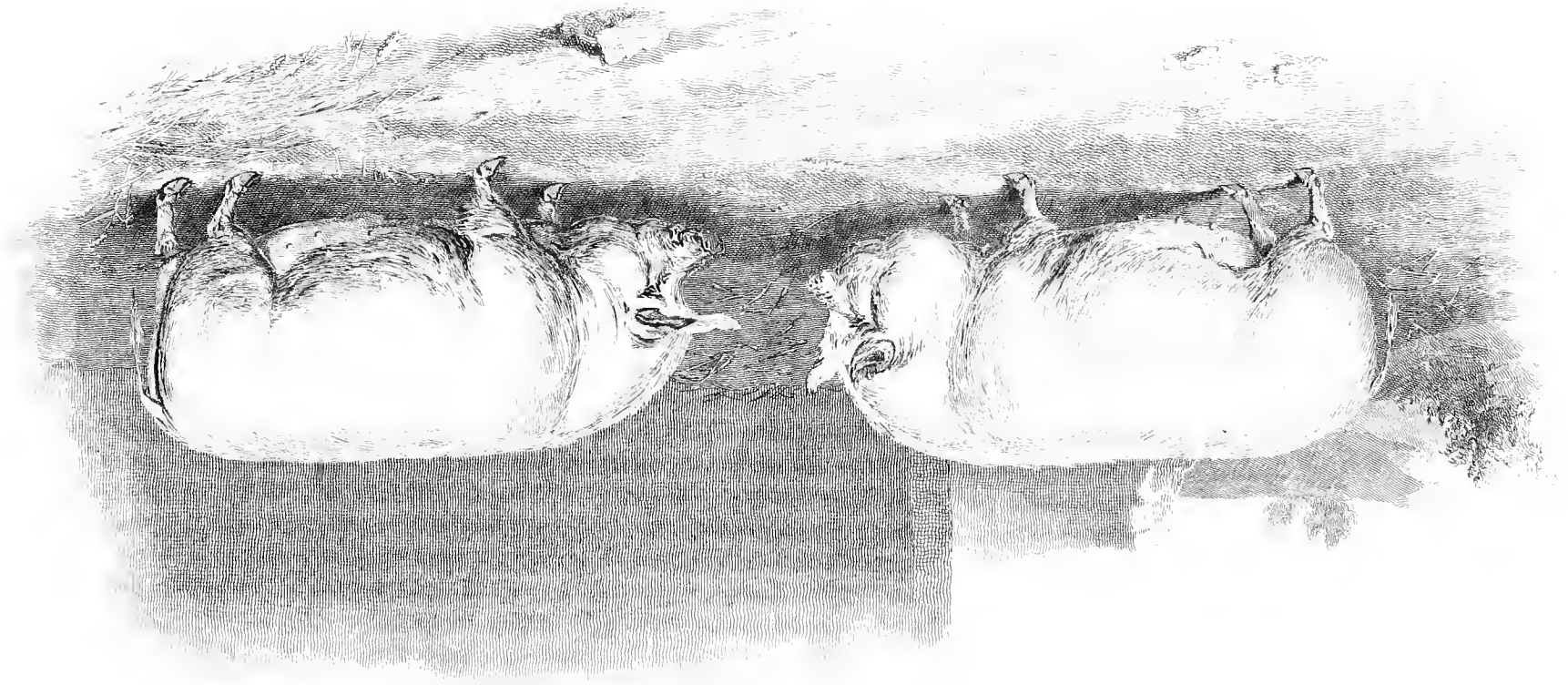
JULY TO DECEMBER, MDCCCXLIII.

LONDON:

OFFICE, 24, NORFOLK STREET, STRAND.

MAY BE HAD BY ORDER THROUGH ALL BOOKSELLERS.

LONDON:
PRINTED BY JOSEPH ROGERSON,
24, NORFOLK-STREET, STRAND.



THE FARMER'S MAGAZINE.

JULY, 1843.

No. 1.—Vol. VIII.] [Second Series.

PLATE I.

The subject of the first Plate is a short-horned Bull, "Pilgrim," the property of Mr. William Torr, of Riby, near Brigg, Lincolnshire; the prize for the best short-horned bull of any age (open to all England) was awarded to Mr. Torr, for this animal, at the Exhibition of the North Lincolnshire Agricultural Society, held at Brigg, in 1841. This bull also obtained the same prize at the above Society's show at Caistor, in 1838, and has won several other first class premiums. "Pilgrim" is a roan, calved in 1831; was got by Soldier (2656), dam (Kate) by Rival (553), gr. d. (Tulip) by Surprize (2716), gr. gr. d. by Aylesby (44), gr. gr. g. d. by the brother to Mr. Robert Collings's white heifer, that travelled, gr. gr. gr. g. d. by Barningham (56), &c., &c. Mr. Torr is one of the most intelligent young farmers of the present day, he has already acquired a high reputation for his skill and judgment in the various departments of husbandry; and, we feel confident, will in due time rank amongst the first farmers of his day.

PLATE II.

The Boar and Sow in the second Plate, are bred by, and the property of, Mr. J. W. Nutt, of York. The Boar obtained the first prize, "as the best Boar of the small breed" at the meeting of the Yorkshire Agricultural Society, in 1840; and, also the prizes of the Thirsk and Northallerton Societies, in the same year. In 1842 he obtained a prize as extra stock, at the meeting of the Yorkshire Society; and the first prize at the meeting of the Wetherby Agricultural Society, beating the pig which won the first prize at the Yorkshire Society's Meeting; and also the pig which obtained the prize given by the Wharfdale Agricultural Society.

THE DRAINAGE FROM POPULOUS PLACES—ITS USES TO AGRICULTURE.

BY C. W. JOHNSON, ESQ., F.R.S.

Some years have now elapsed since an association of gentlemen, under the name of "The Thames Improvement Company," ineffectually endeavoured to bring into use, for agricultural purposes, the sewerage of the metropolis. They laboured for this object with no little zeal and ability, in a cause which would apparently be secure of commanding the support of every person of common sense.

They proved by very systematic and laborious enquiries, the vast extent and fertilizing composition of this huge mass; they ascertained to what agricultural uses such sewerage matters were employed on the continent; and that, even in our own island, the citizens of Edinburgh had already by long experience proved the great value, for the purposes of irrigation, of the drainage matters of the Scotch metropolis. Dr. Granville, too, who was employed by the society to make a continental tour, in his published report produced a mass of unanswerable practical testimony in favour of the same national objects. Tired out, however, by not only the apathy with which their efforts were regarded, but by even the active opposition which they experienced from every constituted authority, the Thames Improvement Society were at length induced to suspend their exertions. I am glad, however, to perceive from several recent public

notices that the Government and the City authorities are in conjunction endeavouring to improve the banks of the river; and I trust that when thus employed, the question of turning the sewerage to a profitable purpose will not be forgotten in their plans of metropolitan improvement, but that, following the example of the citizens of Edinburgh, and of some of the continental cities, they will turn to a profitable account the sewerage of London. The great amount of the drainage matters of the capital (and the same general remark applies to almost all other populous towns), now wasted in, and polluting, the waters of the river, is in general but little understood. The engineers employed by the directors of the Thames Improvement Company ascertained that the sewers of the metropolis daily discharged into the Thames a foul mass of liquid and solid matters, equal to about 700,000 tons.

That this mass, if employed for the purposes of irrigation, would be productive of the most extensive agricultural advantages, there is not any reason to doubt—the very experiments which have succeeded so well in the immediate vicinity of Edinburgh, would as assuredly be productive of the same excellent effects in the neighbourhood of other towns. The account of these Scotch improvements can hardly be too often repeated; for it is not so generally known as is desirable, that the waters the most abounding with impurities are precisely those the most valuable for the use of the irrigator.

On the use of the liquid portion of the Edinburgh town drainage a very able report was long since made to the Thames Improvement Company, by Mr. Thomas Oliver, an excellent Scotch farmer, in which he observed—"From the elevated position of Edinburgh, there is a considerable extent of ground which can be overflowed by the water from the city drains in its progress to the sea, and of late years it has become an object of attention to the proprietors and occupiers of ground so situated as to admit of its application; there are, I should think, not less than three hundred imperial acres to which it is regularly applied, and with great advantage."

"Such ground is annually kept in grass, and yields from three to six cuttings in the season, which, let to dairymen and others, at rents varying, according to circumstances, from twelve to twenty-four pounds per acre. You will perceive from this statement, that the chief benefit derived from the drainage of Edinburgh arises from the fluid part, and if we reckon the increased yearly value of the land above mentioned at ten pounds per acre (which I think is under the mark), it yields a clear revenue of three thousand pounds per annum to the proprietors of those grounds through which the drains pass" (Paper of Dr. Granville.—Rep. of Committee, p. 31).

The history of the adoption of this system of town drainage irrigation at Edinburgh is very interesting, and I will therefore abridge and insert the description given of it by Mr. Stephens (Practical Irrigator, p. 75). "Edinburgh," says this intelligent land drainer, "has many advantages over the most of her sister cities; the large supply of excellent spring water is one of the greatest blessings to her numerous inhabitants, both in respect to household purposes and keeping her streets clean, as well as irrigating the extensive meadows situated below the town, where the art of man, with the common sewer water, has made even sand hillocks produce riches far superior to anything of the kind in the kingdom, or in any other country.

"By this sewer water about two hundred acres of grass land (1834), for the most part laid into catch-work meadow, are irrigated; whereof one hundred and thirty belong to W. H. Miller, Esq., of Craigintinny, and the remainder to the Earls of Haddington and Moray, and other proprietors. The meadows belonging to these noblemen, and part of the Craigintinny meadows, or what are called the old meadows, contain about fifty acres, and have been irrigated for nearly a century. They are by far the most valuable, on account of the long and continual accumulation of the rich sediment left by the water; indeed the water is so very rich, that the tenants of the meadows lying nearest the town have found it advisable to carry the common sewer water through deep ponds, into which the water deposits part of the superfluous manure before it runs over the ground. Although the formation of these meadows is irregular, and the management very imperfect, the effects of the water are astonishing; they produce crops of grass not to be equalled, being cut from four to six times a year, and the grass given green to milch cows.

"The grass is let every year by public sale, in small patches of a quarter of an acre and upwards, and generally brings yearly from twenty-four to thirty pounds per acre. In 1826 part of the Earl of Moray's meadow fetched fifty-seven pounds per acre.

"About forty acres of the Craigintinny lands were formed into catch-work water meadow before the year 1800, which comprises what is called Fillieside Bank, old meadows, and is generally let at a rent of from twenty to thirty pounds per acre. In the spring of 1821, thirty acres of waste land, called the Freegate Whins, and ten acres of poor sandy soil, were levelled and formed into irrigated meadow, at an expense of one thousand pounds. The pasturage of the Freegate Whins was let previously to this improvement for forty pounds per annum, and the ten acres for sixty pounds. They now bring from fifteen to twenty pounds an acre per annum, and may be much improved.

"This," continues Mr. Stephens, "is one of the most beneficial agricultural improvements ever undertaken; for the whole of the Freegate Whins is composed of nothing but sand deposited from time to time by the action of the waves of the sea. Never was one thousand pounds more happily spent in agriculture; it not only required a common sewer to bring about this great change, but a resolution in the proprietor to launch out his capital on an experiment of a soil of such a nature. One hundred and ten of Mr. Miller's meadows in 1827 gave a clear profit of two thousand and ten pounds; the yearly expense of keeping these meadows in repair is from ten to fifteen shillings per acre, which is more than double the expense of keeping water meadows in repair in general, for the watering of them is not only through the winter season, but the water is put on them for one or two days together, immediately after every cutting of the grass, throughout the whole of the season."

The forcing quality of liquid manure, as shown by the constant result of irrigating with common water, and as still more strikingly confirmed by the use of the Edinburgh town drainage waters, was entirely confirmed by the experiments of the

late Mr. Knight, in the employment of liquid manures for fruit trees, which I cannot give better than in his own words. "I have shown in a former communication," said this able vegetable physiologist, "that a seedling plumstock, growing in a small pot, attained the height of nine feet seven inches in a single season, which is, I believe, a much greater height than any seedling tree of that species was ever seen to attain in the open soil. But the quantity of the earth which a small pot contains, soon becomes exhausted relatively to one kind of plant, though it may be still fertile relatively to others, and the size of the pot cannot be changed sufficiently often to remedy this loss of fertility; and if it were ever so frequently changed, the mass of mould which each successive emission of roots would enclose, must remain the same. Manure, therefore, can probably be most beneficially given in a purely liquid state; and the quantity which trees growing in pots have thus taken under my care, without any injury, and with the greatest good effect, has much exceeded every expectation I had formed.

"I have for some years appropriated a forcing-house at Downton to the purposes of experiment solely upon fruit trees, which, as I have frequent occasion to change the subjects on which I have to operate, are confined in pots. These at first were supplied with water, in which about one-tenth by measure of the dung of pigeons or domestic poultry had been infused; and the quantity of these substances (generally the latter) was increased from one-tenth to one-fourth. The water, after standing forty-eight hours, acquired a colour considerably deeper than that of porter; and in this state it was drawn off clear, and employed to feed trees of the vine, the mulberry, the peach, and other plants; a second quantity of water was then applied, and afterwards used in the same manner, when the manure was changed, and the same process repeated.

"The vine and mulberry tree being very gross feeders, were not likely to be soon injured by this treatment; but I expected the peach tree, which is often greatly injured by an excess of manure in a solid state, to give early indications of being overfed. Contrary, however, to my expectations, the peach tree maintained at the end of two years the most healthy and luxuriant appearance imaginable, and produced fruit in the last season in greater perfection than I had ever previously been able to obtain it. Some seedling plants had then acquired, at eighteen months old (though the whole of their roots had been confined to half a square foot of mould), more than eleven feet in height, with numerous branches, and have afforded a most abundant and vigorous blossom in the present spring, which has set remarkably well; and those trees which had been most abundantly supplied with manure, have displayed the greatest degree of health and luxuriance. A single orange tree was subjected to the same mode of treatment, and grew with equal comparative vigour, and appeared to be as much benefited by abundant food as even the vine and the mulberry tree" (Trans. of the Hor. Soc., vol. 2, p. 127).

As it is, therefore, evident from the concurring practice of not only the talented agriculturists of our own country, but of those of all parts of the world—from China to Egypt, from the low lands of northern Italy to those of Holland—that the value of any liquid manure is as great as that of the more solid, is it not most desirable, even in a national point of view, that every facility should be given to its collection and disposal? And if the drainage from a small country town is found to render even the passing waters of a river more fertilizing to the meadows on its banks, how strongly does this fact show the immense value of the fluid matters hourly wasted in the huge drainage of London, none of which have hitherto been employed for the purposes of irrigation; and should not some plan be speedily devised by which this rich liquid portion may be made available, if only on the great marshes of Essex and Kent?

I have not in this paper alluded to the other great public advantages which would attend an improved and better regulated system of drainage: these have lately been alluded to Mr. Chadwick, in his report to the Poor-law Commissioners, some extracts from which will be found in the last number of the Journal of the Royal Agricultural Society, vol. 4, p. 151.

London is perhaps the best drained city in the world; its sewers have been gradually extended, and are still extending, in all directions; fresh channels for the conduction of its refuse matters are yearly opened into the Thames, where it is not only wasted for all the purposes of agriculture, but by this means the waters of this noble river are corrupted to such an extent as to render them totally unfit for the purposes of drinking. It becomes, in fact, a flowing mass of slowly putrefying matters; and there is little doubt but to this source may be ascribed the origin of some of those pestilential fevers which, in the height of summer, are wont to visit London; for to similar sources—to the presence of slowly putrefying waters—has been clearly traced, in other places, the origin of typhus and other fevers. Thus, in a report from Mr. John Marshall, jun., the Clerk to the Isle of Ely Union, he observes (Jour. Roy. Ag. Soc., vol. 4, p. 152):—"The Isle of Ely was once in a desolate state, being frequently inundated with the upland waters, and destitute of adequate means of drainage; the lower part became a wilderness of stagnant pools, the exhalations from which loaded the air with pestiferous vapours and fogs. Now, by the improvements which have from time to time been made, and particularly within the last fifty years, an alteration has taken place, which may appear to be the effect of magic. By the labour, industry, and spirit of the inhabitants, a forlorn waste has been converted into pleasant and fertile pastures, and they themselves have been rewarded by bounteous harvests. Drainage, embankments, engines, and enclosures, have given stability to the soil (which in its nature is as rich as the Delta of Egypt), as well as salubrity to the air. These very considerable improvements, though carried on at a great expense, have at last turned to a double account, both in reclaiming much ground, and in improving the rest, and in contributing to the healthiness of the inhabitants.

"On reference to a very perfect account of the baptisms, marriages, and burials in Wisbech from 1558 to 1826, I find that in the decennial periods, of which 1801, 1811, and 1826 were the middle years, the baptisms and burials were as under:

	Baptisms.	Burials.	Population in 1801.
1796 to 1805	1,627	1,535	4,710
1806 to 1815	1,654	1,313	5,209
1816 to 1825	2,165	1,390	6,515

"In the first of the three periods the mortality was 1 in 31; in the second, 1 in 40; in the third,

1 in 47 ; the latter being less than the exact mean mortality of the last two years. These figures clearly show that the mortality has wonderfully diminished in the last half century; and who can doubt but that the increased salubrity of the fens produced by drainage is a chief cause of the improvement?"

In whichever way, therefore, the question is viewed, it must still be regarded as one of considerable national importance. The advantages of thus diverting the matters of the sewers are, in fact, not confined to the landowners, but they extend in a much greater degree to the citizens. To the first, it is merely opening a new source from whence to obtain a supply of manure; but to the closely-congregated townsmen, the improvement contributes to the comforts of life, to its enjoyment, and to its extension.

BURTON FARMERS' CLUB.

The question discussed at the usual monthly meeting on Thursday evening, May 11th, was "what is the best description of artificial manure as a top-dressing for wheat?" Mr. S. Ward introduced the subject by detailing some experiments which he had made with several kinds of manure, in order to determine which of them was the most economical. Last season he used nitrate of soda, guano, soot, salt alone, and salt with lime. The nitrate of soda and the guano were applied to a piece of wheat sown after a crop of turnips which had been dressed with farm-yard manure. One-fourth of an acre was top-dressed with nitrate of soda, and another half acre with guano. The crop on the whole of the field was good, but that part on which the nitrate of soda was applied bore at the rate of ten thrave per acre more than the remainder, and the yield per thrave was equal, while the part dressed with guano was the worst part of the crop. On another field of wheat he used soot, salt, and salt mixed with lime, on three different portions. The crop was visibly improved on that part where the soot was applied, but not in near the same proportion as in the case of the nitrate of soda; that on the salt and lime portion was also improved, and the quality of the corn very good indeed, it weighed 65lbs. per bushel; but no perceptible effect was produced by the salt alone. The result of these experiments had so convinced him of the superiority of the nitrate of soda as a top-dressing, that he purposed applying it to twenty acres of wheat this present season. A friend of his also had tried the nitrate on strong soils, and found it far superior to soot. His own soils were rather light, and he had observed that the beneficial effect of a top-dressing was very greatly increased by harrowing it in with a light implement, or with a bush harrow. There was only one other member present who had tried the nitrate of soda. His experience of its beneficial effect was not so decided as that of Mr. Ward. He had used it on several soils, and for several kinds of crop, on grass, barley, and wheat. On the grass it produced a very decided increase of crop; not much improvement in the barley; and of the wheat, spring sown, the crop amounted to fifty bushels per acre. Various other members gave the result of their experience of different kinds of top-dressings. One member said he had reaped very profitable crops on a piece of land, which was subject to grub, by applying half a load per acre of salt. Others spoke lightly of the merits of soot, but none had made comparative trials of it with other articles. Other members thought the effects of nitrate of soda were so uncertain, and the reports respecting it so contradictory, that it was scarcely safe for farmers to apply it to any extent, until some means were discovered of knowing on what circumstances its efficacy depended. At present, though it is certain that on some soils and crops it will produce a very profitable result, yet in other soils, and those apparently similar, it entirely fails, and we have no way of ascertaining why these contrary effects follow its application. One member entered more fully into the subject of manures in general. Manure consists of three classes of substance, which are all found in farm-yard manure, and it is therefore that this is so unfailing in all circumstances and soils, however various. Plants require certain saline and earthy substances in the soil; they also require some substance capable of furnishing carbonic acid, and another kind of substance which contains nitrogen. It is seldom that land requires most the carbonic acid, for the other materials are most apt to be deficient. If any one of the saline materials is deficient, no manure which does not contain it will render the land fertile, and frequently land may contain all the essentials of fertility except one of the salines. Hence it is that gypsum, phosphates, or wood ashes are seen to produce, in some cases, such remarkable effects, the addition of the one material which was wanting enabling the plants to make use of those that were already present. The farmer has no means of knowing which of the salines is deficient; an analysis of the soil can only show it; but he can strew over parts of his land some of the most likely articles of this kind, and the result will pretty plainly tell him all he needs to know. But in a careful husbandry the salines should never become deficient in the soil, for they are all, or nearly all, returned in the straw of the farm-yard manure. What is usually wanted to keep up the fertility of the land is that kind of substance which is carried away in the corn crops. In these there are some salines which are chiefly phosphates, but the chief thing is a substance which is partly composed of nitrogen. If a considerable quantity of richer kind of food have not been mixed with the straw of our farm-yard, the manure made from it will be deficient in this most essential ingredient; and if a crop be dressed with such manure it will require the addition of a top-dressing of some article which contains the substance which is deficient. Such artificial manures as soot, and guano, and those made from night soil, owe their efficacy to their power of imparting nitrogen in the form of ammonia to plants, and their comparative value depends on the quantity of this material which they contain. As a general rule, all decomposed vegetable and animal substances should be placed in the soil, because it is there that they are exposed to the combined action of air, heat, and moisture, which favours their speedy decay, and the products of their decay being partly volatile, they are in some degree wasted when used as top-dressings. It is only those articles which contain the products of the decomposition of organised substances in a fixed or soluble farm, which should be used as a top-dressing: such artificial manures as rape-cake, bones, night soil, woollen rags, &c., should be mixed with the soil, while the urine of cattle, gas water, soot, guano, or the nitrate of soda, may properly be used as a top-dressing. With regard to the nitrates of

soda and potass it seems very doubtful whether they owe their fertilizing effect to their power of supplying nitrogen to plants, for they frequently fail where an ammoniated manure would succeed, and sometimes succeed where the land is already rich in substances which are capable of furnishing nitrogen. Their effect may be due to the alkali which they contain, or it is supposed by some that the compound salt has some stimulating power on plants. However this be, it would, he thought, be unwise in farmers to trust blindly to chance in the use of the nitrates, but to test, by previous trials on a small scale, their effect on each field, before venturing on their use on a large scale. Such articles as soot, and liquid manure, and guano, were certain to have a good effect when applied to land which needed the ammonia they contain, and the choice of them depended on the quantity of that material which could be obtained for a given price; but the nitrates should be rather experimented upon, he thought, than used in the present state of our knowledge respecting them. He recommended that their club should adopt a plan of experiments, something like what was proposed by Professor Henslow. In conclusion, the club recommended that the members should try experiments on small portions of land, with the different artificial manures as top-dressing, and communicate the result of their experience.

PROBUS FARMERS' CLUB.

An important paper, by Sir Charles Lemon, Bart., on an unnatural or morbid growth of the potato plant, which has particularly manifested itself within the last few years in this county, and threatens to inflict serious injury on the potato growers, was read to the club by Mr. W. F. Karkeek, of Truro.

It appears that Sir Charles Lemon has, for some time past, directed his attention to this subject, and with a view of eliciting the opinions of the members of the club, and stimulating them and others to institute experiments which might determine the very frequent cause of failure in the potato crop, he furnished them with this paper, confessing at the same time that he had attained as yet no satisfactory result.

It will appear in the sequel, that the members of the Probus Farmers' Club were not more fortunate in solving this *verata questio*, than Sir Charles himself; and as the subject seems to be one of great interest to the county, in the hope of inducing others to direct their attention to it, we give Sir Charles's paper entire, as experiments are wanted to determine the cause of the disease complained of:—

The symptoms of the disease, says Sir Charles, are as follows:—The sets appear to sprout as they ought, and as others which surround them in the same field have done; but they are stopped short before they reach the surface, and no leaves are formed. Large patches in the field are thus left bare; and when the ridges are dug up it is found that these abortive sets have formed each a little button about two or three inches from the surface, and, as it were, gone to rest after the effort. The disease produced no very sensible effects on the crops till about four or five years ago; but I have been informed by a farmer of this neighbourhood, that he recollects a few instances in which these little dwarfs, called by the country people "Bobbin Joans," were noticed as long ago as thirty years. In the neighbourhood of Penzance, a great potato country, the failure of crops from this cause has been more general and more destructive than in this part of the county; in some instances destroying one-third of the produce. This information I derive from a gentleman residing there, on whose accuracy I place great confidence. Without dwelling on the name, then, let us enquire as to the thing, *unde derivatur* "Bobbin Joan?"

The form in which the question first presents itself is whether the defect is owing to the soil or the seed? Whether, in fact, some principle necessary to the growth of perfect potatoes is either naturally wanting in the soil, or has been, by excessive culture extracted? And, again, whether the potato may not have contracted some disease, or perhaps have exhausted that vitality which we know will last only a limited time, after the creation of a new plant from blossom seed, though its produce may be extended over an unlimited surface by the propagation of its offspring? And this latter supposition is that adopted by the gentleman to whom I have before alluded; who says that the potatoes in his neighbourhood "have degenerated, are degenerating, and ought to be regenerated."

I shall presently state reasons why I do not agree with him; but first let me give the history of some of his experiments. He first took some potato sets from a field which was much infested with "Bobbin Joans," and planted them in new ground —in the crop which was produced there were some, but not very many of these abortions. He then planted sets of a fresh sort in the ground previously supposed to be infected, and the crop was entirely free from the deformity. At my suggestion, a farmer in this neighbourhood has made the same experiments; and though the result agreed with that obtained near Penzance only in this, that good sets produced perfect potatoes in ground which had previously produced "Bobbin Joans," I think it is enough to prove that the condition of the soil is not the true cause of the complaint.

The point in which the issue of the experiments made here differed from that arrived at near Penzance, related to the reproduction of imperfect potatoes from diseased sets. Here none such appeared: but there was a good and healthy crop. Moreover I have planted in garden ground, the very "Bobbin Joans" themselves, in which, if any where, the disease must have prevailed; and in due time I dug up an abundant return of potatoes, every one of which was sound and of full size.

From the foregoing experiments, it appears to be clear, that the condition of the ground is not the sufficient cause of the effect; and there is also a reasonable presumption that disease or constitutional debility in the plant, arising from the decrepitude of age computed from the original sowing, does not explain the loss of energy in the plant, which was so easily revived by renewed planting.

Then, I think, we must look about for other causes to account for the stunted growth described; and the mode of planting the sets suggests itself as the most natural. There is some analogy between the effects thus produced, and the habit which may frequently be observed in the growth of certain bulbous plants. The common autumnal

colchicum, for instance, if planted too deep, will make a shoot which stops short of the surface, and then forms a bulb in the position most favourable for its growth in the ensuing year; and I have even seen cases, when the plant has been accidentally buried very deep, where three or four of these bulbs have been formed, at nearly equal distances from each other; thus, as it were, making its journey to the surface by stages. Therefore, planting too deep, I have no doubt, may in some cases be the cause of the production of "Bobbin Joans." The root may not have strength to reach the surface, and so transfers its substance to a more favourable position. But this is a very imperfect solution of the difficulty; for in a field where the culture has been equal, and apparently there has been no variation in the depth of the plants in different parts, "Bobbin Joans" have occurred in one place, and been entirely wanting in every other. This same remark is applicable to the idea which suggested itself to me, that insufficiency of nourishment and the absence of light might account for the imperfect growth of the set, as described in the 3rd volume of the Horticultural Society's transactions, page 48. It is there stated that potatoes covered with sand, and placed in a cellar, will produce small tubers, exactly resembling the "Bobbin Joans." The author thus explains the phenomenon. "The potato, from the abundant nourishment which the tuber affords to the embryo plant, has an extraordinary disposition to vegetate; and it seems to be possible to place it in such a situation that the vegetating power, being prevented from exerting itself upwards, so as to form stem and leaves, should be employed in throwing out roots only, with their appendages." But I do not see how this cause can exist in the open field, or what is to prevent the vegetating power from exerting itself upwards; and I believe we must look in another direction for the natural history of "Bobbin Joans." The following circumstances seem to point to that direction; and I submit them to the growers of potatoes as leading to a conjecture to be verified or contradicted by their experience.

From a heap of potatoes lately turned, some of which had shot out to a considerable length, two or three examples have been brought to me in which the shoot had been suddenly stopped by a small tuber. On cutting open the potato, I found that the inner substance had entirely decayed away, and not more than half an inch remained of the interior substance. This, however, appeared to be perfectly sound. Furthermore, on referring again to the farmer from whose field I first got the "Bobbin Joans," and who had suffered severely in his crop in the season before last, I learnt that the potatoes from which he had taken the sets which produced the defective crop, had been drawn in very wet weather, and stowed away without being properly dried. They had remained in that state; and I have no doubt, that incipient decay, though unperceived when the potatoes were cut, had produced some change in the substance, unfavourable to the growth of the set. Heating, by fermentation or from any other cause, and perhaps frost, may produce the same sort of disorganization; and I think it is not difficult to conceive that the starch of the potato, being prematurely changed into sugar, and dissipated before the young plant is in a condition to absorb it, the set may be rendered unable to afford the nourishment requisite for healthy growth. What remains of the original substance may be simply transferred to the little tuber, as the substance of the cotyledons of a bean are transferred to the root leaves, before those leaves have begun to perform their functions, and attract from the atmosphere the proper nourishment for the infant shoot.

The reasoning which I have thus indulged in, I confess, is not conclusive, but it may point the way to some useful and practical conclusions; and I offer it in the hope that the subject may be taken up by a more experienced agriculturist. In my hands, the result pretends to no more than to be conjectural, and my surmises are as follows:—

1st. That a chemical change may occur in the internal substance of a potato which the eye cannot discern, but which may render it unfit to afford nourishment to a young plant in the first season of its growth.

2nd. That this incipient decomposition may be produced by dampness, by heating, or by bruises.

3rd. That the utmost care is requisite to preserve that portion of a crop which it is intended to plant again, in the most perfect state of health and integrity.

Carclew, April 18, 1843.

P.S. Since writing the above, a circumstance has been related to me, which at first appeared to be entirely inexplicable, according to the view which I have taken; but, on re-consideration, I think it is not at variance with my conjecture:—A large quantity of potatoes were cut for seed. Some of these were planted in the morning, and some in the evening of the same day. Those which were planted in the morning grew well; those planted in the evening produced dwarfs, and ended in a failing crop. Now I think we have only to suppose that incipient fermentation had taken place in the heap of cut potatoes, and the result may be thus explained:—The sets which were at the top of the heap were sown first; and these would be less effected by the exclusion of air, and the pressure of the heap. Those sown in the evening were at the bottom of the heap, and may have been bruised by the weight of the mass above them—at all events, fermentation would commence there; and therefore the chemical change of substance, which would end in fermentation, would commence there also.

At the conclusion of the paper, a rather long and interesting discussion ensued between the members of the club, as to the cause of the disease in question. Its destructive effects were acknowledged by all, but so completely were the opinions of the members at variance as to the cause, that it was recommended that experiments be instituted forthwith; and we recommend others to institute them also. We may now, therefore, hope, as the subject is fairly brought before the public, that it will be thoroughly investigated.

A vote of thanks was proposed to Sir Charles Lemon, for his kindness in sending them his paper, which was carried unanimously.

MR. LEGH'S ANTIFRICTION PUMP.—The exhaustion being by bellows instead of a piston, there is *no friction*, and no *expensive boring of a good tree*, as the whole may be made of any sound air-tight oak boards by a common carpenter; of course no *nice fitting* of a piston is required, and no *loss of water and time* by its not fitting can arise, if the valve at A is good; the two very essential parts the bellows, and the valve

at the spout, are both *in view*, to be repaired, when out of order. As Mr. Legh has freely bestowed the above invention on the *public*, having taken *no patent*, he is sure the law will allow them the *full benefit of it in all its endless modifications*. It should however be stated, that a young engineer, not satisfied with having taken out a patent for a new *kind of bucket* to a pump, has made attempts in the same patent to monopolise this also, a pump *without a bucket, pretending* to be the inventor: it is not necessary to expose his name to the public here, but to state, that as the *first model* of Mr. Legh's invention, of which there is ample evidence, *was made* in 1841, this engineer's *patent taken out* in 1842, so much of it, as is borrowed from the above, may be made void at any time: and it is the interest of every man to suppress such a fraud on the public, who would scarcely believe, that a mere casual railway conversation between Mr. Legh and some strangers in the *neighbourhood* where the said engineer then lived, should have been so shamefully used. It is evident, if a blank piston and cylinder is substituted for the bellows, it differs nothing in principle excepting in wanting a condenser from a common forcing pump, a patent for which could with no honesty be attempted.—*Norbury Booths Hall, near Knutsford, Cheshire*, 1843.

THE DRAINAGE OF LANDS, COMBINED WITH THE SEWERAGE OF TOWNS.

A FEW SUGGESTIONS OFFERED FOR CONSIDERATION PREVIOUS TO THE PASSING OF ANY ACT, EITHER FOR THE DRAINAGE OF LANDS OR THE SEWERAGE OF TOWNS.

(Extracted from the Westminster Review.)

1. *An Act to promote the Drainage of Lands and Improvement of Navigation, and Water-Power in connexion with such Drainage of Ireland.*
2. *Remarks on Thorough Draining and Deep Ploughing.* By James Smith. W. Drummond and Sons, Stirling.
3. *Land Drainage, Subsoil Ploughing, and Irrigation.* John Murray, Albemarle-street.
4. *Treatise on the Improvement of the Navigation of Rivers.* By W. A. Brooks. John Weale, High Holborn.
5. *The Practical Irrigator and Drainer.* By G. Stephens, Land Drainer. Blackwood, Edinburgh.
6. *Report on the Sanatory Condition of the Labouring Population of Great Britain* (as far as relates to Drainage.)
7. *Report on the Progress and Present State of our Knowledge of Hydraulics as a Branch of Engineering.* By George Rennie. Taylor, Red Lion Court.

Of the lands forced into cultivation by the late, and now modified, protective system, very many are wet and cold,* yielding only just enough to pay a moderate rent, and to defray the heavy expenses incurred in their tillage, with a small, if not dubious, profit to the tenant. The remainder are those poor light lands which have only been cultivated from the advantage which the growth of the turnip and the ease of management give them over the clay districts. These inferior lands must, under ordinary cultivation, revert to their pristine state—the latter as sheep-walks, and the former as coarse, wet pastures—unless some general measure be adopted by which the great cost of bringing the clay lands into a fruitful state shall be curtailed, and brought within the means of the common farmer. For some years past, up to the present, the light lands have had a decided advantage in the seasons, which advantage (in spite of satisfactory results from partial drainage of detached lands) has had the effect of diverting the minds of agriculturists from any bold or extensive improvement of the heavy lands, although it is an undoubted fact that, could the expense of the first step towards their amelioration be surmounted, the difficulty of working them would be lessened, and "they would become," as Professor Johnston says, "the richest corn-bearing lands in the kingdom."

It is, moreover, well known that our clay lands are those best adapted for the growth of wheat, which, in a national point of view, is our most important grain. Their improvement, therefore, is especially desirable. The lighter soils have already, in our opinion, attained, as far at least as our present knowledge extends, to the height of their capabilities. The heavier soils present a wide scope for those scientific operations whereby our deficiency in corn may be supplied. We would have the intrinsic resources of this country tested, under a firm conviction that, if rightly husbanded, they would enable it to maintain a larger population than any elsewhere existing within an equal space. Therefore it is that we are desirous of seeing a general drainage bill for Great Britain become the law of the land.

The principles on which such a measure should be based, ought, we would suggest, to be of a comprehensive character, having the three-fold object of the *clearing of outfalls, the conservation of the refuse of towns for manure, and the profitable distribution of water.* And could such a measure be brought into operation during the progress of the act for Ireland, we should, in consequence of the heavy character of the works in Ireland, soon outstrip them in execution, and, by subsequent example, point the way for that country becoming, as the nature of her soil qualifies her to become, the reserve granary for England, when future experience shall have proved to the latter her incability of supporting her population. But before entering upon the subject of drainage and its consequences, we would address a few words to the councils of the Agricultural Society of England, and the Highland Society of Scotland. It is a matter of much regret that in this country there should be no statistics relating to agriculture which can at all be depended on. Mr. Dudgeon, of Spyelaw, in an article on the subject, addressed himself to this great desideratum, and suggested that, at the periods of taking the census, papers should be sent round to the different parishes with certain questions to be answered, which, he considered, would supply the information wanted. The idea of occasional returns, and the suggestion of connecting them with the census, is feasible, but the groundwork of the design must be arranged skilfully, and should be commenced by the

* "A stiff clay will, in a single night, absorb sometimes as much as a thirtieth part of its own weight." —"In wet soils the temperature rises more slowly, and never attains the same height as in a dry soil, by 10° or 15°."—*Johnston.*

first round of information being obtained on the spot by some qualified person, who should act under the direction of the national agricultural societies. By this means that information which would ever remain the same, such as the total quantity of each parish, its soil, and geological peculiarities, would be obtained correctly, and with an uniformity of management and nomenclature, which would go far to establish Professor Daubeny's rules of "Agricultural Constants;" while the sub-division of quantities into the various states of cultivation and methods of cropping would be more correctly rendered hereafter, by being accurately taken in the first instance, and the parochial assessment and tithe surveys would facilitate the operation considerably.

The first expense of this inquiry would consequently be all that would be incurred, and upon a liberal calculation, it would be easy to find scientific men to undertake the matter in districts upon an average cost of 2*l.* per parish, to be paid by funds from government, and from the national agricultural societies, and by subscriptions from local associations, which, instead of following the absurd practice of granting prizes to the best farmers of the different districts, should set aside a sum for the establishing of a national work, by which progressive improvements might be traced, and on which all future calculations may be based. The government would be supplied with data of the botanical, zoological, and productive resources of the country—the scientific man would be gratified by having the information classed with the geological survey of England—and the landowner and farmer would be able to compare notes with distant localities of the same capabilities, by which emulation would be excited, and the intrinsic value of property ascertained. This mode of obtaining knowledge is peculiarly accordant with the habits of the farmer; he is habituated to reason by comparison, and he will avoid a logical discourse for an analytical abstract, by which he is able to place in juxta-position the effect of different systems.

It is proposed to connect the two measures—the sewerage of towns with the clearing of outfalls, and construction of mains and receivers for catching the surface and drainage waters from the lands—so that the design, as a whole, may conduce to the most profitable employment, as well of the waters from lands as of the refuse of towns; and if this combination could be effected in a scientific and effectual manner, it is impossible fully to predict the advantages which would accrue from it. Some, however, of these we may anticipate, as follows:—

First. Although the clearing of outfalls may not be identical with the drainage of land, the one would assuredly and naturally follow the other. The clearing of outfalls—*i. e.*, rendering the backward lands susceptible of drainage by discharging from the surface the waters which now stagnate on the lower lands—would superinduce underdraining, the farmer manifestly perceiving that, without compulsion or invasion of his private rights, means the most advantageous were provided for consummating the good work at his own pleasure.* And the sewerage of towns could undoubtedly proceed as successfully in union with that of the land as under distinct arrangement.

Secondly. The waters derived from the surface and land drains being subject to economic management, would be collected in those localities where they could be advantageously applied either to the benefit of the farmer or the mechanic; in the former case for irrigating, and in the latter as a motive power.

Thirdly. The refuse of towns would be conserved for application as manure. The waters from the higher surrounding lands would be conveyed to the towns for the several uses of supplying houses with water for domestic purposes (where not better provided), of cleansing the streets, and of flushing the sewers and reservoirs, and washing them clear of filth; and would be ultimately used as the vehicle for distributing the refuse.

Fourthly. Water employed as a motive force would moderate the consumption of coal.

Fifthly. Considerable improvement in inland navigation would result to the country from clearing the outfalls, and from intercepting the sedimentary matter which is abstracted from the land by seasonal floods.

Sixthly. Where tortuous rivers and watercourses might be straightened without a depreciation of the stream, such alteration would be effected to the great improvement of adjoining properties.

Seventhly. By preserving the refuse of towns by means of intercepting drains along the banks of those rivers which are now the receptacles of the filth of our large towns, the river water would revert to its natural purity.

Eighthly. The drainage and surface waters would be distributed (where they could be spared from more useful applications) in providing a supply for ornamental lakes in parks, and for profitable fishponds.

If the principle is allowed as a just one, that every owner and occupier of land, great and small, should have a right of egress for superfluous water;—if it is considered right that the smaller agriculturists whose lands do not command an outlet, and whose means are limited, should have an equal chance with the more affluent of making the most of their property;—if it is thought fit they should add their proportionate quota to our wealth as an agricultural nation by the application of science to their calling; then it is not only equitable, but it is imperatively necessary, that a general law should be laid down for the clearing and maintenance of outfalls, and that a systematic order should be adopted, which shall have an economic regard for future progress, as well as for present benefit.

We have seen the evil of disorganisation in the sewerage of towns; and now, after suffering all its consequences, we are about to apply a remedy as best we can. And no better result will follow from the operation of any partial measure for draining lands; for apathy would prevail in some cases, prejudice in others; and as each district, when drained, would be independent of surrounding ones, a medley of works as specific in them-

* But something more than the mere drainage of the field is required, and that is, the removal of the drained water. Drainage is but badly executed if that be not done; in short, it is not more than half done. And yet we sometimes find ditches blocked up, and the stagnant water in them almost level with the surface of the land. The benefits which should result from the capital expended on the drainage are thus completely lost.—*British Farmer's Magazine*, No. 23.

selves as dissimilar in construction would start, in defiance of order and contempt of system, into inefficient existence.

The metropolis is but a type of what the whole kingdom would become upon the substitution of any measure allowing an unequal administration of its objects for one which would ensure an effectual and economic benefit, by being designed and carried out in uniformity of structure and arrangement.

Should the lucrative results to be anticipated from this project of consolidation be insufficient in themselves to demand the attention of the country, philanthropy suggests a few other considerations in its favour. Mr. Chadwick, in his "Sanatory Report," has, with irrestible force, shown that the first great cause of disease in towns is the want of drainage; and, as promised by Sir James Graham, a bill will be founded upon that report for bettering the sanatory condition of the labouring population: but we ask, is nothing required for the improvement of the country generally? Does not Nature, by the machinery of her rivers, her brooks, her springs, point out to Art the means of increasing the general salubrity of our island by providing an outlet for those floods which are peculiar to Britain from its diversity of surface, the prevalence of heavy soils in the valleys, and its sea-bound circumference?

The whole process of nature, in adjusting the attributes of its first element, water, to the various wants of the animal and vegetable kingdoms, might, one would think, suggest a means of obviating any little defect in the system. The evaporation of water, in the first instance, from the surface of the ocean, and its fall to the land in the form of rain and dew; its re-absorption by the atmosphere, its use by all animal and vegetable bodies, its descent into the porous strata of the earth to be discharged again, in the form of springs, to the sea, exhibit to man a vast system of perpetual circulation which should, incite his emulation to become an instrument for the removal of obstacles which, it would appear, exist only that his energy may be roused into action.

The measure, too, would be the source of immediate and continued employment of remunerating labour; and this is no immaterial point.

The position that "every step towards improvement is an advance in reduction of existing burdens," is substantiated by the gradual increase in the growth of grain for the last fifty years. We are deficient in wheat, annually, to an amount for which we pay, for foreign grain, its freight, and duty, between eight and nine millions sterling. But while our population for the two last censuses, has increased sixteen and fourteen per cent., the growth of wheat has increased eighteen per cent.; so that a small reduction in the deficiency thereof has annually taken place.* This reduction has been sufficiently large to show that, if by private and individual improvement in the cultivation of our soil, we have succeeded in keeping under an evil which originated in the prejudices and ignorance of former ages, we may reasonably expect to entirely overcome it, if, by a general measure of drainage, we open the way for the application of valuable manures and new methods of tillage to those lands which are now unsusceptible of them, and which are, we repeat, best fitted for the growth of wheat: for we know of no case on record where a *less* increase than one quarter of wheat an acre has resulted from proper drainage; and this affords a basis for calculating what advantage would accrue to the country were draining generally applied to those lands which would be benefitted by it. Let the consequence which in our opinion, would result from providing outfalls where none exist, and clearing those which are imperfect, be admitted for the sake of argument; namely, that such partial improvement would induce, without compulsion, a thorough underdraining, we shall then stand, with regard to produce, thus: for the reason just stated, we may assume that five-sixths of the land annually under wheat by rotation, would be improved by draining so as to produce an increased crop of more than three millions of quarters in England and Wales. This annual increase would directly supply the deficiency for which we are dependent upon foreigners, and would put into farmers's pockets annually between 8,000,000*l.* and 9,000,000*l.* sterling, while the increase of produce in other crops, oats, barley, and rye, duly alternating with pulse, turnips, and green crops, added to the improved value and increased quantity of meadow-grass, would yield (were the demand equal to the supply) a correspondent return.

This is taking ten millions of acres—the quantity mentioned by Mr. Burke, which is considered by many too little by half—as the quantity of cultivated lands in England which are at present undrained or ineffectually drained; allowing three millions to be devoted to wheat, and the remaining seven millions to the growth of other grain, seeds, and grass. The whole of those lands which would be improved by a measure of drainage are considered to require a summer fallow once in four years to render them suited to grow any profitable crop. And in reckoning that the aggregate increase of other crops would be equivalent to the increase of wheat, we have considered that summer fallows would go out of fashion altogether; and in many cases folding would be introduced on lands which have never yet either grown a turnip,* or been trod by sheep. And in this estimate we have considered only the mere increase in produce which would arise from draining those lands, without calculating any further gain from reciprocal advantages in the art of culture and mode of tillage, the improvement in implements, and the saving of horse labour, &c.; whence, however, profits even superior to the subduction of stagnant water would assuredly accrue.

* The increase of population in England and Wales, from 1821 to 1831, was sixteen per cent.; from 1831 to 1841, fourteen per cent.; and the increased produce of wheat per acre is averaged at about eighteen per cent. for the whole country; so that, in the present state of things, the quantity of wheat has increased faster than the population by about two per cent.—*General Drainage and Distribution of Water.* Ridgway, London.

* The finest turnips we have seen this season (which has been generally propitious for turnips) were on the farm of Mr. John Bennett, of Bosworth, in Leicestershire, in a field which had never before grown them. The soil is clay of the stiffest character. He has drained it with tiles upon pieces of slate, instead of sole tiles; and over the tiles he has laid thorn (black or white), and filled up with the porous surface-soil, scattering the subsoil clay over the land. Each day's work was finished the same day.

It is necessary to advert to another important change which would inevitably result from a general drainage of our wet lands. The inferior heavy land pastures would be converted into arable, and clovers and herbage plants would supersede perennial grasses. Professor Johnston has well expressed it:—

"That in almost every country extensive tracts of land on certain formations, will be found laid down to natural grass, in consequence of the original difficulty and expense of working. Such are the Lias, the Oxford, the Kimmeridge, and the London clays. In raising corn, it is natural that the lands which are easiest and cheapest worked should be first subjected to the plough. It is not till implements are improved, skill increased, capital accumulated, and population presses, that the heavier lands will be rescued from perennial grass, and made to produce that greatly increased amount of food for both man and beast which they are easily capable of yielding."

To render the drainage of land compulsory would, however unreasonably, be met with an immediate negative; because, as has been already hinted by a contemporary, the immense cost of such an undertaking would oblige landowners to raise a vast amount of capital by sale or mortgage of part of their estates in order to improve the rest.

We think the observations of Lord Stanley at Liverpool, in July, 1841, when he stated—"That there was no bank in the whole country, no commercial speculation, no investment, so safe, so sure, so profitable, as that in which even borrowed capital may be engaged, by investing it under the ground of your own soil"—an excellent reply to an objection raised on this score: and so thought the legislature when it passed the bill enabling proprietors of entailed estates to raise money for draining those estates by way of mortgage. Nor could it have been conceived that apathy on the part of some proprietors, and a dislike to have their titles investigated on that of others, would blind them to the conviction that the permanent improvement effected by drainage would enable them gradually to pay off the debt incurred, out of their increased annual income, the consequence of such an improvement.

Let us extract a few words from the preamble of this act, that we may review the considerations which induced Mr. Pusey to promote, and Parliament to pass, it. It recites that—

"Whereas much of the land in England and Ireland would be rendered permanently more productive by draining the same, it is expedient, as well for the more abundant production of food as for the increased employment of farming labourers, and the extended investment of capital in the permanent improvement of the soil," that proprietors having limited interest in their estates should be relieved from their disability to meet the great expense of draining.

This measure, though so recent, if not forgotten, is at least unheeded; nothing appears to be doing under its provisions. It affords a signal instance of the truth of Mr. Roe's trite remark in evidence before the Poor-law Commissioners, that "the public are passive"—while it must be evident that were some company or companies started to carry the measure into execution, adverse and private interests being excited, it would proceed immediately. We offer no opinion as to the wisdom of acting forthwith under this measure, because we hope to see a general system adjusted as the basis of operation before any private and extensive enterprise is undertaken. At the same time there can be no doubt that some company is, or rather will be, wanted to act as a medium and guarantee between capitalists and landowners, to find funds or supply materials, and to superintend the execution of the works by efficient and scientific officers. The profit of such a company, beyond the five per cent. interest on capital advanced, would arise from the making of tiles, and from a charge for the superintendence of the necessary works. Under any circumstances it is too much to expect landowners, unless they persist in yearly tenancies and the arbitrary and prejudicial consequences of such a mode of tenure, to find both materials and labour; the lord should find the former and the tenant the latter, on the same principle as that adopted by Lord Grey and other enlightened agriculturists in the north.

There is no well-informed tenant who would not willingly pay seven and a half per cent. upon the capital expended by the landlord in tiles and bricks, as an addition to his rent, beside finding labour; and as landed property will always command mortgagees, who will gladly advance money at the interest mentioned in the act (5 per cent.),* the landed proprietor, instead of suffering even temporarily by the negociation, gets an immediate advantage in the difference of interest. Moreover, the seven and a half per cent. on the landlord's outlay is only considered sufficient so long as the tenant who has found labour remains in the farm; from all succeeding tenants he would obtain a much greater rent—for his lands will then have assumed a new character and a much higher value.

The permanent advance in value to the landlord, of lands drained, may fairly be taken as two-thirds at least of their present rent; and the tenant finding labour, must be considered to pay *in kind* the difference between the seven and a half per cent. and the permanent advance in value of the land. Estimating the average present rent of the wet lands at 15s. per acre, if we add 10s. to that rent, as what will be paid by future tenants, the landlord secures to himself ten per cent. interest on his original outlay.

An estimate has been made, that, to carry out a complete measure of under-drainage for the whole of the wet lands of Great Britain, a capital of one hundred and fifty millions sterling would be required.† How this is arrived at we are at a loss to imagine, unless the tenant's portion of the work is included in the estimate: an unfair way of meeting the question, for, unless the work proceeded at railroad speed uniformly all over the kingdom, creating a great demand for labour, the farmer would regard such an employment of his labourers as part of their routine of duty; and if he were obliged to engage fresh hands, he would consider such an use of his money as a more satisfactory way of spending it than sending it to the union to be expended by other persons in support of unemployed though able-bodied men.

The only amount which can in any way be considered as "withdrawn from other investments

* So plentiful is money at the present moment, that bills are now discounted in Liverpool at three per cent., while in London good paper may, we believe, be discounted for two per cent.—*Times*, Sept. 27, 1842.

† See *Blackwood's Magazine*, No. cccxx.

and buried in the soil," is that which the landlord would pay for materials with which he would supply his tenantry ; and taking the number of acres stated by our contemporary at twenty millions, as the amount of land which requires draining in Great Britain, we cannot make more than £85,000,000 instead of £150,000,000. We will take, for example, tile-draining, because it is the most expensive, allowing one hundred and forty-seven rods of trench work to the acre, the drains being eighteen feet apart. The landlord would have to find 2,425 twelve-inch tiles, which, at 35s. per thousand, would give £4 4s. 10½d. per acre ; multiply twenty millions of acres by that sum, and the product will be found to be rather less than £85,000,000. This includes Scotland. England, upon Mr. Burke's estimate, would only take half that sum.

It will be found, however, that more draining is done with materials costing less rather than more than £4 4s. 10½d. per acre. The average width between drains, according to works already executed, is twenty-four feet, and the average cost of tiles is under 35s. per thousand.

By selecting a few impartial instances we may be able to deduce from present practice a pretty clear proof that when further experience and competition have simplified the labour and reduced the cost of materials, we may reckon on being able to drain land in the best manner at an average cost of £5 per acre, including labour and superintendence — particularly if concrete tile-draining stands the test of time, and is not too difficult of performance.

	£	s.	d.
Lord Hatherton, at Teddesley, as may be seen by the account extracted, has drained four hundred and sixty-seven acres at an expense of 1,508*l.* 17s. 4d., making his property, originally worth 11s. per acre, now worth 30s.; the average expense per acre.	3	4	6
Rev. W. L. Rham says* that he has drained and subsoil-ploughed some land at a cost of	5	0	0
and adds, "I consider the sum laid out in this field the most profitable investment I ever made."			
Sir James Graham† mentions his having drained (labour, of course, included) a farm which was previously let at 4s. 6d. per acre, but is now let at 20s. at a cost per acre of	5	12	4
Mr. Dennison, of Kilnwick Percy, has drained (with soles) four hundred acres of land which was let at 2s. 6d., and was used as a rabbit-warren, but has yielded ten quarters and a half of oats, which fetched 26s. per quarter, at a cost per acre, exclusive of carting the tiles from the kiln, of.....	5	4	8

At present, the great obstacle to a general drainage of the country is to be found in the weirs and dams which have been thrown across streams receiving the surface waters of the country they pass through, at a time when agriculture was disregarded, and individual millowners were daring enough to seek their own advantage to the prejudice of others. But so it is; and it should now be a matter of national consideration coequal with the sewerage of towns, how to remedy an evil which so injuriously affects the agricultural interest.

Turn to the reports of the several engineers, Telford, Bald, Walker, Palmer, and Cubitt, who have been engaged in the improvement of rivers, and it will be found that they all confirm the evil of weirs. Mr. Walker says, in his "Report on the Improvement of the Severn," that "They must prejudice the drainage of the country instead of improving it;" and explains how it is so—"First the water will be kept back; then a deposit will take place which will diminish the depth, raise the surface of the water, and increase the floods."

Again, Mr. Palmer, whose views on the subject of inland navigation are very perspicuous, and whose dock works at London, Ipswich, and elsewhere are splendid instances of his talent in this department of engineering, thus speaks of the Mersey :—

"The river is subject to considerable land floods, which descend with great impetuosity, and overflow the banks, laying under water extensive areas of marshes. A land flood implies an accumulation of the water of drainage derived from a more than ordinary quantity of rain. The river channel being proportioned only to an average quantity, the surface of the stream is necessarily raised. But the accumulations that are so injurious, and which are complained of, are not to be attributed to any natural deficiency in the capacity of the channel, but to the permanent barriers or weirs that have been erected, which diminish the water space nearly three-fourths, without any compensation having been provided."

We would not be supposed to advocate a disregard of existing rights; but we believe that the making of outfalls where none exist, and the clearing of those which are imperfect, would supply a new water power far more than compensating for that which it would be desirable to abolish.

From a conversation we once had with a millowner of some considerable business, we are led to expect that any measure for general drainage would receive opposition from the body of millowners. He questioned the power of landowners to drain their own lands, and denied the justice of their so doing; alleging that the process would depreciate the regularity of supply of water to mill-streams : in effect, that it would provide too speedy a termination of an evil to the farmer which is a benefit to the owner of mills worked by water power. Such opposition, however, would have little weight with any legislature, which, knowing that to confer a general good some few must suffer, would provide that the commissioner should act upon the principle set forth by Mr. Palmer, that "It is incumbent upon us to extend our caution, and rather leave a river untouched than act upon it without a full examination into its nature and capabilities."

In fact, it would be indispensable that the commissioners under whom such a measure would be carried into execution should proceed cautiously, and, while acting up to the spirit of their commission, guard against doing too much.

The main object of their care would be an uniformity of design, arranged with a view, in the first place, to provide a ready vent for waters which are now injurious; and, in the next, to their profitable use. While some rivers would remain un-

* See 'Journal of the Royal English Agricultural Society,' vol. i.

† Ibid.

touched from a consideration of the important works along their banks, others would have their waters augmented for the benefit of future navigation by collateral watercourses, either then made for the first time, or converted from dry ditches into constant tributary streams.

The mains or receivers by which the waters would be concentrated would be laid out on the ground, so as to have regard as much to the outcropping of strata as to the undulations of surface; and, by this uniform and scientific administration of the law, all petty and sinister interests would be set aside, and country districts would be saved from the disorganization prevailing in towns which we have before alluded to, and which Mr. Chadwick describes in his report.

Now, although the immediate object of the "Report of the Sanatory Condition of the Labouring Population" is to procure health to the inhabitants of closely populated towns, Mr. Chadwick gives an instance or two which go far to illustrate the views we entertain with regard to rural districts, and which induce us now to offer suggestions for a measure which, with the least possible amount of compulsion, would oblige the few to give way to the many. We extract one case.

"About a mile and a half distant from one of the towns in Scotland, there is a moss of about seven miles long, with a small stream running through it, with a fall of about twenty-five feet. At the outlet of this stream there is an old corn mill, which yields a rental of about 25*l.* per annum. By the water being dammed up to turn this mill, the whole run is impeded, and the consequent sluggishness of the stream occasions it to be choked up with weeds. Whenever a fall of rain takes place the banks are overflowed, and not only is every improvement rendered impracticable, but on several harvests as much as 500*l.* worth of hay has been destroyed at a time when a heavy fall of rain has occurred and occasioned an overflow.

"It so happens that the proprietor of the mill would himself clearly gain more than the value of the mill from the drainage that would be effected on his own lands by the removal of the dam. The other proprietors, however, offered to him for its removal the full rental that he now derives from the mill. The property is in the hands of a factor, who is ignorant and obstinate, and the offer was refused. Now the land which would be affected beneficially by the removal of the dam is a tract of seven or eight miles long, with an average width of two miles and a half. The expence of an Act of Parliament, if it were resisted, as it most probably would be, renders an appeal to the legislature valueless. Thus one individual is enabled to exercise a despotic caprice against the health and prosperity of the surrounding population, to inflict an extensive loss of labour and wages on the working man, the loss of produce and profit to the occupiers, the loss of rent to the other owners, and at the same time to inflict on all who may live on the spot, or come within reach of the marsh, the ill health and hazards of disease from the miasma which it emits."

Similar cases might be related from all parts of the kingdom.

The opinion of Mr. Chadwick as to the manner in which drainage operations should be carried on, and the defective condition and administration of those isolated works which have already been effected, is so incontrovertibly sound, and goes so far to sanction the proposition of general and uniform drainage over the whole kingdom, that we extract rather lengthy passages from his sanatory "Report," referring to the Bedford Level, &c.

"The extent of the areas to be drained determines arbitrarily the extent of the operations of drainage, whether public or private, which shall combine efficiency and economy. If these areas are occupied by different parties, they cannot be cleared separately at an expence proportioned to the extent cleared. In general they are only to be won by agreement amongst the parties holding the property, to place the operations under the guidance of science; these labours will then be rewarded by production, whilst disease and pestilence, as well as sterility, are the effects of the ignorance and selfish rapacity which impede such union for the common advantage. The early history of the attempts of the separate owners of portions of the tract of country included in the Bedford Level to drain their property separately, is a history of expensive failures of attempts to get rid of the surplus water only by flooding the lands of neighbours, and scenes of wretched animosities. These continued until the whole tract was put under one strong authority and scientific guidance, when productiveness and health arose, as described in the account of the sanatory condition of the Isle of Ely. Had the natural district formed by the geological basin of that Level been subdivided for drainage operations into districts co-extensive with districts for municipal, ecclesiastical, or parochial and civil administrative purposes; or had it been divided into districts according to property or occupation; had the commissions charged with the drainage of the subdivisions acted independently by ill-paid and ill-qualified officers, without any competent control, instead of acting on one comprehensive plan in subordination to an engineer of science adequate to its design and execution, vast sums of money might have been spent, and the land would still have remained a pestilential marsh, occupied by a miserable population. What the tract of country belonging to the Bedford Level, so subdivided and inefficiently and expensively managed, once was, large urban and rural districts are now found to be in degree. The circumstances which govern what is called the private drainage will illustrate the nature of the administrative obstacles to efficient public drainage, and it is necessary to consider them in connection, for they are inseparably connected by nature.

"The natural districts for public drainage are so capriciously subdivided and departed from, as frequently to render economical and efficient drainage impracticable.

"The municipal authorities who obtained powers for drainage only thought of the surface drainage of their own jurisdictions. Some towns are at the bottom of basins and others on elevations, and the operations for effectual drainage must often be commenced at a distance. It is stated by persons of competent skill in drainage, as an example, a town situate on one side of a hill will be drained dry by tapping or opening a spring on the other side. The manifest defect in the areas of operations for drainage is noticed in the 'Report of the Committee of the House of Commons,' which in the year 1834, inquired into the administration of the sewer's rate in the metropolis, where, perhaps, the most money has been expended in imperfect sewerage and cleansing of any part of the kingdom."

It is hardly necessary to advert to the possibility of conducting the drainage of a country upon the principle of an attentive regard to its geological

formation, especially as the physical geography of every district which is apparent to the eye is representative of the geological structure.

We have already remarked upon nature's system of universal drainage, as evidenced by the formation of rivers and water-courses, which follow the natural valleys of the country upon those soils which, from their constitution, are best calculated to offer resistance to the water being absorbed. By these means a general water level is maintained on the surface; and if we examine into the laws which regulate the disposition of the waters which find their way into the earth, we shall ascertain them to be similar to those which govern the waters of the surface, the geological boundaries below being of the same undulatory character as the surface.

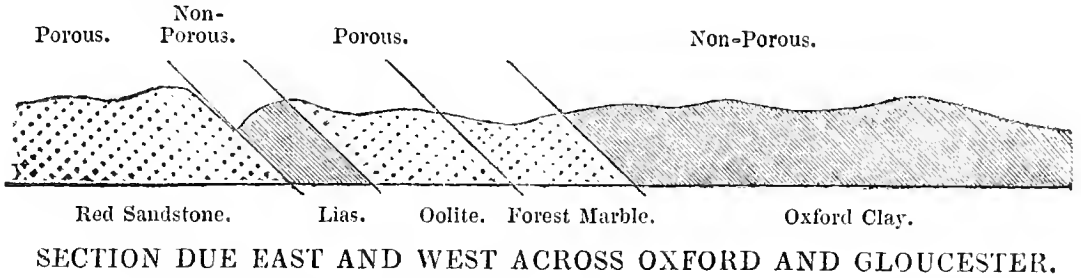
In the valleys of the porous strata a subterranean water level is established, and the various springs we find gushing out of the surface may be taken as indices of the extent of the distribution to which the surplus waters are and might be applied without a depreciation of the main body of water.

Sir H. T. de la Beche, in his "Report on the Geology of Cornwall and Devon," states that "Those who examine more minutely into the subject will soon perceive that the variation in fertility extends very generally to the boundary lines of the various colours marked on a geological map; so that if the scale of the map be sufficiently large, the relative fertility may, in some cases, be traced even across fields, portions of them being far more productive than others."

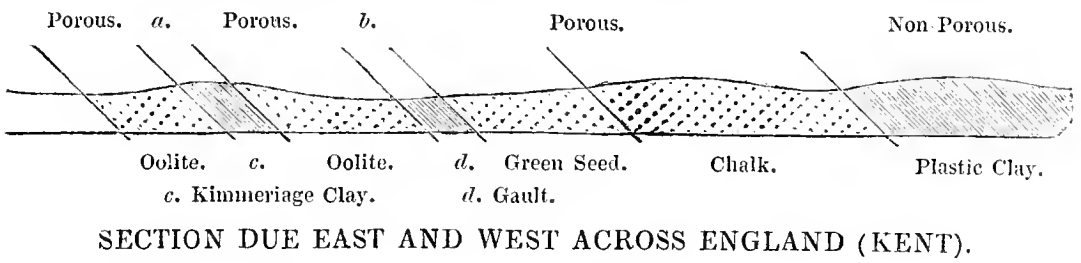
Thus a geological map of a country becomes the best guide for designing a general drainage scheme.

In the geology of England there is an excellent series of rocks, the sequence of which is exceedingly favourable to agricultural purposes, both from their juxta-position and their absorbent or non-absorbent qualities; in other words, the porous and non-porous rocks almost invariably succeed each other in regular order, as will be seen by the annexed diagram.

COTTESWOLD.



SECTION DUE EAST AND WEST ACROSS OXFORD AND GLOUCESTER.



SECTION DUE EAST AND WEST ACROSS ENGLAND (KENT).

Now, by observing the sequence of strata, as exemplified in these sections,* it is evident that, in order to secure the waters of the surface for agricultural and mechanical purposes, it is essential to intercept the waters which would otherwise run off from a non-porous surface, and to catch the waters which exude at the junction of a porous stratum overlying a non-porous one. At present the water which is discharged from the clays upon meeting with the chalk, oolite, or red sandstone series, drops down at once to the subterranean water level in those strata, and is discharged again in the form of springs at their point of junction with the underlying non-porous stratum; therefore the course to be adopted to secure these waters is at once defined. Receivers conducted along the lines of junction would in the first case prevent the waters of the clay lands from sinking into the porous soils, and in the next they would intercept the springs which too often find their way to the surface level by courses prejudicial to the land the flow over.

We have entered upon no disquisition on the effects of drainage, considered either physically in relation to the soil, or philanthropically with regard to the benefit the inhabitants of clay districts would derive from it. Dr. Madden and other agricultural writers have so forcibly treated the subject in its first bearing, and Mr. Chadwick in the next, that we shall at once proceed to consider the other branches of the proposition.

As already stated, the waters to be derived from systematic drainage would be converted to various uses; but irrigation and the creation of a motive power are the most important, and, indeed, the only applications of them to which at present it is desirable to direct attention. As regards irrigation, it is necessary to estimate the quantity and the fertilizing power of water attainable for that purpose. In the "Report of the Commissioners for the Drainage of the Bogs of Ireland," Mr. Nimmo says—

"The benefit of irrigation is necessarily connected with an effectual drainage; and I place my hopes of advantage in the rapid transmission of that water which is at present injurious by its stagnation. If the rain water of one hundred acres be caught and re-applied during a descent of one Irish mile, the ground thereby irrigated will

* For the above sections, and for many valuable hints on the utility of geological data for effectual and economic drainage, we are indebted to Mr. Charles Moxon, editor of the "Geologist."

be eighteen and a quarter Irish acres, or nearly one-fifth of the supply."

This estimate may be applicable to certain localities, but it is too much for the average of England, which might be more reasonably taken at a tenth; and as England is more within the scope of our observation, we are content to deal with her independently of Scotland.

We have before said that there are ten millions of acres of cultivated land which require draining; to which may be added another ten millions* from which the surface waters would be obtained by a general measure; and taking a tenth of the sum of these two, viz., two millions, we at once get at the quantity of meadows which could be irrigated by water from the higher lands; and this calculation is made exclusively of waters from springs, and of those which might be derived from the introduction of the artesian theory. Upon the last mentioned means of gaining water for agricultural purposes we lay but little stress, because we wish to avoid anything like speculation, although we consider that much might be done in conjunction with drainage to acquire a greater force than may be gained by draining only, to increase and render constant that force as a motive power, by bringing from a lower strata water which by hydrostatic pressure would rise some feet above the surface.

Agriculturists may say that such waters contain no fertilizing ingredients; let us, therefore, confine ourselves, while treating of irrigation, to the waters which, running along the surface of the land, rob it of its lighter vegetable matter, which they convey to the brooks and rivers, whereby it is conducted to the sea. Here it creates bars at the estuary, raises deltas, or fills up the depths of the ocean. It should be remembered that just that portion carried off by the seasonal floods from the land, is that which, if retained, would most serve to enrich it, and which, therefore, if intercepted, would most improve our meadows. In every instance where land composed of this stolen alluvium has been reclaimed from the sea, it has turned out the richest and most valuable soil—particularly where the subsoil is clay or gault, and is easy of mixture with the surface.

What valuable matter is abstracted from the lands by various rivers of the different continents! Hartsoeker computed the Rhine to contain in suspension one part mud to ninety-nine parts in water. Sir George Staunton states the Yellow River to contain one part in two hundred.

"The alluvial soil deposited by the waters of the Nile is 14,784,000 solid feet per hour.

"The Mississipi deposits 8,000,000 solid feet per hour, and the Koangho, according to Barrow, carries into the sea 2,000,000 solid feet of sediment every hour."

Major Rennell considers the Ganges to contain a sediment one part in four! and says—"No wonder, then, that the subsiding waters should quickly form a stratum of earth, or that the delta should encroach on the sea."

Mr. Everett calculates the annual discharge of sediment from the same river at 6,368,077,440 cubic feet; while Mr. Chadwick thus speaks of the Thames:—

"Mr. Roe has furnished me with a calculation made from the flow of water in the Thames at a neap tide; taking the ebb and comparing it with the quantity of deposit in the water running from sewers from the whole of the metropolis (assuming that the sewerage bears the same proportion as the Holborn and Finsbury division), that the proportion of impurities to the volume of water of the Thames is as 1 to 10,100. If the surface-cleansing of the streets were added to the ordinary mass of impurity, he calculates that the proportion held in suspension would then be about 1 to 5,069. To this must be added the impurities from land floods, and those from vessels in the river. The amount of impurity discharged from the sewers was calculated from the amount of deposit known to have been formed in several of them. The amount of impurity in the Thames would, therefore, be at the least double the amount of that calculated for the Seine."

From these facts we are able to arrive at the cause of the filling up of rivers which have bars and weirs, and the consequent flooding of river banks. Thus evil is added to evil: first, the higher land is robbed of its richest portion, and in the next place the lower lands are flooded with stagnant water, in consequence of the elevation of the beds of rivers. Of these evils, the first may be compensated for, and the second prevented, by the clearing of the river and the distribution of the sediment while held in suspension, in its transit, during floods to its lowest level.

If, in the main bodies of water in rivers, the alluvium is of the amount quoted, what portion of the floods which during heavy rains find access to the rivers by running far and wide over the surface of the ground, may be regarded as sedimentary matter? For waters which thus proceed to the rivers must form but a small portion of their bulk, compared with those obtained from springs, while they are the sole means of conveying the sediment to them. Do they not contain sufficient vegetable matter to alter* the character of many poor sandy and gravelly soils which might without much expense be irrigated, or that of the strong adhesive sour wet lands,† which, *after* draining, would be even more benefited by irrigation than lighter soils?

But should town and farm yard sewerage be combined with land drainage, and the water derived from the latter be made the vehicle of conveying the ammoniacal refuse in a state of dilution to the land, a proportionate increase in vegetating power would result.‡ In a late number of the

* The total content of England and Wales is 36,522,615 acres.

* Oats and rye will grow upon a soil containing only one and a half per cent. of organic matter, barley when two to three are present, while good wheat soils generally contain from four to eight per cent.—*Johnston's Elements of Agricultural Chemistry.*

The very fertile alluvial soil in East Friesland, formerly overflowed by the sea, but for sixty years cultivated with corn and pulse crops without manure, has been analyzed and found to contain ten per cent. of organic matter."—*Ibid.*

† Wet lands are called *sour*, because any vegetable matter which is mixed with the soil, if it decomposes at all, produces an acid more or less unwholesome to plants—hence it is that irrigation, which is a sure means of sweetening herbage, is so highly recommended to heavy land meadows.

‡ Mr. John Evelyn Denison, in speaking of the Clipstone meadow, says—"The quality of the water is very important; soft water the best; mineral waters, and waters from peat mosses and bogs, are found to be injurious. After strong rains the wash-

"Quarterly Journal of Agriculture," the following experiment is detailed—and we do not abridge the description, because we are desirous that in any measure which may be based by government upon Mr. Chadwick's report, the value of the refuse of towns may be considered as a primary object:—

"The produce in grass from thirty-one square yards carefully measured on a crossing line, and weighed, was, from the acres dressed with nitre, nitrate of soda, and rape dust, nearly the same, averaging from 98½ to 100lbs. The space dressed with nitrate of soda and salt, 82lbs., and the undressed, 55lbs.; whilst the produce from the dressing with ammoniacal water weighed 126lbs. The produce in hay made from the different parcels of grass, carefully kept separate, and weighed on the 2nd of August, in good condition, was similar in proportion. After the dressing with nitre, nitrate of soda, and rape dust, giving 31lbs., 32lbs., and 30lbs., being on the average one pound weight of hay from the square yard; that after the mixture of soda and salt, somewhat less; and that from the undressed land, only one half pound; whilst that dressed with ammoniacal water weighed 46lbs., or a pound and a half per square yard—equal to 326 stone of hay per imperial, or 410 stones of 22lbs. each, per Scotch acre. The apparent anomaly of the grass watered with ammonia having lost less weight in being converted into hay, than the others did, can only be accounted for by the singular effect that the ammoniacal water had in stimulating the growth of Timothy grass (*Phleum pratense*) beyond that of any other dressings; and it is a peculiarity of this grass to part with fewer of its inherent juices in drying than the greater number of cultivated grasses do, from being furnished with additional joints or valves on the flower stems.

"After removing the hay crop, the remainder of the field was begun to be top-dressed on the 12th of August with the following substances: and for a further trial of the effects of gas ammonia on after-grass, I had a present of one hundred and ten gallons from the manager of the Perth gas works, which I reduced with the same quantity of common water as before stated, and applied to another or fifth acre:—

	£	s.	d.
A sixth acre was dressed with twelve bolls lime-shells, slackened with bog earth, at 3s. per boll.....	1	16	0
A seventh with twelve bushels bone dust (slightly fermented), at 3s.....	1	16	0
The eighth acre, with cocoa-nut dust, six cwt., at 6s.....	1	16	0
The ninth, with fifteen cwt. animalized carbon, at 2s. 8d.....	2	0	0
And the tenth acre with thirty bushels bone refuse or sweepings, at 1s.....	1	10	0

"In this second experiment with other substances, the ammoniacal water showed a decided superiority.

"Animal manure acts only by the formation of ammonia.—*Robinson.*

"In human excrements there abound phosphates of ammonia and magnesia.—*Ibid.*

"In putrefied urine the urea is changed into carbonate of ammonia.—*Ibid.*

"In some experiments of Mr. Gregory, who watered half a grass field at Leyton with urine, the portion thus treated yielded nearly double the quantity of hay produced by the other unmanured portions."—*Ibid.*

(To be concluded in our next.)

CHINESE AGRICULTURE.

The greatest annual festival on which the sovereign appears in his sacerdotal character, is that of the celebration of the season of spring, which takes place about the middle of February, and is one of those ancient observances that help to preserve the primitive character of this nation. It is then that the Emperor performs the part of the husbandman, by ploughing and sowing seed in an enclosure set apart for that purpose near the palace. The day for the royal ploughing is fixed for the Board of Rites, and this ceremony was accompanied by many solemnities on the part of the emperor, and those who were to assist at the sacrifices—such as fasting for three days until the evening of each, and abstaining from all kinds of amusements during that period. Early on the morning of the festival the Emperor, attended by the great officers of state, repairs to the Temple of the Earth, where he makes sacrifices and implores a blessing on the labours of the spring, that they may produce a plentiful harvest; and when these rites are ended, he descends from the temple into the field, where all the requisite preparations have been made by forty or fifty husbandmen who are in attendance. The Emperor ploughs a few furrows with his own hands, and sows five sorts of grain; after which, twelve grandees of the first rank plough and sow in turn, and then the work is completed by the professional husbandmen, each of whom receives a present of a piece of Nanking cloth. The produce of this field is held sacred, and carefully preserved in a granary by itself, to be used for the most solemn sacrifices. The ploughing by the Imperial husbandman takes place only in the capital; but in every large city a ceremony is performed, called "meeting the spring," when the governor assumes the character of high priest, and goes out in state, carried in a finely ornamented sedan-chair, preceded by banners, lighted torches, and music. He is followed by several mandarins in their sedans, and by a number of litters, in which are placed children who are fancifully dressed and crowned with flowers, representing various deities connected with the labours of the field. But the most prominent figure among the *dramatis personæ* is a huge earthen buffalo, the representative of the spring, which is borne in procession to meet the high priest, who delivers a lecture on the benefits of husbandry, which is one of sixteen discourses read annually to the people. At the conclusion of the lecture he strikes the buffalo three times with a staff, when it is immediately broken in pieces by the populace, and a number of little porcelain cows, with which it was filled, furnish materials for a scramble. The rest of the day is devoted to amusements. It is thus that the rulers of China, both by precept and example, stimulate their subjects to the pursuits of agriculture, so essential to the support of the empire. And, as the Emperor in person ploughs the land and sows the seed, so the Empress also performs her part to encourage another most important branch of industry, by going through, in appearance at least, all the labours connected with the culture of silk.—*Miss Corner's History of China*, Part 4.

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ings of the streets and sewers of the town of Mansfield, which discharge themselves into the Maun, give great additional efficacy to the water. Mr. Tebbett compares its virtues in that state to *ale*; when, in its ordinary condition, it would not deserve a better name than that of *small beer*. It will sometimes deposit a sediment in one watering of the thickness of a sheet of paper."

HOW TO PURIFY THE AIR OF STABLES.

BY HENRY REECE.

Having been invited by Mr. Evans, of Dean House, Enstone, to make some experiments on his excellently conducted farm and stables, I trust the results of those upon the absorption of ammonia may prove of sufficient interest to entitle them to publication. As gypsum (crystallised sulphate of lime) had been highly recommended for this purpose in some recent works on agriculture, the stables were in the first instance freely strewn with this salt, coarsely powdered; but though the ammonia was evolved during the removal of the wetted straw in sufficient quantity to affect even the eyes of the grooms, I could not after two days' exposure, detect the slightest trace of it in the gypsum when I examined it with slaked lime. This result was the more surprising, as it is known to every chemist that solutions of carbonate of ammonia and of gypsum are incompatible; the carbonic acid leaving the ammonia to form the precipitate carbonate of lime, the sulphuric acid passing to the ammonia; and I had previously ascertained that in an atmosphere so highly charged with ammonia as to be destructive to animal or vegetable life, a very appreciable proportion was taken up by wetted gypsum. The following experiments appeared conclusive upon the point, that under less favourable circumstances not an atom was absorbed:—200 grains wetted with distilled water were exposed in a close stable for three days, precautions having been taken to avoid any error from evaporation; it was again weighed, no increase could be perceived, nor was any ammonia evolved on the application of the usual tests; while 200 grains wetted with diluted sulphuric acid, and exposed the same time, were found to have gained 36 grains of ammonia. The stables were then strewn with the gypsum moistened with sulphuric acid, and examined the next morning; every portion was found to have absorbed sufficient ammonia to evolve its peculiar pungent odour when brought in contact with slaked lime; the stables had also lost their close, unhealthy smell. To use the words of the grooms, they appeared sweetened. As it was evident the gypsum acted merely mechanically, affording a convenient absorbent surface for the acid, experiments were made substituting sawdust for gypsum, with even more favourable results. That the proportion of free ammonia in stables is very large, may be shown by the simple experiment of placing a moistened piece of litmus paper, reddened with weak acid, in a stable: in one badly cleaned or ill-ventilated the effect is instantaneous; but even in those of Mr. Evans, where the greatest attention was paid to these points, the paper was observed in a few minutes to become blue; even the water kept in the stable the overnight, as is the habit, to take off the chill, becomes sufficiently impregnated with ammonia to affect tests. As this alkali is justly ranked among the most powerful stimulants, the continual breathing of an atmosphere vitiated by it can hardly fail to have a prejudicial effect. Grooms are observed to be short-lived; and the rapid course of inflammatory diseases in horses, and their distressing predisposition to colds and affections of the chest, are no doubt greatly aggravated by this cause. The increased salubrity and sweetness of the stable, if pointed out to the grooms, would, therefore, soon reconcile them to the slight additional trouble the adoption of this remedy would incur. At Dean House the acid gypsum was first strewn amidst the straw; but as this was considered likely to injure the feet and clothing of the hunters, it was afterwards spread on trays. One part of sawdust will be found to absorb readily three times its weight of acid solution, which I made with one part, by measure, of sulphuric acid to fifteen of water. If intended to be tried as a manure, it should be mixed in with the straw when removed from the stable. During the process of rotting the ammonia is evolved so freely, that at the end of two or three weeks the acid powder, which should not remain more than three days in the stable without changing, will be found completely neutralized; and as the greatest benefit was derived from covering up and salting dung-heaps, by which I believe an additional absorption of ammonia could only have been gained, it may be reasonably hoped that an increased value would result from a manure thus surcharged with ammoniacal salts.—*Journal of the Royal Agricultural Society.*

DANIELL'S MANURE.

Sir,—I send you an account of a few experiments made with "Daniell's patent manure," which you can, if deserving your notice, insert in your celebrated magazine. Hearing of its wondrous qualities, I thought I would give it a fair trial; accordingly, when I applied it to an orange tree, the progress it made as long as I continued to give it plenty of water was surprising, but for some reason or other I was called away from home, and on my return I found my friends had neglected to water this tree, and the consequence was, it was in a most deplorable state, being quite dry and scorched. I tried it also on some wet clay soil, and it certainly has improved the parts to which I applied it. Could one secure such wet as we have had lately after the application of it, one might reap much advantage from it; but at present I think it is not at all understood. A noble lord not far from where I live applied it last year to some strawberry beds, and the produce was amazing; this year likewise it seems to answer, so far as the prospects of that fruit is concerned. Should any one like to try it on his strawberry beds, I would give directions through your admirable papers for its application.

I am, yours obediently,

H. F. E.

(A Constant Reader).

Vitality of the Wire-worm.—A short time ago, Mr. Edward Ingamells, of Eastville, picked upwards of 200 of these destructive insects from cabbage-stalks which had been recently ploughed up, and kept them closely shut up without sustenance. On opening, on the 22nd inst., the receptacle in which they had been enclosed (after a period of five weeks), they were found to be all living. They have since been separated; one part being fed upon a slice of raw potato, whilst the others are destined to live upon *air*, with the view of testing their vitality.—*Carlisle Paper.*

REVIEW.

AN AGRICULTURAL TRACT FOR THE TIMES.

THE QUESTION—"*What can be done for British Agriculture?*"—proposed a second time, with an attempt at an Answer, in a Letter to the Landowners of Great Britain.—By J. WEST, Landagent, North Collingham, Notts; author of "Remarks on the Mismanagement of Woods and Plantations," "Remarks on the Turnip Question, Subsoil Ploughing," &c., &c.

Longman and Co., London; J. Perfect, Newark.

Mr. West has "done the state some service" by his frequent and powerful advocacy of the agricultural interests—and especially when we find that this has been done at some pecuniary sacrifice. At p. 16, speaking of his work on the Turnip Question, he says—"I hope I may stand excused if I remark in passing, that, notwithstanding that the book was written solely for the benefit of those who possess land, either as proprietors or occupiers, and although it has received the highest commendation from some of the first practical men of the day, so little interest is taken by the mass of farmers, either in this or in any other new thing, that I shall probably find, as many have done before me, that not even the cost of printing will be reimbursed me. When patronage is withheld to this extent it compels complaint." It is this injustice, this apathy, this neglect of their own interests, which is the besetting sin of the cultivators of the soil. Would that, with the word of command of the "great hero of a hundred fights," "Up, guards, and at them!"—"Up, farmers of England, and face your deadly foes, with a spirit of determination not easily subdued!" We should wish to see more energy, more enthusiasm, more union among farmers; for never was there a period when it was more required to meet and contend successfully against the assaults from within and from without. Our opponents are united, energetic, strenuous, and resolute; and unless met with a bold front, will assuredly succeed in their efforts.

But to return to Mr. West's essay. His remarks on draining are so applicable to the times, and so much to the purpose, that we must give them entire, at the risk of doing injustice to the author by extracting so largely from his pages. We trust his observations—which are those of a well-informed, a practical, and an experienced man—will carry conviction home to the minds of many of our readers.

DRAINING.

"This is a subject which *must* obtain attention. Its importance is so great, that very few of those who disregard it in farming will long farm at all. Instead of writing upon it a few paragraphs, as I must content myself with doing on this occasion, it were easy to write a folio, and yet leave much unsaid that ought to be said. The diversity of opinion is indeed such, that the mode of doing it might well employ the pens of the most illustrious judges of draining in existence. As for myself, the limits of this address will confine me to the duty of urging upon you, my lords and gentlemen, *the necessity of your seeing that the work is done with as little delay as possible*, and that it is *done*, not according to the fancy of this person or that, but in such manner as competent judges shall direct.

I am not ignorant that many of you have already given much attention to this subject. You have incurred a large annual outlay in the purchase of tiles, or of some other materials wherewith to drain your estates. In some instances you have both found the tiles and done the work yourselves; and when that has been the case it has generally been well done; but in by far the greater number of cases *you have given the tiles on condition that your tenants would put them in*. Here, again, the work may have been sometimes well done, as far as regards *ordinary draining*, but it will not be disputed by any but the parties themselves, that in at least forty instances out of fifty the draining which has been thus done has been executed in the most imperfect manner. As I have just now said, I have neither time nor space to enter upon the whole question of draining, but that it is almost one universal course of blundering, few of those who really understand the matter will deny. A vast amount of property in tiles has been literally thrown away, in consequence of their being improperly put in. It is of no consequence that men of great intelligence, and of long experience, have fully tested and deliberately adopted a certain practice in draining, as to depth, distance of drains, their direction, &c., &c.; every man thinks himself competent to undertake work of this sort; and it too often happens that an ignorant and bigotted attachment to his own narrow views completely closes his mind against enlightenment and conviction; and consequently he goes on groping his way in the dark, as long as his indulgent landlord will furnish him with the supplies. In illustration of my position that the landlord should take the draining of his estates into his own hands, I shall shortly refer to a case or two.

One of the most frequent, and one of the most mischievous mistakes that is committed, is that of *putting in the tiles too near the surface*. Upon many estates, the staple of which may have been somewhat stiff, one man has probably set the example, and all the rest have followed it; and from 10 to 14 inches has been the depth of the greater part of the draining.

While I would respect the honest convictions of candid men, I neither wish to feel nor to express any, for those who have irresistible evidence before their eyes, but will not look at it; and I affirm, without fear of contradiction, that the notion of very shallow draining can only be entertained by a very shallow head; or by reason of men, otherwise clever, taking a superficial view of the subject. In every part of the kingdom where I have travelled, I have met with men who, from limited views of the question, were offensively positive in condemning what has been clearly established on a scale of enlarged experiment, as about the depth proper for drains; but opinions more absurd than any other which I ever heard were unanimously supported in a conversation to which I listened at a market table in a town not a hundred miles from Stockton-upon-Tees. The gentlemen were highly respectable, and appeared to possess, upon general subjects, very great intelligence; but to my utter astonishment and dismay, I learned that they practised, and against some gentle hints of mine they vindicated, a depth for drains varying from 8 to 12 inches! When tiles are given away to be thus put in, it is worse than doing nothing. I have lately met with another instance worth mentioning, upon a gentleman's estate which I am partially draining. In taking up an old drain which had been put in by a tenant, the workmen found it *quite dry*, whereas, upon sinking it from 6 to 8 inches deeper, they found an

extraordinary quantity of water, which, as it spread itself by a very open measure, was quite sufficient to starve and render unproductive twenty acres of land which were below it. This difference of *effect* was produced at a cost of less than twenty shillings.

I have had much experience in these matters, and I have been tolerably observant of the practice, and the results of the practice, of others, and I have lived to see the question of draining in a very different light to what I once did; and while I would not, on any account, recommend landlords to give *one tile less* than they have done before, but rather ten times more, I would most undoubtedly, and very strongly, urge them to watch the process of putting them in much more closely than it has hitherto been their practice to do. In fact I should, without hesitation, say that, in most cases, the proper course to adopt, my lords and gentlemen, is yourselves to do the whole work, from beginning to end—except the leading of the materials—under the direction of "competent persons," and after the most approved methods. This is one grand means of benefitting your tenantry and their dependents, and of staving off the consequences which must otherwise ensue from an unjust and unequal competition. But there is a great difficulty in the way of some gentlemen who would otherwise greatly improve their estates, and that is, *the want of sufficient outfalls*. No man of business can have traversed any extent of country without perceiving this. An effectual bar is thus very frequently put in the way of a gentleman when he is perhaps desirous of entering upon an extensive scheme of improvement. Now, although I have long thought that the legislature ought to interfere, and, by the authority committed to it, remove all such obstacles, I should not have deemed it right that a humble individual, like myself, should publicly put forth such an opinion, if I had not previously known that persons, much more competent to judge of the matter than myself, had declared themselves in favour of an act for the purpose of insuring a better drainage. I am happy to hear that the subject is likely to be taken up in Parliament by Mr. Pusey, and I fervently hope that such a scheme will be devised as will secure to all who are desirous of doing so the means of thoroughly draining their land. Much good has undoubtedly been done by the Courts of Sewers, but they are not rightly constituted, nor have they sufficient powers. By whatever method however—whether an entirely new machinery, or by a re-modelling, and an extension of the powers of the Court of Sewers—it is very important that a large measure should be enacted, as the outfalls of the country, *where drainage is most needed*, are in a very bad state indeed. It is high time that it were put out of the power of any man to hinder or delay the execution of any great and important work of this nature. A thoroughly effective drainage is vital to the onward progress of agriculture; but this will never be secured so long as it shall be necessary to have the consent of every individual person who may be likely to be affected by, or who may be called upon to pay to it. Of course the rights of every man ought to be respected, and any innovation upon even the fancied rights of a man on his own freehold would be improper, until after every legitimate means had been adopted, to show him the necessity of the steps contemplated; but, that being done, no work of general public utility ought to be prevented by individual ignorance or obstinacy. If the law does not provide a summary remedy for this difficulty, it ought to do.

Permit me, my lords and gentlemen, before taking my leave of the question of draining, to refer to a great project which was some years ago started, to reclaim from the sea a large tract of land in the neighbourhood of Lynn, in Norfolk, which is called the "Wash." It appears that Sir John Rennie was officially employed to examine the outfalls of the Ouse and the Nene, which empty themselves into that great estuary; and that in his report he declared the embankment to be perfectly practicable, and showed that, at a cost of two millions sterling, 150,000 acres of very valuable land might be recovered, besides the immense further advantage of greatly improving the natural drainage of 900,000 acres of lowlands, which are at present very imperfectly drained. It was calculated by Sir John, that the 150,000 acres of land would have been worth £6,000,000 sterling, while, as I have said above, the outlay would have been only £2,000,000.

Thus land of the fee simple value of four millions, after paying all expenses, would have been actually *created*, if this important work had been carried into effect; but who does not see that, even if the whole six millions had been expended, the completion of the scheme would have been a great national advantage? It is not easy to estimate the benefit that the 900,000 acres would have derived; but it is no exaggerated view to take of such a case to suppose that it might have been improved to the amount of £1,000,000 sterling per annum. No work of such local, and even national, importance as this ought to be stopped by any private influence whatever."

THE STRANGER IN INDIA, OR THREE YEARS IN CALCUTTA.

BY GEORGE W. JOHNSON, ESQ.,

Advocate of the Supreme Court at Calcutta: Fellow of the Agri-Horticultural Society of India.

2 vols., 8vo. London: Colburn.

The wants, the products, the political relations, and the habits of England's great oriental empire are well and feelingly portrayed in these highly interesting volumes. The author has successfully managed to unite the most plain and practical instructions for the use of the voyager to India, with well-drawn sketches of all that is interesting to the stranger visitor of the shores of the Hooghley. We are quite sure that it will be well received by all the lovers of general literature throughout the country, for it unites both amusement and instruction, and this instructive matter might, we think, be read with advantage on more points than one, even in the office of the Secretary for the Colonies. We make but one extract, but that will be a copious one. We take this from the chapter (vol. ii., p. 73) where Mr. Johnson is speaking of the agriculture—landlords—ryots—coolies—and slaves of Bengal:—

"The agricultural system of India is the prime cause of its poverty, and deeply is it to be deplored that the English landholders of its soil make no attempt to change that ruinous system pursued by the native Zemindars, or land proprietors—a system steeping to the very eyebrows the ryot, or actual farmer, in hopeless poverty.

"Scarcely a ryot exists in all India who is not in debt, beyond the hope of redemption, to the Zemindar of whom he holds the land, and who has made to him money advances enabling him to sow the few bigahs of

land he has hired.* This weighs like an incubus upon the ryots, but it is not the worst contingency, for they are debited in the Zemindar's books for sums far larger than they receive. The Zemindar does not personally visit his estate, but leaves its entire management to his Sircar,† and the consequences are, that this invariable rogue and extortioner, keeps the money he ought to have advanced to the ryots in his own hands, applies it to his own purposes, and when he does pay the advances to the ryots, it is only after making a large deduction, or *dustoorie*—a deduction which his victim dares not to refuse.

" The following narrative is from the pen of a highly respectable clergyman, resident at Calcutta, and may be depended upon, not only as particularly true, but as a correct illustration of the working of the general system.

" ' There are two estates, not one hundred miles from Calcutta, belonging to Europeans, on which paddy (rice) is grown, and salt manufactured. They abound with game, and fish in abundance is at the very doors of the ryots. On a visit paid to one of these estates, we found the people living in huts, or rather apologies for huts, such as the most wretched of the sons of Erin would scarcely shelter in. Poverty the most squalid sat on every feature, and haunted every spot.

" ' The miserable beings, shut up from all communion with the mass of the people, had one priest, one shopkeeper, whose whole stock consisted of a few of the meanest articles of barter; not one pice (the lowest circulating coin) was to be found in the community, nor money in any form. They had no gun either to kill game for subsistence, or beasts of prey for protection; no net or hook with which to catch the fish at their very doors; and the reply to my inquiry, ' Why have you not this or that?' was invariably, ' How are we to procure it? We have received no money for twelvemonths—the sircar will come soon, perhaps, and then we shall get what he pleases to bring.' The sircar! this is the fly in the pot of ointment.

" ' On the other estate there were traces of better days, and the ryots stated that they had done well, when the sahib (the English proprietor) was in life, and himself listened to the story of their wants and successes; then, they said, ' we were happy, but now the sahib listens through the sircar, and we have no hope. He is kind to us, but we never see him; we only see the sircar, and he does with us and the lands as he pleases. Our lands are neglected—our advance is not forthcoming—and we are dispirited. What is it to us what becomes of us now?'

" Many remedies have been suggested to remove this wretched state of the population, and one of these, proposed by the Rev. Mr. Hill, deserves to be brought into practice. This gentleman recommends that a Zemindary be purchased by a society, to be called ' The Christian Landholder's Society,' having as its sole object the benefit of the ryots, as the object of the existing ' Landholder's Society' is exclusively the advantage of its members.

" At present, conversion to Christianity from Hindooism is prevented most powerfully by the persecution and loss of property to which it subjects the convert, according to Hindoo laws. Many natives, converts in heart to our religion, have acknowledged to me that they were deterred from its open profession solely by the ruin to which such an avowal would subject them.

" The Hindoo law decrees that such apostates from the religion of Bramah forfeit all their landed property, become incapable of inheritance, and are outlaws and outcasts. A regulation of Lord W. Bentinck's neutralized, in some measure, this law, which would bind its slaves either to ignorance or hypocrisy; but that regulation does not effectually protect the native convert, and the following instances related by Mr. Hill, are unexaggerated examples of many cases which came to my knowledge, in Calcutta.

" A Hindoo youth desired to be baptized, but added, ' in that event, can any of my relatives seize my property?' An answer to this query was sought from the highest authority, who replied that, although the regulation passed by Lord W. Bentinck would, in the end, protect the youth, yet his relatives would have recourse to such artifices, and pursue him so pertinaciously with litigation, that he must advise the youth to sell his landed estates before his desire for baptism could be known.

" If the young convert had done this, and for all similarly situated, such a Zemindary as that proposed by Mr. Hill would offer a refuge to which they might flee, with the certainty of obtaining that protection from persecution, and that means of obtaining a livelihood, which, under existing circumstances, are so withheld from them by the bigoted persecution and annoyances of unconverted relatives and neighbours. In such a Zemindary they would be surrounded by those of a kindred spirit.

" Such protection is not the only benefit derivable from a Zemindary so established, for it would be an effective agent; also, in demonstrating that under a just system of management, the jumma (government land-tax) need never be in arrear, and yet the ryot be enabled to become independent and comparatively rich.

" The strengthening which such a demonstration would afford to the hands of our government in India, whilst carrying out the much coveted reform of the Zemindary system, is at once evident.

" M. Lavoisier's farm, which he cultivated upon scientific principles, was an unanswerable replication to those who said chemistry could do nothing for agriculture. ' Come to *my* château—my crops double in their returns those of my neighbours.'

" This was Lavoisier's *argumentum ad hominem*, more efficient than all the world's logic, for ' seeing *is* believing' with the most ignorant, as well as with the most knowing. So, if a Zemindary could be referred to, which never failed in paying its *quota* of taxation, yet in which the ryots were thriving and unoppressed, the equally silencing answer to those who now say, ' Oh! it is the degraded people, not the system, which causes their poverty'—would be a paraphrase of Lavoisier's reply—' Come and look at *our* Zemindary.'

" The curse of India; as already observed, is the poverty of the bulk of the people; for poverty, in a nation whose very religion inculcates vice, is a fearful dictator. But this poverty is a curse in other modes. Thus it renders the ryot the victim of the usurer, to whom he is compelled by it to apply for the very means of cultivating his scanty amount of bigahs.

" It matters not whether the usurer and the Zemindar, as is usually the case, are one person—the effect is the same—or, indeed, worse; for, were they different individuals, the ryot might be protected and benefited by the conflict of their antagonist interests. As it is, ground down by his landlord for rent; ground down for the fifty per cent. usury on the money advanced; ground down by the priests' and the village dues; and ground down by extorted presents when the Zemindar requires to make, for his own pleasure, an extra expenditure; is it a wonder that India's people, who are her ryots, should be such an impoverished, degraded race? Rather, is it a wonder that they are no worse; for the man, so overwhelmed with enforced poverty as barely to have left to him wherewithal to support life, and who is engaged in perpetual recourses to knavery and falsehood to evade to the utmost the harassing extortioners I have enumerated, can have little leisure, little inclination, and no means, whereby he can attain to anything likely to elevate him further above the beasts he goads, and is, in turn, obliged to starve.

" To demonstrate that the exactions under which the ryot suffers are not capable of reprehension only so long as kept indistinct by dealing with them generally, let the following particulars be examined. The ryot's heap of grain (rice, dahl, &c.), usually amounts to about 3000 seers, of which is set apart:—

* In Bengal, a bigah of land is one-third of an acre, but it varies in different parts of India.

† Sircar, a native steward or accountant.

	seers.
For the gods, or rather for the priests	5
For charity to the Brahmins and other mendicants	5
For the astrologer	1
For the hereditary Brahmin of the village	1
For the barber	2
For the potter	2
For the carpenter and blacksmith	2
For the measurer	4
For the washerwoman	2
For the chuprasse (beadle)	7
For the chief of the village	53
For the accountant	200
For the watchman	10
For the conductor of water (irrigator)	20
Total	314

"These deductions leave a residue of 2686 seers, from which government takes first ten per cent., and then half the residue; so that, when all exactions have been satisfied, except those of *the usurer* and the *ad libitum* claims of the Zemindar, the ryot has left for himself rather more than *one-third* of his crop.

"From a large amount of the above enumerated payments, and from all the extortions, a Zemindary, managed as proposed by Mr. Hill, would shelter the ryots. This would rescue them from their usual extreme poverty, and being so saved, they would gradually become as much elevated above the ryots of neighbouring Zemindaries, as are, from very similar causes, the peasantry of England and Scotland, superior to the peasantry of Ireland.

A Zemindary so conducted would be a mean, the most efficient, for effecting the introduction of agricultural improvements. The ryot there would have removed from him that incubus, the certain knowledge that extortion would keep pace with the increased productiveness of his land. At present, if improvement be suggested to the ryot, he invariably replies, 'What for? It matters not whether my bigahs produce ten or one hundred maunds, for no more than three would be left me.'

"Poverty will be perceived, even by those the least informed concerning Indian affairs, to be the immediate cause of the degraded state of the people; but the proximate cause is the gross, long-enduring ignorance, pervading every class of the native community.

"If we inquire why the high-caste natives scorn the pursuit, and despise the practitioners of agriculture? If we inquire why more roads have not been constructed? Why every agricultural practice is imperfectly accomplished? Why every agricultural animal is deficient in essential points? Why the greatest possible amount of labour is wasted? Why the least possible produce is grown on a given space? Why the last possible *pice* is extorted from the ryot?* If answers be sought to these queries, they will be found in one fact—ignorance still densely envelopes the community."

Once more we commend these volumes to our readers—we shall hereafter return to them again.

ON THE ROTATIONS OF CROPS ON HEAVY LANDS.

By William Stace.

(From the Journal of the Royal Agricultural Society of England.)

PRIZE ESSAY.

Having had considerable experience in the cultivation of heavy soils, and having for many years turned my attention particularly to the selection of such crops as are calculated to render heavy soils more friable, by the mechanical action of their roots, and having by that means succeeded in growing such root crops as are usually grown only on lighter soils, I respond to the invitation of the Royal Agricultural Society of England, and proceed to give some account of the rotations of crops which I think best suited for heavy lands, and calculated to bring such lands more nearly on an equality with those of a more friable texture than they at present are in the maintenance of stock.

I am aware that it would be impossible to propose any rotation of crops that would be suited to all heavy soils; nor do I pretend to be able to say what rotation would be best suited to each variety of soils termed heavy; so infinite is that variety in tenacity and quality, that I believe only those who cultivate them are able to determine, in every case, what course of crops is the most profitable to be adopted.

Therefore, although I propose with some confidence a rotation which I believe to be well suited to most heavy soils, yet I readily admit that there are many heavy soils to which it is not suited, and that certain localities, or various circumstances, may render its adoption on some others unadvisable.

As the object in the following rotation is to obtain from heavy soils profitably that which has generally been yielded only by light soils, I have introduced such crops in the rotations as, by the mechanical action of their roots on the soil, have the greatest tendency to ameliorate it and render it more friable: such are tares, winter-beans, and clover.

Another motive to the selection of tares and winter-beans is, that the cultivation proper for them is required at the time of year when the treading of horses is least injurious, and when the turning up the soil and exposing it to the action of the atmosphere is most beneficial, so that the cultivation for them, as well as the crops themselves, tend to the desired effect—that of rendering lighter the soil on which they grow.

The following is the course I propose:—

First year—Winter tares, to be fed off by sheep on the land, followed by turnips and rape; the rape, and also part of the turnips, to be fed off by sheep; the remainder to be carried off and eaten in the yards.

Second year—Wheat.

Third year—Clover, to be cut for hay on one half, and trefoil and rye-grass mixed on the other half, to be fed off by sheep in the spring, and followed by spring tares, also to be fed off by sheep.

Fourth year—Wheat.

Fifth year—Winter-beans.

This ends the course, excepting that in the next course the clover takes the place of the trefoil and rye-grass in the former course, and the trefoil and rye-grass that of the clover, by which arrangement the land bears clover only once in ten years.

By this system every hundred acres of arable land would produce annually forty acres of wheat, twenty acres of beans, thirty acres of tares, twenty acres of turnips, ten acres of clover, to be mown twice, and ten acres of trefoil and rye-grass, to be fed a few weeks in the spring.

In order to point out the fitness of the above rotation for the object intended, it will be necessary to enter into some particulars respecting the cultivation best suited for some of the crops.

* *Pice*, a small copper coin, the one sixty-fourth part of a rupee, or somewhat more than a farthing.

Preparation for the winter tare-crop should commence before the beans are carried from the field. My practice is to cut them and bind them in sheaves at the end of July (for *winter* beans will ripen thus early); I then clear a space wide enough for the ploughs to begin, and place the beans on the ploughed land as the ploughs proceed, and then by arranging them in straight rows across the field, the land may be harrowed and rolled before the beans are ready to be carried, and another ploughing may be given immediately after, followed by the necessary harrowings and rollings. The field should then be manured with rough unfermented dung: the less the manure is decomposed when applied for this crop, the lighter and drier will the land be in the spring, after the tares are fed off, and the greater will be its effect on the following turnip crop. The tares should be sown for successional crops from the first week in September to the end of October: a small portion of those sown first should have a litle rye mixed with the tares—about one bushel of rye and two bushels of tares per acre would be sufficient: this would be ready for the sheep to begin early in the spring, and should be followed by wheat and tares in the same proportions. A larger quantity of this may be sown then of the rye and tares, as the wheat continues longer in perfection, as food for sheep when mixed with tares than with rye; and I have found it prove a very wholesome and abundant crop—one acre frequently producing sufficient food for two hundred sheep for a week, in the month of May. The winter tares should then be sown in the following order:

In the first week of September a small portion should be sown with rye and tares, and a larger portion with wheat and tares.

At the end of September one-third of the remainder should be sown with two-and-a-half bushels of tares per acre.

In the middle of October another third should be sown with the same quantity per acre; and

The last sowing should be finished at the end of October, with three bushels per acre.

When I begin to feed tares in the spring I keep the sheep entirely upon them; the fold is moved twice in the day, and the tares are cut and put in moveable cribs. As fast as the land is cleared of tares it should, with the greatest expedition that the weather will admit of, be prepared for turnips; for even under the favourable circumstances of the previous cultivation and manure, heavy land cannot be well worked in the spring unless it be sufficiently dry; and from my own experience I have found that heavy land will become earlier dry, and more friable, after bearing a crop of tares than after a winter fallow.

The first turnips that are sown (at the end of May) should be an early sort, to be fed on land before the rape is ready; then all the land that can be prepared before the middle of June should be sown with Swede turnips, to be carried off for winter food in the yards; then all that can be prepared by the end of June should be sown with some sort better suited for late sowing—these may either be fed on the land or carted off; the remainder of the tare-ground should be sown with rape, to be fed on the land in autumn, after the early turnips. As the turnips and rape are cleared from the field, wheat should be immediately sown, and on one half the wheat, clover should be sown in the spring. The common objection to sowing clover in wheat does not apply when wheat is sown after turnips, as the wheat is not likely to be laid by an over luxuriance of straw, though I have always found it a good yielding crop. The other half should be sown with trefoil and rye-grass; and although it may appear that this crop is sacrificed by being ploughed up early in the following spring, to make room for the more valuable one of spring tares, yet it will be found to produce a good quantity of food in the stubble after harvest, and very nutritious and wholesome food for sheep early in th spring. As soon as the land is sufficiently dry in the spring, a small portion of tares should be sown, and the rest in succession till the beginning of May. In feeding these tares off with sheep the land will be manured for the following wheat crop; and the clover ley may be manured by folding sheep on it at night, whilst they are eating the turnips and rape, as the land on which they grow has been sufficiently manured before. Wheat follows; and after that the land should be ploughed and the winter-beans drilled in, in October, at the rate of two and-a-half bushels per acre. The rows should be sufficiently far apart to admit the horse-hoe, and the beans should be kept as clean as possible. The winter-beans coming early to harvest are generally carried before the haulm is much injured by the weather, consequently sheep will eat it (*i. e.* the haulm) with avidity, if given to them in a yard at some part of the day whilst feeding off turnips and rape: this I have practised for some years, and found it particularly wholesome for sheep.

I must be allowed to repeat, that in this rotation such crops have been excluded as require the land to be ploughed early in the spring, when it is most injured by the treading of cattle, such as oats and spring beans; and such are introduced as are least exhausting to the soil and best calculated to render it more friable, such as tares, clover, and beans; and my own experience assures me that by it is afforded such an abundance of food for cattle as will insure an ample supply of manure to keep up, or rather increase the fertility of the soil.

Berwick, near Lewes, Sussex.

TO THE FARMERS OF SUFFOLK.

LETTER XIV.

GENTLEMEN,—I am indebted to Mr. R. Rand, of Hadleigh, for the following account of an experiment tried by him last year, in consequence of a remark I had made at a meeting of the Hadleigh Club, and which (if the truth must be told) you may find in Letter 6. Three separate portions, each 7 yards long and one wide (that is, seven square yards), of mangel wurtzel were selected, where the plants on the ridges appeared to run as nearly alike as possible. Four or five of the under leaves were stripped, upon three separate occasions, from the plants on one of them (A), viz., on July 8, August 6, and first week in September; from another of them (B) on two occasions, viz., August 6, and first week in September; and none were stripped from the third ridge (C). The roots were carefully cleaned and weighed, and the produce was as follows:—

	lbs.	tons	cwt.	qrs.	lbs.	
From A	47½ net weight, or	14	13	0	27	per acre.
B	52.....	16	1	0	2	
C	61.....	18	16	2	9	

So far this experiment speaks for itself, and I dare say its language is sufficiently intelligible not to need an interpreter. Now I do not even yet presume to allow science to boast herself over practice from the result of this single experiment; for I do not know to what extent the practice alluded to any where prevails. I merely produce the experiment in illustration of what I have been saying of the function of the leaf, and in contradiction to the very commonly admitted notion that the root directly nourishes the leaf, and not the leaf the root. If each member of the jury whom I have invited to test the utility of pulling leaves off mangel will only consent to play the part of executioner, and, after torturing a certain number of plants, will be so good as to favour me with the result in the form of comparative experiments, more or less like those of Mr. Rand, I shall be happy to report upon them, and state to what extent you may possibly expect to increase your produce by the practice, or to what extent you may perhaps be able to succeed in diminishing it. It was not an unfrequent practice in the unhappy days of the feudal ages (may their like never return!) for our bold Barons to put unlucky Jews to torture whenever they could catch hold of them, and could not prevail upon them by fairer means to produce a certain amount of cash from their pockets; and so, perhaps, we shall find that some non-baronial experimenter of these our own days, of somewhat advanced and advancing intelligence, may discover a harmless mode of torturing a mangel, so as to force it to yield more nourishment by foul treatment than it may be disposed to do by fair means. But I will not be so unphilosophical as to anticipate the result of our projected experiment. If the experiments detailed in Letters 12 and 13 have any way tended to convince you that the leaf really does prepare all the nutriment upon which root, and branch, and every other part of a plant depends, I fancy you will never see a leaf in future without thinking it ought to remain upon the stem as long as it is alive. As plants are without leaves during the winter, they receive no fresh food during that time; but are content with what has already been stored up for them in their stems and roots, to support the feeble action which is going on during that period of torpidity. Thus, also, when bears take up their winter sleep they are well lined with fat, which gradually wastes in supporting the vital functions; but they do not trust to licking their paws (as some suppose) for nourishment to keep them alive. It would occupy me too long to dwell upon the various inferences which may be drawn in a practical point of view from the establishment of a correct principle like the one I have called the "function of organization." The very commonest occupations of the garden and the field—watering, pruning, transplanting, &c. &c. ought all to be considered with reference to this important function, in order that a correct judgment may be obtained on the best modes of carrying on these operations. I will, however, just venture one or two remarks, by way of suggestion, on points of practical interest. Since the amount of exhalation depends upon the supply of water introduced at *the root*, it seems to be a plain deduction of common sense (until some stout practitioner shall produce his strong reasons for refuting it) that all who water their plants should apply the water immediately to the root, and in good doses—and not to the herbage, and in small sprinklings only: unless where it is necessary to clean the leaves. It is true, indeed, that the whole tissue of plants is capable of imbibing moisture, and so the leaves will be refreshed and look well satisfied immediately after they have been wetted, though the root itself may not have been watered; but this only produces an undue stimulus, inviting them to an activity which, unless it can be sustained by a sufficient supply in the right direction, will soon cause the leaf to become exhausted, wither, and die. A similar effect is produced when a botanist brings home the plants he has obtained in his rambles, in that peculiar description of tin box which he dignifies with the classic name of a Vasculum, and then straps it across his shoulders to the admiring ridicule of country gazers. If his plants were quite dry when gathered, even though they seem to be half faded on being taken out of the vasculum, they may readily be revived on being placed in water; but if they were gathered in the wet, or were wetted in the box, however fresh they may look when first taken out, they will soon fade afterwards. Light being the great stimulus to these vital functions, this sufficiently accounts for (what every one is well aware of) the propriety of temporarily shading plants when their roots have been weakened by transplanting; because they cannot then imbibe the moisture with sufficient rapidity to supply the requisite discharge at the leaves. In this insular climate of our high latitudes the direct light of the sun is seldom likely to be an unwelcome visitant upon the leaves of our ripening crops, and therefore the shadows of all trees planted in the hedges towards the south of fields, must always be saying stop—not so fast—to any very rapid elaboration of the "proper juices" of those plants upon which they may chance to fall. The tree will most probably have been closely trimmed to the very topmost branches, in the most approved fashion of ugliness; but whilst it has any head left its shadow must still fall somewhere, and there it will cause a certain amount of relaxation in the manufacture of "proper juice," which it will be most improper to sanction unless it cannot be disallowed without producing some greater inconvenience. This remark may be considered trifling, and possibly it may be unnecessary; but I would ask whether the actual amount of the bad effects thus produced has ever been estimated by direct experiment? The greater rapidity with which corn ripens after flowering in still higher latitudes than our own is owing to its longer daily exposure to the light of the sun in regions where, at midsummer, it hardly dips at all below the horizon. After the "proper juice" has been prepared and carried into the system, a variety of chemical changes take place, according to the nature of the plants; and in some crops it is of the utmost importance to the success of their culture that these changes should be closely watched, lest the time should pass by when it was of most consequence they should be gathered. This is well known to those who in France cultivate beet for the manufacture of sugar: are our own cultivators of mangel wurtzel equally well acquainted with any facts that may teach them when it may be most to their interest to pull up these plants, which are only a variety of beet? As the leaves can only prepare a certain amount of nourishment for all parts of the plant, if we are desirous of supplying one part with it rather than another, it may then be advisable to remove the part which we have no desire to cherish. Thus we may pull off the tubers from potato plants,

where it is considered more desirable that the flowers and fruit should be left for ornament; or we may pull off the flowers as soon as they are about to expand, if we should happen to think it most advisable to give the tubers a good blow-out of "proper juice," for the sake of afterwards robbing them of their stores for our own particular eating. But I shall not pursue further the practical inferences which may be deduced from the firm establishment of correct principles—that is rather your province than mine—and possibly some of my attempts might excite a smile at my own expence. I must try, before next letter, whether I cannot muster up courage sufficient to take a somewhat bolder step than I have hitherto done, and speak out a little plainly to other parties as well as to yourselves. If we are ever to have a general scheme for experimental co-operation, properly organized through all England, this can only be effected by the more influential parties attached to the agricultural interests lending the farmers a helping hand—not so much as regards expence (for there need be little or no expence incurred by most of you), but in respect of example, advice, and counsel. Hosts of advisable experiments are importunately thrusting themselves forwards for trial; and many of them (I doubt not) only need a little cross-questioning previously to their being engaged by one or other of you on advantageous terms, and in the capacity of faithful and trustworthy land-agents. Your obedient servant,

J. S. Henslow.

Hitcham Rectory, April 5, 1843.

Letter XV.

Gentlemen,—For the sake of uniformity I address myself to you, though I intend to direct my observations in this last letter mainly to our country gentry, and to our rural clergy. This intention has been awakened by a remark of the editor of the "Gardener's Chronicle," in his comments on some of my letters to you. "There is not (he says) that universal stir among the agriculturists which their political position, and the imminency of their danger, loudly call for; and for hundreds who are helping themselves, there are thousands who trust to others for assistance. We are not, however, among those who blame them; on the contrary, their bad education disarms the critic, and we are convinced that if they do not move, it is rather because they do not know how, than because they are unwilling. We would, therefore, represent *to country gentlemen, to the rural clergy*, and to the people of good education throughout the country, that they should all bestir themselves, each in his own circle, in order to induce the farmers to try whether they cannot better their condition by bettering their husbandry, rather than by waiting helplessly upon Parliament. We are convinced that if this were generally done, an immense deal of good would result." From all political allusions I have scrupulously abstained. I have only been considering the possibility of *improving* agriculture by the adoption of an improved system of *experimenting*. To this question I continue to restrict myself, and proceed without further preface to appeal to the two classes named above.

To the Country Gentry.

I feel the full responsibility of appealing to persons so much better qualified than myself to form a correct estimate of what is most desirable for the interests of agriculture; and who (I know) are perfectly aware of the importance of uniting science with practice. Still, I claim for scientific men the right of declaring what may be the steps which they consider best for speedily attaining so desirable an object. Now, I need only refer you to several of those reports which have been written by our most eminent men of science, for the British Association, for decided expressions of regret at the scanty distribution of *strictly scientific* information throughout England, compared with its wider spread in foreign countries. Popular notions of science are prevalent enough; but these cannot convey sufficiently accurate ideas of the precise description of evidence which is needful for the further *advance* of science. If I mistake not, such popular notions often throw sad obstacles in the way of immediate advances, by directing well meant efforts to purposes of little or no value; or they lead to the suggesting of heavy schemes, and the planning of expensive machinery, for effecting what might be more readily and rapidly accomplished by easier and less costly contrivances. I should be parading the notion of a general system of experimental co-operation with oppressive officiousness, if I found myself standing alone in such a suggestion. I have already quoted the opinions of De Candolle, Liebig, Lindley, Johnson, Sir H. Davy, and Sir J. Herschell, all tending to show the immense importance to be derived from an extensive co-operation between experimenters, when they would wish to accumulate facts for the purpose of building up any science like the one you are desirous of seeing established for agriculture. The last named excellent and judicious adviser has promulgated a few maxims which may be adopted by all persons who would attempt the planning of any such scheme. "In short (he says) there is no branch of science whatever in which, at least if useful and sensible queries were distinctly proposed, an immense mass of valuable information might not be collected from those who, in their various lines of life, at home or abroad, stationary or in travel, would gladly avail themselves of opportunities of being useful. Nothing would tend better to attain this end than the *circulation of printed skeleton forms*, on various subjects, which should be so formed as, 1st, to ask distinct and pertinent questions; 2ndly, to call for exact *numerical* statements on all principal points; 3rdly, to point out the attendant circumstances most likely to prove influential, and which ought to be observed; 4thly, to call for their transmission *to a common centre*."

There is also an important advantage to be expected from a scheme of extensive experimental co-operation, beyond the actual discovery of sound agricultural principles—viz., the certainty of its raising the general intelligence of our agricultural population. Simple as the experiments may be which the farmers will be called upon to try, they will all inevitably serve to promote *discussion* wherever they are attempted. I am told that our gypsum experiment has been a universal topic at the market tables in this district; and an intelligent farmer, whom I happened to ask whether he considered his neighbours were really likely to turn their thoughts to speculations of these kind of enquiries, replied to me, "Well, sir, I never saw them so much in earnest before." This, depend upon it, would soon be the case everywhere, if a little trouble were taken to prepare schedules

on the plan recommended by Sir J. Herschell. Of course, there are certain persons—mere lumps of apathy—who have not more than the two ideas in their heads of sowing and selling; but we have no more right to judge farmers from these samples than to condemn any particular class of men because there are certain persons unworthy of the position they occupy in it. We might as well stigmatise our clergy as hypocrites, our nobility as blackguards, our military and navy as bullies, our physicians as quacks, our lawyers as cheats, and our *sçavans* as fools. It is a bad spirit which harps on partial evil only to condemn the general good. It is very unfair to censure a whole class, or even any large portion of a class, from looking at the least worthy or efficient members of it. There is plenty of intellect, plenty of intelligence among our farmers; but it is (as Dr. Lindley has well observed above) their bad education only which disqualifies them for helping themselves. May I then earnestly invite you to take a little trouble in setting them on the right road, and in encouraging them how to proceed along it. If you will do this, I suspect that men of science will be likely to run some risk of being overwhelmed with schedules, and smothered, like Tarpeia, beneath the weight of the presents they have called for. I feel convinced of this from the applications I have received from various distant quarters for copies of Schedule A., of which I have not only now dispersed all that were printed, but have been asked for several more. In the name of the excellent authors to whom I have referred, I venture to call upon you to think about, and to act upon, some scheme for extensive experimental co-operation. At present your more enterprising tenants are wasting their strength like ill-disciplined troops in a desultory warfare. A little drilling will soon convert them into regular campaigners; and then, if you will only cheer them on, their advance upon ignorance will be as steady, and their success as certain, as when our brave fellows, in the day of danger and duty, pour their deadly fire into the ranks of a stubborn foe.

To the Rural Clergy.

I may appeal to my brother clergy a little more confidently than to any other class, because with them I am upon ground which we can firmly tread. Many of you, indeed, are yourselves occupiers, and so far you are personally interested in the improvement of agriculture. But now that we are most of us only pensioners on the land, and no longer tithe-owners, we have surely an increased stimulus for exerting ourselves in any way which may seem to promise advantages to the landed interest. We cannot now be personally profited, as heretofore, by any agricultural improvements, so far as they may tend to increase produce, and thereby evidently tend also to keep down prices—which must act disadvantageously upon *our* incomes, whilst landlord and tenant are profiting by these advances. We may now, then, fairly hope that every little assistance we shall chance to have it in our power to give the farmer, in these experimental researches, will be viewed by him as a disinterested act. Among much that is excellent, generous, and confiding, in the characters of British farmers, it must be allowed that there are some serious exceptions of case-hardened selfishness to be met with, which appear to be perfectly incapable of comprehending the possibility of our being influenced by any other than secret motives of self-interest in whatever we undertake. Under our new relationship with the occupier, and now that we are no longer so closely linked with him in his daily anxieties, I trust that even the most sceptical of our good motives will allow us to serve our generation in these worldly matters without risk of reproach, and without suspecting that we cannot possibly be desiring the welfare of our neighbour independently of our own personal advantage.

Your obedient servant,

J. S. Henslow.

Hitcham Rectory, April 20, 1843.

RUGELY FARMER'S CLUB.

ON THE SELECTION OF SEED WHEAT, AND THE BEST METHOD OF PRESERVING IT, BY MR. JAS. WYLEY.

The subject for discussion this evening is perhaps one of the most important set down for our consideration during the year, and I regret that it is not proposed by some member who has had more experience than myself.

I will first offer a few remarks on the selection of seed wheat,; and secondly, on the different ways of preparing it. Linnæus comprehended six different species of wheat, but botanists of the present day enumerate about thirty different species, and these again are divided into several hundred varieties; this, I am of opinion, is occasioned by a change from light land to strong, or a change from a warm to a colder climate.

I have seen two instances of white wheat degenerating when sown on strong land, and the grain becoming nearly red (though it retained the same form), after it had been grown for only two years in succession on strong land; the original seed was grown on a fine light soil, and was a very pure sample. These instances in part prove that some of the new varieties are produced from a change in their cultivation—but I am not confining myself to the subject, in making these remarks.

I will name first the best quality of strong land: on this land it is of little consequence what variety of wheat is cultivated. The person who is so fortunate as to have a farm of this kind will be best able to judge what variety of wheat will be likely to yield the best return. On the fine deep soils in Worcestershire, a kind of cone wheat is generally grown, and I have seen very heavy crops of it; but I do not expect it would be equally productive on poorer soils; and if the harvest is wet, it will take damage sooner than many of the other varieties.

For the strong clay soils, I decidedly prefer the old red Lammas to any other variety of wheat; I think it hardier, and not so liable to lose plant in the winter as the white wheat. I have often known white wheat perished in the land before the grain had germinated. If the autumn is wet, white wheat is so very uncertain that I never sow it, and cannot recommend it for this kind of land. The golden drop is a variety of wheat frequently grown on strong land, and may in some seasons produce a greater yield per acre than the red Lammas; but it is usually sold at a less price per bushel than red Lammas, and, taking the average of seasons, I am of opinion that red Lammas

wheat will yield a better return than any other that can be cultivated on strong clay land.

For light land, I prefer the different varieties of white wheat; on these soils they are equally, if not more productive than red. We all know that white wheat is more saleable than red, and usually obtains a better price when brought to market. The variety that I have cultivated for some years on light land, is a white-chaffed wheat with mixed red and white grains. It is a wheat that grows longer in the straw than most of the white wheats, and it is also a very productive and an early variety.

The best variety of wheat for sowing in the spring is the white Talavera. I have heard it asserted that it is not a good yielding wheat. Two years ago I planted a field with it on the 16th of March, and on the 20th September it was harvested. The yield from this field was forty-four imperial bushels per acre; and though I do not expect ever to grow so large a produce of this variety again, I have always had as many bushels per acre in other years as I anticipated.

I can offer with confidence this advice on selecting seed wheat:—Always sow the finest, driest, and clearest samples you can procure, and do not spoil your crops for the sake of saving one or two shillings difference in price per bushel between good and inferior seed. The saving is very trifling; the loss from disease in a crop of wheat is serious, and bears no comparison to the small saving of a few shillings from sowing inferior seed. It is very desirable to change seed wheat frequently, but we should always try to obtain a change from land that is earlier than our own. There are some very good remarks on seed wheat, by Professor Henslow, in the "Quarterly Journal of the Royal Agricultural Society of England," vol. 2, part 1; and on wheat, in "Johnson's Encyclopædia," there is much very interesting information, but the articles are too long to insert in this paper.

ON THE BEST METHOD OF PREPARING SEED WHEAT.

The article to which I have referred in the "Journal of the Royal Agricultural Society of England," treats on the precaution to be taken against smut from preparing seed wheat. The author says, though much may be done by carefully steeping seed wheat, yet the most sanguine must never expect entirely to exterminate the smut fungi.

Tull tells us that the practice of preparing seed wheat was first discovered by accident. In his "Husbandry," page 66, he says—"Brining of wheat to prevent or cure smuttiness was first discovered about seventy years since, in the following manner:—A ship-load of wheat was sunk near Bristol in the autumn, and afterwards, at the ebb-tide, all taken up, after it had been soaked in sea-water, but being unfit for the making of bread, a farmer sowed some of it in a field; and when it was found to grow very well, the cargo was all sold at a low price for seed to many farmers, and sown in different places. At the following harvest all the wheat in that part of England was smutty, except the produce of this brined seed, and this was all clear from smuttiness."

There are few things on a farm that require more attention from the master than taking care to see his wheat properly prepared before using. I am always with my men to see that they do this work effectually.

The system I have pursued for some years has been first to sprinkle the seed with old or fermented urine until every grain is wet, and turn it over several times. I then let it lay for ten minutes, and then put sufficient quick lime over it to absorb the urine, and keep turning the wheat during the time the lime is being added; when the moisture is dried it will be fit for sowing. I believe this is as good a preparation as can be, having used it and not had any smut in my wheat for years.

It is very requisite with this preparation, to be careful and not allow the seed to lay in a thick heap; the urine has a tendency to heating, and if the seed lays for only two hours in a heap, the urine will destroy the vegetating powers of the grain. I always prepare my seed twice each day, if possible; and never fill the bags full, and have them untied in the field to prevent the seed from heating. I have once or twice used brine instead of urine, made of sufficient strength to swim an egg. It may perhaps be as likely to prevent disease as urine, but I have a strong objection to it. If the day is damp when using it, it is very difficult to get it quite dry. It hangs to the cups of the drill, and does not separate, causing the wheat to come up in little bunches, instead of evenly in the drill rows. I have never tried any chemical preparation, and as long as I can grow wheat free from smut with urine and lime, I see no inducement to try experiments that may, even with the greatest care, destroy the germinating properties of the seed.

Mr. Clarke Hilyard, speaking of preparing seed wheat, says he has always used brine and lime, and never had any smut. He then states that he is surprised that, when farmers have so safe a preparation, they ever use anything so dangerous to the seed as arsenic. Sir John Sinclair, in one of his works, notices kiln-drying wheat as a preventive of disease often adopted in Scotland, but it requires to be done very carefully, or vegetation is at once destroyed.

I shall be pleased if any gentleman can recommend to the meeting a better selection of seed wheat, or plan of preparing it, than I have in the observations I have made this evening.

ON THE BEST METHOD OF MAKING SUMMER FALLOWS, BY MR. JOSEPH DICKEN.

In consequence of the absence of two members of the club, I have been most unexpectedly called upon to bring forward a subject for this day's discussion. The one to which my name is attached is on the best method of making summer fallows.

According to the printed card this was to have been considered at the meeting in June; consequently I had not yet turned my attention to it. This I very much regret, being conscious that my best efforts would have been inadequate to the occasion. As this, however, does not arise from careless neglect or disrespectful feeling towards the club, I throw myself upon your indulgence, hoping that the inefficiency of my own remarks may cause the present meeting to be what it ought to be in reality—one for discussion rather than for listening to the studied sentiments of an individual.

The subject in hand is one of great importance to the farmer. Firstly, I propose considering the

advantages to be derived from summer fallowing; secondly, the best method of making it; thirdly, the expense; fourthly, the abuses to which the system is liable.

It appears to me, that if summer fallows were to be now introduced as a new system of fertilizing the earth, and preparing it for the reception of seed for a succeeding crop, it would be rejected on account of its great expense, and also on account of the length of time which must necessarily elapse before it is possible to obtain a return. By long usage, however, farmers have become so habituated to the plan, that they bear both the expense and the delay with patience, frequently, I am convinced, without considering whether the same results might not be obtained at far less expense, and with more advantageous results. It cannot be doubted, however, that an occasional fallow is absolutely requisite for strong lands. In very ancient days it was thought that fertility could only be restored to worn-out lands, like strength to fatigued horses, by means of rest, without either knowing or considering that soil is, if I may be allowed so to express myself, the stomach of plants, into which food is to be received in the same way in which food is received and digested by animals, in order to promote their growth and enable them to perform their various functions of life.

1. Let us consider the advantages which may be obtained by summer fallowing. It must be observed that this system can only be admitted on soils of a clayey or strong nature; these must sometimes be unavoidably worked in a wet state. Hence, in a moist climate they become hard and stubborn, impervious to the sun and air, as well as to the roots of plants, and thus lose their fertility, and require repeated exposure to the atmosphere before these defects can be corrected. By a complete summer fallow the earth is again rendered tender and mellow, and a tilth is given superior to what can be obtained by a fallow crop. The grand object with the farmer is to keep his land in good heart and clear of weeds, and on strong soil which has become foul, either from a long-continued or from an improper course of tillage, this can only be effected by a summer fallow. Fallowing is also found to contribute essentially to the destruction of snails and other vermin in the ground. It converts the roots and other vegetable remains into soluble matter, as food for succeeding crops; it affords an opportunity for removing all obstructions to perfect tillage, and for throwing the land into butts best suited to its various peculiarities. During the process of fallowing, lime and other manures may be most profitably applied and mixed with the soil. A well conducted fallow is more favourable to the early sowing of wheat, upon which crop the occupier of strong land must chiefly depend; and on clay soils it is impracticable to sow wheat extensively, unless a considerable quantity of the land has been prepared during the summer months. It is also the best means upon which the clay land farmer can depend for a good crop of clover or grasses.

2. Our second point is the best means of working the summer fallow. This must commence by ploughing the land to the full depth as early as possible in autumn, taking care to trench it well immediately afterwards for the water to pass freely off; then to reverse that ploughing as soon as possible after spring sowings are over; then to make diligent use of the scuffle and ox-harrow; and cross plough once at a moderate depth, with repeated applications of the harrow and scuffle, as circumstances may direct. If the weather be fine, the land will, I think, by these operations be freed from weeds. The dung should then be applied, and covered immediately by single ploughs working to the full depth. After this no more working should be allowed—the land should rest awhile, in order to promote the growth of seeds, and to allow of its becoming moderately firm. It must afterwards be drawn up into butts; the width of these should depend on various circumstances; but if it be intended to use the drill, it is very important to have them of such a size as that the drill may cover the whole, the horses moving only in the furrows. If lime be applied, I think it ought to be spread on after the last cross-ploughing, in order that it may be intimately mixed, but not deeply buried in the soil. It must always be remembered that strong land fallows can be only advantageously worked when dry.

3. The expense. On this point I cannot enter minutely; but it will consist in two whole years' rent, tithes and payments, labour, seed, wear and tear, and interest of capital; these, if fairly calculated, will generally prove a fallow crop to be not very profitable.

4. The abuses of the fallowing system appear to me to consist in subjecting land to that operation more frequently than is really requisite; and in applying the system to a great breadth of land, it ought not to be submitted to it at all; and I have frequently observed those farms to be in the foulest and worst condition where fallowing is practised systematically to a large extent. It begets a spirit of neglect and slovenliness in hoeing and otherwise cleaning land, the farmer comforting himself with the recollection that the fallow year is at hand, and that then all things may be put straight.

I had forgotten one great item of expense, not only to the pocket, but to the farm at large—I mean as to manure, for it is evident that the fallow takes all and yields none.

I think it behoves every one to consider well by what means he may avoid or lessen this most ruinously expensive system. These are—1st, efficient under-draining; 2nd, avoiding as far as possible all spring ploughings; 3rd, drilling and hoeing his crops; and 4th, adopting the best rotation of crops, of which the nature of his farm and various circumstances will admit.

WHAT IS THE BEST ROTATION OF CROPS FOR THE LIGHT SOILS OF THIS DISTRICT, BY MR. W. T. SMITH.

"What is the best rotation of crops for the light soils in this district?" I doubt not appears to many a very simple question, and most easily to be disposed of; and if it could be considered satisfactorily answered by a plain statement of the practice too generally adopted in this neighbourhood, I should be detaining you most unprofitably in requesting your attention to the few remarks and observations I shall address to you on the present occasion. I crave that indulgence which you have never denied me, in my feeble endeavours to perform the task assigned to me; and in confessing my inability to treat the subject according to your expectations, I am not too proud to regret that some member far more experienced than my-

self should not have been selected, who could have proved every word of his theory by the evidence of his practice. My disadvantages are twofold—bodily infirmity, which you will compassionate, is the one; my ignorance of chemistry, which you will judge charitably of, is the other. And here let me remind you, that without the powerful and incessant aid of chemistry, we can do little in producing the fruits of the earth. God has been exceedingly bountiful to man—has given him all good things richly to enjoy; but with the gift a duty is imposed—that he shall call into active exertion his best faculties in increasing the fertility of the soil he cultivates. Those exertions will never fail in receiving their reward, if executed by a firm hand directed by a scientific head. Each successive trial will convince us of our own ignonance, and that there is no end to God's goodness. This increased fertility is mainly to be obtained by the liberal but proper use of manure—a term perhaps not the most pleasant to a fastidious and high-toned ear; but it is the true English of agriculture. It is the parent of rent, the provider of taxes; it is the rock whence springs the farmer's comfort, and the happiness and worldly advancement of his family: and are we not bound to confess that no branch of husbandry is less understood by the generality of farmers; that no article of his stock is more neglected than that on which his everything depends. The waste of this valuable article is indeed inconceivably great, for not only do most of us allow each gas and vapour to escape, but many others fill the ditches below their yards with the very essence of manure. I am not, perhaps, strictly confining myself to the subject for this day's consideration in venturing these remarks; but without manure no land can be farmed; the importance, therefore, of its preservation must excuse the trespass.

In offering you my opinions and observations on the subject assigned to me, it will be my most scrupulous endeavour to avoid giving utterance to any remark that may be personally offensive to any member; my wish is simply to narrate to you what little lesson I have learned, and that unadorned with the insinuating garb of flowery language, unattended by any vain attempt at eloquence; nor will you justly charge me with egotism, if in endeavouring to prove a theory I produce my own practice. It is confessedly the wish and expectation of all men connected with agriculture sooner or later to farm a plot of land for himself. Here most frequently arises a lasting evil; for unless the individual can command a sufficient capital to warrant a reasonable hope for the success of his undertaking, he is about to commit a threefold injury—first, to himself, by the consequences of being "under the weather;" secondly, to his landlord, by exhausting the soil, and that, too, without the excuse even of self-enhancement; and thirdly, by leaving a legacy of poison to the succeeding tenant which poison is charged with a most extravagant duty; for not only has he to do what his predecessor left undone, but his own work into the bargain. Two or three dog-horses and a short supply of old-fashioned worn-out implements, do not comprise a sufficient stock even for a light land farm. Everything, to be profitable, must be good of its kind; and when I tell you that I find the sum of 2391*l.* 3s. 1d. on the debit side of my farming ledger for the year ending last Lady-day, you will agree with me that a small light land farm, of less than two hundred acres, employs a considerable capital. In dilating upon the rotation of crops, you will bear in mind that I consider the broadcast system as exploded; that seed is never committed to the soil in a foul or unfit state to receive it; that one horse never pulls its follower along, excepting in a cart; and that the strictest attention be paid to the saving of manual labour.

I am fully convinced that a much greater breadth of oats and barley is sown in this neighbourhood than is profitable to the grower. Wheat should be the crop to be debited with all our liabilities; consequently it must be credited with every advantage. I never grow what is called loose or spring corn, but under extraordinary circumstances—as, for instance, if, after having grazed a clover ley for two years, and folded my sheep thereon with turnips during the winter, such land will be in sufficient condition to produce a crop of peas prior to the wheat. Peas exhaust the soil but little, and every animal on the farm will improve upon them; and the feeding sheep and lambing ewes will prefer the cut haulm to your best hay. Oats are great exhausters, and should never be sown on light land excepting on breaking up old turf; but I am continually told, in opposition to this doctrine, "I must have some oat-straw for the young stock in winter." My reply to this is, the starving system is abolished; experience has proved that there is no profit in allowing stock to thrive in its natural elements in summer, and keeping it just alive during a severe winter. Stock, to be profitable, must hourly be growing, and your farm-yard manure should consist of something better than straw saturated with a winter's rain and snow. Sow more clover and turnips, which two articles will enhance the value of your stock and manure-heap far beyond the capabilities of poor straw, besides which a crop of wheat will profitably occupy the field that oats were intended to beggar.

I will now briefly state the rotation of crops I recommend, and then narrate to you what practice has assured me is the best mode of producing each. I would adopt what is generally called the four-course system, but sowing Talavera wheat in lieu of barley; thus—wheat, turnips, Talavera wheat, and seeds; or if the seeds be treated as I before mentioned, a crop of peas may be taken off the clover ley before the wheat. Many will be inclined to say this is severe work, and something like wheat every second year. Where is the evil, if the land remain in good heart? If I work a horse more laboriously than my neighbour, but he still appears healthy, performs his work with ease, and improves in his condition, can the owner be blamed?

Let me assure you that I have adopted the practice I now recommend on the same field for six years; and I will challenge any individual who now hears me, with a rump and dozen, that I have on this the sixth year nearer thirty-five than thirty bushels of wheat to the statute acre. Its last produce was forty-one and a half bushels, but we all know that this season the plant was universally too thin on the ground. Every crop during the term has been an abundant one, and the produce is to me a satisfactory proof that the land is neither impoverished nor out of condition. This part of my subject leads me to make an observation on that all-important mystery—the food of plants, or manure, as it is only by keeping the land in high condition, or full of vegetable life,

that good or remunerating crops can be produced. Land that has been accustomed to one course of tillage, with an occasional and inadequate manuring becomes languid, torpid, and what is generally termed clover-sick, and the seedsman is not unfrequently blamed for selling doctored seed, whereas the fault is with the buyer, not the seller.

Soil, to be fit for profitable cultivation, must be free from any mineral ingredients opposed to fertility, but must contain all the mineral matters found in the ashes of plants destined to be cultivated upon it in such a condition as to be available by the plants, and in sufficient quantity to enable the supply to be kept up by some economical mode of cultivation.

It is our ignorance of the science of agriculture —the total absence of chemical information requisite for discovering the substances of which our crops are composed—that allows us not unfrequently to commit the grossest errors in attempting trials or experiments opposed to the laws of nature. For example—if a plant fail on a sandy soil we try it upon clay, and finding it to succeed, then we at once feel satisfied that the latter is the soil intended for its sustenance ; but our neighbour sows the same seed upon clay, and obtains so poor a return that he determines to try it on sand, and obtains a good crop, therefore he is assured that sand is the proper soil for the plant, and to sow it upon strong clay would be waste both of seed and manure. Now chemical analysis would have proved in this instance that the clay of the one and the sand of the other contained a good supply of some peculiar compound existing in the ashes of the plant in question ; and consequently the knowledge of this fact would have prevented both failures, and would have enabled each experimentalist to determine the true cause of success, without leading them to contrary conclusions.

It is impossible to define any particular line of culture for land in general, as all our labour, energies, and expense, depend upon the chemical composition of the soil—as the more highly and nutritiously a plant is fed, the more vigorous and productive will be its return. When we have determined what seed to sow, our next object is to ascertain its composition, and that of the soil intended to sustain the crop, as that manure is best which assimilates in the greatest degree to the plant intended to be raised. There are no bones in Swede turnips, but Swede turnips contain in large proportions hydrogen, nitrogen, and carbon, each of which will be found abundantly in bones. I am here enabled to afford a simple and homely illustration of this fact. In a twelve acre field of Talavera wheat last year, a portion of it containing about three acres was completely covered, and, but for most expensive and repeated weeding, would have been destroyed by wild mustard or a plant known in this locality by the name of "yellows" ; its previous crop was turnips, and not a yellow flower to be seen. Where then, some may enquire, could they come from ? The answer is not difficult ; the seeds may have been buried in the earth for many years, awaiting only for the application of some chemical ingredient, which I innocently afforded them in manure intended for a better purpose. Nothing is grateful to plants, or of any benefit as manure, that is insoluble ; humus or earth by itself, or deprived of chemical ingredients, is insoluble, and can yield no food to plants. The mode of culture employed for the production of fine pliable straw for the manufacture of hats and bonnets, is the very opposite to that to be adopted in order to produce a crop of corn from the same plant ; poverty suits the one, and plenty the other. That we may obtain the latter we must proceed in the culture of plants as we do in fattening animals ; artificial means will produce both corn and fat. The stag or hare in their natural wild state are nearly devoid of fat, but possess much muscular flesh ; on the contrary, all domestic animals contain much fat. The difference is obvious ; nature itself can almost be changed by the quantity and quality of food. The same rule applies to birds. You can feed with a particular substance and produce to a certainty a particular end ; a goose's liver, for instance, in some parts of the continent is an article of food highly prized by the epicure ; chemistry has therefore taught the gourmand's provider that charcoal powder will produce such an excessive growth of the liver of a goose, as at length to destroy the bird.

Again, the best manure for vines is the young shoots pruned off the vine itself, cut small, and immediately dug in ; the whole will decay and disappear in a month.

Do not consider these observations as foreign to the subject we are discussing. I intend them as examples to illustrate a fact that the crop to be produced, and the manure employed in producing it, should assimilate in their chemical properties.

Corn in a growing state may be well compared to a woodcock or snipe, as whatever it imbibes or feeds upon must be liquid ; it also ejects or returns to the soil by its roots the refuse as excrements. These excrements may be of considerable service to plants of another species, but are most obnoxious and detrimental to those of its own ; hence the necessity of constant change, or what we call rotation of crops. That these excrements are deposited in the manner here stated—a fact well known to all of us who have paid much attention to our orchard or garden will sufficiently prove—namely, that should an apple-tree be removed, it is not in the power of man to raise another on the same spot for many years ; when perhaps a tree of any other species would thrive amazingly. Nature or artificial means must destroy the nausea left by the former occupant before one of the same family can thrive in the same situation. Again, in my travels this summer a beautiful crop of Swedes attracted my attention near Liverpool, but in the very centre of the field was a square plot with every turnip diseased ; and on enquiring the cause, found that Swedes had been stacked there four years ago.

The rapidity of decay of these excrements depends on the nature of the soil ; the more porous or light it is, the more rapid the decay. A strong loam or clay, consequently, requires a longer time, and therefore it is that it requires a different course of cropping to light soil. Such are the difficulties and obstacles we have to contend with, and without the powerful aid of chemistry we must remain subject to their governance ; but had we the power, or rather the knowledge, how to destroy these offensive excrements, there is no reason why wheat should not be grown crop after crop as regularly as in following up our rotation. It must, however, be admitted as a principle of agriculture that the corn or produce which has been removed from the land must be restored to it in the shape of manure, bones, or ashes ; and a time will come, says Liebig, "when fields will be manured with a solution of glass, ashes of burnt straw, and with salts of phosphoric acid,

prepared in chemical manufactories, exactly as at present medicines are given for fever."

I have occupied so much of your time in discussing the properties of manure, that I must be brief in my observations on the mode of applying it. Several years experience has convinced me that raw manure should never be applied to a light soil, except, perhaps, for a crop of potatoes. The waste of manure by atmospheric action is excessive, besides which it renders the land more light and open than good compost. Our great manuring is for turnips, which work should be performed in the autumn, immediately the field be cleaned after the removal of the wheat crop; the manure used—a rich compost, consisting of all parings of banks, turf soil, night soil, indeed every spadeful of mould that can be collected on the farm or in its neighbourhood, mixed at your convenience, with the farm-yard manure; plough in about twenty-five loads per statute acre of this compost, and sow the land with rye, if intended for Swedes or vetches. If intended for white turnips, the former will furnish you with good keep for the ewes and lambs during March and April, when food is most wanted; the latter may be fed off with sheep, or mown for the horses or cattle, as most convenient. The rye will be eaten off by May-day, when the ground should be ploughed, well pulverised, drawn up, and sown with Swedes as soon after as possible. The ground between the drills cannot be too frequently disturbed with the horse-hoe and moulding plough, which will not only destroy every weed, but cause the more rapid growth of the young plant, by admitting freely the air to its roots. The side leaves will begin to decay early in October, when the horse-hoe should again pass between the drills as deep as possible. The crop will be in perfection in December, when the whole should be removed. This mode I recommend under all circumstances, as should the bulbs be permitted to make a second growth early in spring, the injury or robbery inflicted on the land is most serious. But the old-fashioned farmer says, "I must eat the turnips on the land." So he shall; but first stack and cover them in different parts of your field, cut them in troughs for the sheep, which will, I assure you, save a third of your feed, consequently give your field a third more manure, besides which you are always prepared for a long frost. The turnips being consumed or off the ground by the end of Feburary, the field should be ploughed across the ridges and sowed with Talavera wheat, which should be hoed in April, after which the artificial grass seeds may be sowed and rolled in. As soon as the wheat is harvested, the seeds may be eaten down by sheep, after which they should be top-dressed; and what you do not require for your horses in the yards or stables during the summer, to be consumed by sheep—never forgetting to manure such parts as may have been mown. At the end of October the plough may again be applied for wheat to be sown during the first week in November; let the seam presser follow the plough, which on light soil will be found of more benefit than the drill. The presser is an implement that no light land farmer should be without; and I am sure you have only to use it to be convinced of its great value. I press my land for everything but turnips, well knowing that a seed will vegetate and take better hold on a hard base than a spongy one; besides which, every bit of grass and weed is buried and converted into food for the young plant. The wheat should be hoed in April; and when rolled, will want nothing but perhaps once weeding till the harvest, which closes my rotation of crops.

In conclusion, allow me to congratulate you on the termination, if not of a most abundant harvest, of certainly the most cheering and delightful one in the memory of man; nor has the Almighty been satisfied with bestowing upon us such an inestimable boon, but has further delighted us with an equally propitious seed time. Instead then of anarchy, confusion, discontent, insubordination, and riot, would not man be more gratefully employed in declaring his thankfulness to the Great Author of these blessings, and by confessing that though Paul may plant, and Apollos water, 'tis God who giveth the increase?

ON SOWING CORN, BY MR. COOK.

In discussing this subject I beg leave to offer a few remarks the result of my own experience, and shall feel obliged to any gentleman who will correct my views, or add further information thereon.

I will first speak of the subject generally.

All the sorts of corn should be sown in rows of sufficient width apart to admit the sunshine and wind to the soil between them, in the early growth of the plants. This method produces a strong stem, not to be easily beaten down, a heavy ear, a superior quality of corn, and a more abundant crop than the broadcast system.

The width of the rows should be extended to the point at which it may not be injurious to the yield of the crop, for by its not sufficiently covering the ground, when at maturity the bulk is diminished, and the plants will have shot out their side branches so late in the summer as to retard the ripening of the corn and cause it to be unequal. I think seven inches between the rows is sufficiently near for covering all the land when the corn shoots into ear, and wide enough for either hand or horse-hoeing.

I recommend sowing across the furrows where the land is sufficiently level, in preference to sowing in the direction of the seams.

With regard to *wheat* on light land, I recommend, as soon as possible after the land is ploughed, to draw a land roll across the furrows to roll them down flat and close to the subsoil, which will give sufficient solidity to the soil for the well rooting of the wheat plants, and preserve the moisture in the soil. Then harrow the land, and afterwards wait, if necessary, till it becomes sufficiently moist, when the seed may be sown.

Wheat sowing on heavy land is more hazardous, and should not be delayed till late in the season; but this land may be made too loose in fallows, by working it too fine, and by drawing it up when very dry. I would prefer a time when the soil is rather moist for this operation, if done early enough.

In oat crops the seed is liable to fail where there is a want of moisture, which is chiefly occasioned by late sowing and not well covering the seed. The drill will place it at a regular and convenient depth.

Barley should be sown when the land is moderately dry and light, and should be put in shallow. Cloddy land should be well broken when in a dry state, and after having obtained a fine surface the drill will deposit the seed at an even depth.

I conclude by observing that there are sometimes failures on land well prepared and manured, which may be attributed either to the mode of sowig orn to the state of the soil being at the time unsuitable to the sort of corn sown; and I think many such disappointments may be avoided by careful observation and attention to facts, by comparing them together, and reducing them to simple and general rules.

AGRICULTURAL MISSION FROM THE UNITED STATES OF AMERICA.

Mr. Henry Colman, of the State of New York, has come to England, at the request of a very large number of the farmers of the United States of America, to enquire into the arming and condition of the rural population in England, and on the Continent, with a view to ascertain their improvements, and obtain such information in every department of agriculture and horticulture, and rural and domestic economy in general, as may be beneficial to his own country. He is familiar from long experience with all the practical operations and details of American husbandry, having been employed by the government of Massachusetts for several years as commissioner for the agricultural survey of that most improved State in the union. His reports have been favourably received in this country. He brings with him numerous letters to gentlemen of the highest consideration in this country, and on the Continent; and has likewise diplomas from the American Agricultural Society, at Washington; the Pennsylvania Agricultural Society, at Philadelphia; the New York State Agricultural Society; the American Institute, at New York; the Massachusetts Agricultural Society, at Boston; and the farmers of Massachusetts, at a public meeting held at the State-house, in Boston; and other societies in the United States, commending him and his objects to the friends of agricultural and rural improvement, wherever they may be found.

Mr. Colman's objects, we understand, are wholly public and practical, and entirely disconnected with any party or political considerations whatever. He proposes to spend a year or more in England, in visiting as far as may be every part of the country—England, Scotland, and Ireland—and then to proceed to the Continent, to examine the husbandry of France, Belgium, Germany, Italy, and other places where information may be obtained; and especially to make himself acquainted with the agricultural and manual labour schools, and the experimental farms.

Mr. Colman was, a year ago, elected an honorary member of the Royal Agricultural Society of England, on the motion of the Duke of Richmond, seconded by Lord Spencer.

We have now before us some of Mr. Colman's reports on the condition of agriculture in certain districts of the United States, and which contain a vast body of useful information. They clearly prove the ability of Mr. Colman to perform the task he has undertaken, and we trust every facility for obtaining information will be afforded him by our agriculturists; if for no other cause, for the selfish one that we believe the reports which he will publish of the agriculture of Great Britain, will be as useful to the British farmer as they will be valuable to the farmers of his own country.

NORTON FARMERS' CLUB.

On Wednesday evening, May 3rd, the members of this club met in their room, at the Bagshawe Arms, Hemsworth, for the consideration of the rules which had been drawn up by a committee appointed for that purpose. The Rev. H. H. Pearson took the chair, and warmly supported the objects the institution had in view. He observed that farmers were unlike manufacturers and others in large towns: they had not the same opportunities of meeting to discuss topics connected with their interests; and on that account, he hailed the commencement of the club with great pleasure. The periodical meetings of members would have a tendency to create a friendly feeling; and the discussions which would arise on the best methods of cultivating their farms, would have a most beneficial effect. No doubt all parties would be very materially benefited, the farmer as well as the labourer; and he hoped landlords would give the club their support. This was a time when it behoved farmers to apply themselves to enquire into the best systems of management, and he was not aware of a better source from whence information can be gained, than from a well regulated farmers' club. The Rev. gentleman concluded by expressing his willingness to give the club all the assistance in his power, and announced his intention, as well as that of his brother (the Rev. Wm. Pearson,) of becoming honorary members.—Mr. A. Wright also addressed the members at some length, pointing out the great benefits which would arise to all interested in agriculture by occasional discussions of matters deeply connected with their interests. The time had arrived when farmers must increase their exertions; for, depend upon it, an amelioration of their present depressed condition can alone be accomplished by their own endeavours. The admitted fact, that land in this district had not as yet half developed its capabilities, was sufficient to give the greatest impulse to their exertions. It had been urged by some that Norton was not an agricultural district, the land was poor, and that their joining a club would be of little use to them. He must say, that he knew of no land in any part of the country more susceptible of improvement; and it was well known that no class of persons stood more in need of sound information than did some of those who kept aloof on this important and interesting occasion. To those whose minds were warped by ancient prejudices, he would advise them to attend the society's meetings, and he had no fears as to the result. In his opinion, they ranked among that class of farmers who would probably derive the greatest benefit from friendly and instructive discussions. Mr. Wright concluded by expressing his gratification at the favourable prospects of the club, and hoped their next meeting would prove still more satisfactory.—Mr. Jas. Jenkin produced a letter which he had received from Newton Shaw, Esq., in Suffolk, who cordially agreed with the objects and intentions of the club, and promised to contribute to its support.—The rules were then discussed *seriatim*, and after some trifling alterations were agreed to.—The officers of the club were afterwards chosen; the Rev. H. H. Pearson kindly consenting to fill the chair *pro tem.*; and Mr. James Jenkin was appointed treasurer, and Mr. George Rogers secretary.—Subjects were named for discussion at the next meeting, to

be held on the evening of the 22nd instant; but it was thought most desirable to make arrangements for establishing a library, and selecting the most popular agricultural journals, before any other business was proceeded with.—A vote of thanks was then passed to the Chairman, for his able and instructive services, and the meeting shortly after broke up.—*Sheffield and Rotherham Independent.*

ON THE USE OF SALT AS A MANURE.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—In the use of this substance as a manure, it may be useful for those of your readers who are doubtful in this matter, to know that when salt in in solution is added to a dung-heap, it has the effect of fixing a *part*, but not the *whole*, of the ammonia present. Of the truth of this, any one who chooses may convince himself, by adding to the carbonate of ammonia, in solution, a little salt, when it will be found that a part of the ammonia has not been fixed, its escape being perceptible by its smell, and by the dense white fumes formed when a glass rod, dipped in hydrochloric acid, is brought near it. When the solution of the mixed salts is evaporated to dryness in an evaporating basin, the smell of the ammonia disappears, the volatile carbonate of ammonia having been dissipated by the heat; but that ammonia is still present in the dry residue, may be easily shown by sprinkling it with a few drops of distilled or rain water, and adding a little burnt lime, when the pungent odour of the ammonia will be again distinctly perceptible, owing to its displacement from the muriate of that base by the lime, the muriate of ammonia being devoid of smell. That in this process, however, a considerable loss of ammonia takes place, owing to its partial fixation, is evident from the fact, that an ammoniacal smell in a solution of the kind just mentioned was distinctly perceptible for upwards of three weeks, during which time it was kept in a warm room.

The purity of the salt used in this experiment from ammonia, may be tested by adding to it a little quick-lime, as just mentioned.

When two salts are mixed in solution, the products of whose decomposition are soluble, the law is that a division of the acids and bases takes place—though to what extent is not known—owing to chemists being unacquainted with the relative force of attraction between the several principles. In adding, then, a solution of salt to the carbonate of ammonia, four salts remain in solution—viz., the muriates of ammonia and soda along with the carbonates of the same two bases.

I may remark that the conclusion which some people seem so unceremoniously to have jumped to, that all ammoniacal salts are *necessarily* beneficial to vegetation, because the carbonate of that alkali is acknowledged to be so—appears to me, to say the least of it, very unphilosophical. The truth of a conclusion of this kind, which is of so much importance in a practical point of view, ought to be established by direct experiment, which, as far as I am aware, has not yet been done.

Hoping that these remarks may prove of service to the unscientific portion of your readers,

I remain, your obedient servant,

THOMAS HODGSON.

Ranton Abbey, Staffordshire, May 23rd, 1843.

WOOLLEN RAGS AS MANURE.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—The rage for artificial manures being now on the wane from the depreciation of the prices of all descriptions of farming produce, will you allow me to call the attention of your agricultural friends to a manure that has been very much neglected, or at least, not yet got into general use, and which in my opinion is much superior to many of these "artificials," of which their principal recommendations have been the *importers*, and their specious advertisements, containing statements mainly derived from theory, and which practice has proved to be fallacious in nine cases out of ten. The manure I wish to call the attention of the farmers to is that of woollen rags, which may now be bought in the London market at the low price of 3*l.* 10s. per ton. This manure is superior to almost all others; 22lbs. of it being considered by our first chemists to be equivalent to 1000lbs. of common farm yard dung. To a farmer whose land is at a distance from his homesteads it is invaluable, as one cart load of it will go as far as twenty to thirty loads of dung, and it is well known that the team work of every farmer is one of the principal expenses incurred. For hilly soils in particular it is well adapted, as half a ton to eight cwt. per acre is considered a good dressing, and hence the great saving to the farmers; especially as in some seasons they depend upon a hard frost to enable them to get their land properly manured in time to get in the spring corn. A friend of mine was, last year, so fully convinced of this advantage that he sent his teams sixteen miles for six tons of it, at 6*l.* 10s. per ton, to put upon a field of ten acres that was hilly land, the difficulty of getting dung upon it from his farm yard (not three-quarters of a mile distance) was so great. Again, another friend of mine manured ten acres of light land near the gravel, with half a ton to the acre, for barley; the crop was upwards of ninety quarters. And another field of ten acres had eight and a half quarters to the acre, after wheat that produced a load to the acre the year previous, from the same piece; the soil was in such good heart from the dressings of woollens the year the wheat was planted. This may be called bad farming by some, but I consider that the best where the greatest quantity of corn can be produced. Another great advantage I conceive the farmers would obtain from the more general use of this manure, and which is not the least: it is very well known that old woollen rags are bought up by the Yorkshire manufacturers to make into "shoddy," or, in other words, to mix with their wools for the purpose of adulterating their cloths, and thereby cheat the consumers by an article that at first looks to be of first rate quality, but which in a short time proves to be quite the contrary. I say, let the farmers buy up the woollen rags themselves, and keep them from the hands of the manufacturers, and we shall soon see that more corn can be grown, and above all, a much better price will be obtained for our wools, which are at present so very much reduced in that respect. I need only add, that I have used woollen rags with great success on my farm for the last twenty years; and if any of your correspondents wish to know where they may be obtained in London, I shall be happy to inform them, as well as any further particulars respecting the use of them, for which purpose I enclose my address; and if you think these observations worth insertion in your widely circulated Journal you will much oblige, Sir, yours respectfully,

GODSTOW.

RICHMONDSHIRE AGRICULTURAL SOCIETY.

All who were present at the meeting of the Richmondshire Agricultural Society last year were highly delighted with the spirited manner in which the operations of that society were conducted. The general report of the society has just been published, containing a report of the trial of implements, and an account of the premiums to be awarded at the next meeting, and of the arrangements for the trial of implements. The President of the society, R. M. Jaques, Esq., of Easby Hall, near Richmond, assisted by an active committee, will render this society of great importance to the district. The following extract from the report will explain what is contemplated in reference to the trial of implements in September next.

"Your committee have only further to observe, that, in consequence of the trial of implements, which took place last year, having given such general satisfaction to all parties, both to those interested in the sale, and those interested in the purchase of them, and conducing, as such trial does, in the fairest and best manner, to establish the merits, and to make known the particular claims which any implement may have on public patronage, they have determined on a similar trial this year:—to commence on the Monday previous to the show. The President has again placed the use of his farm at Broken Brea, at the disposal of the society, for the purpose of the trials and the ploughing matches; and your committee hope, that they will again see at Richmond, those who exhibited their implements on the last occasion, with many others from different quarters. Scarifiers or cultivators, ploughs, chaff-cutters, drills, &c., will have particular attention paid to them; and, in order that due time may be devoted to each trial, it is especially requested, that parties intending to exhibit will make known their intentions to the secretaries, at least one month before the show, in order that a programme of the proceedings for each day, may be printed previously."

The North of England Railway passes within a short distance of the farm of "Broken Brea," and facilities will be offered for the conveyance of implements from the stations free of expense.

We are glad to see that the society has adopted the plan of giving as prizes, instead of money, the implements purchased by the society last year, and which were to the amount of upwards of one hundred pounds.

INCLOSURE OF COMMONS.

TO THE EDITOR OF THE MORNING CHRONICLE.

Sir,—The report in your paper of the notice I gave last night in the House of Commons is calculated to convey a very erroneous impression of the measure I intend, on the 19th, to ask the leave of the house to introduce. I have, therefore, to request you to allow me to correct the mistake, and give an outline of the bill. The notice I gave was to ask leave to bring in a bill for enclosing or otherwise improving commons and land enjoyed in common.

There are in England and Wales some million acres of moors, commons, and waste lands, and unenclosed fields and pastures, a large proportion of which might be brought into cultivation with advantage to the interests of the parties entitled to rights thereupon; and also to the country generally, besides giving additional employment to a large number of labourers; many of such commons would doubtless have been already enclosed had they been of sufficient extent and value to bear the expenses of a private act of Parliament, and of commissioners appointed in the ordinary way. Some commons, however, are so circumstanced as not to admit of being enclosed with advantage to the interests of some of the proprietors, or of the country at large; and therefore a controlling power is necessary for the purpose of guarding the interests of the public and of the smaller proprietors. With the view, therefore, of facilitating the enclosure of commons generally, and more especially those of limited extent and trifling value, and to effect this object with safety to the interests of all concerned, and with the least expense practicable, I propose that the tithe commissioners, during the existence of the Tithe Act, now limited to five years, shall be the commissioners for carrying this measure into effect, who would receive no further remuneration than they now enjoy, with power to delegate their authority in the ordinary manner to a limited number of assistant commissioners, to be paid for their services *pro hac vice*, in the first instance, out of the consolidated fund, such advances to be repaid by a certain fixed and limited amount of rate, which shall not in any case exceed 50*l*. levied by the commissioners upon all lands enclosed or dealt with by them under the provisions of this bill.

On the receipt of a requisition from the lord of the manor, and a certain proportion of commoners, the commissioners to proceed to make such inquiries as may satisfy them whether or not such enclosure ought to be proceeded with. The commissioners to report twice in every year to one of the Secretaries of State, which reports shall be laid before Parliament, what progress has been made in each particular case, and the grounds on which they have given or withheld their consent to the several applications for enclosures received by them; and in such report they shall state what proportion (if any) of the land under enclosure they have directed to be set out for the use of the public, for the purpose of recreation and of procuring fuel, &c.

The commissioners to notify to the lord of the manor, and also to the commoners, the proportion of interest in the lands to be enclosed, to which they consider he is entitled, by notice within the manor. In case of objection, by either lord or commoners, the parties may try the matter in dispute by an issue at law, within a time to be limited. The commissioners also in like manner to notify, under their hands, the extent and position of the lands they have decided to be set out for the use of the public, subject to appeal. The proportion of the lord's interest, and the legal rights of the several claimants, having been finally settled, the commissioners shall appoint a meeting of the parties interested, for the purpose of choosing a valuer to divide the lands in question, under such instructions as to the formation of roads, drains, embankments, &c., as the meeting may deem it advisable to give them, and of directing the mode of payment for all expenses incident to the division of the lands to be made, either by sale of a certain portion of the lands, or by a rate upon the

lands in rateable proportions to the value of the several lands.

Power to a certain proportion of all parties interested to direct the sale of the whole or a part of the common; proceeds thereof to be vested for the permanent interest of such parties under regulations to be agreed upon and settled by the commissioners.

Power to commissioners on application from a certain number of the parties interested, to direct that a common, in place of being divided, may be stocked and depastured, with or without enclosure by gates and stints, in such proportion as may secure to the parties an equitable enjoyment therein. Amount of gates and stints to be settled by award. The major part in value may apply to the commissioners to direct the enclosure of a portion, and the stinting of the remainder. The parties interested to appoint annually competent persons as fieldreeves, to superintend the management of the commons.

The valuers' draft enclosure award having been examined by the commissioners, to be deposited for inspection within the manor for some fixed period prior to a meeting being held before an assistant commissioner, for investigating objections, if any, to such proposed enclosure award; and if the decision of the assistant commissioner shall not be satisfactory, there may be an appeal to the commissioners themselves. The conformation of the enclosure award by the commissioners to be final, and conclusive as to the proportions of the several allotments therein set out.

I observe that I have omitted to state that power will be reserved to the Legislature to impose a veto on the enclosure of any common, if satisfied that the commissioners shall have erred in judgment, by consenting to such enclosure.

Such a measure will, I think, be found advantageous to commoners; afford additional employment to a great number of labourers, and contribute materially to the production of food for the wants of a rapidly increasing population. I trust, therefore, that I shall be excused endeavouring to prevent any misapprehension of the bill.

I am, sir, your obedient servant,

17, *Arlington-street, May* 6. WORSLEY.

TO HIS GRACE THE DUKE OF RICHMOND,

PRESIDENT, &C. &C. OF THE ROYAL AGRICULTURAL SOCIETY, LONDON.

MY LORD DUKE,—At the request of several of my friends who think it may be useful, I am induced to publish a statement, showing the working of the principle of rent, varying with the published averages of the price of wheat during the last twenty-one years, in a farm belonging to me, in the parishes of Farnham, Essex, and Bishop's Stortford, Herts, in the occupation of Mr. John Paris, situate little more than two miles from the market town of Bishop's Stortford. It consists of about four hundred and seventy-nine acres, of which about four-fifths is wheat and barley land, of fair average quality, the other fifth meadow or pasture, and including about twenty acres of woodland, which latter, from contiguity to the maltings at Bishop's Stortford, is of rather more value than woodland in general. The common fields having been recently enclosed before 1821, it was then valued at 600*l*. per annum; supposing wheat to be worth from eight to nine shillings per bushel, or to vibrate between 64s. and 72s. per qr. The tenant was to be allowed five per cent for every four shillings per qr. that the average price of wheat, as published in the London Gazette between the stated periods of Michaelmas and Lady-day, and so again from Lady-day to Michaelmas, fell below 64s.; but on the other hand the tenant was to pay five per cent. increase for every four shillings that those averages rose above 72s., which latter never occurred. The following then were the payments during the six years from Michaelmas, 1821, to Michaelmas, 1834:—

	£
1822	540
1823	540
1824	570
1825	585
1826	570
1827	555
1828	540
1829	585
1830	540
1831	600
1832	555
1833	540
1834	540

Average per annum about 558*l*. 9s.

It appearing that the pivot had been set too high, a fresh agreement was now entered into for nine years more, and the rent was reduced to 500*l*. per annum—the supposed value if the price of wheat vibrated between 56s. and 60s. per qr., but increasing or diminishing after the same rate as before stated. Eight years of the term expired at Michaelmas last, and the following has been the annual gross rent:—

		£	s.
To Michaelmas	1835	400	0
,,	1836	412	10
,,	1837	487	10
,,	1838	500	0
,,	1839	587	10
,,	1840	562	10
,,	1841	537	10
,,	1842	532	10

The average being a little above the original 500*l*. per annum, the supposed value to which the scale had then been adjusted. The result has been that the aggregate gross rent for the last twenty-one years has been about 1*l*. 2s. 6d. per acre, but from the deductions of land-taxes, materials for repairs, &c., the net receipt is about twenty shillings; the gross rent during the last eight years about one guinea per acre, and the net receipts rather over eighteen shillings per acre. The farm is in a high state of tillage, and although the lease would terminate at Michaelmas next, the tenant is well content to continue on the same principle, for he will, according to the present price of corn and its prospects, have proportionate reduction in his rent, not uncertain and subject to the avarice or caprice of his landlord or his agents, but fixed and known. It is not the least agreeable part of this arrangement, that it inspires confidence in the occupier, which causes him not to withdraw his capital when the times are unfavourable to him. As landlord I derive every advantage which falls to my share as the sleeping partner of that machine, the land, which is worked and rendered profitable by the capital, ingenuity, and exertions of that corn manufacturer,

my tenant. It will naturally be observed, that the landlord has an interest in the advanced price of corn; but how much greater is that of the tenant? The rent may vary from a third to a fifth of the proceeds of a farm, according to circumstances, but the alteration in price over the remaining two-thirds or four-fifths is of much more consequence to the tenant, as far as his immediate payments go, and the interest of the capital he has invested. Improved price causes generally improved tillage, where confidence in his landlord and in the protective laws of his country against foreign competition exist; and though variations must constantly attend prices, from the seasons, in this very uncertain climate, still, as all probable deficiencies ought to be wisely and providently anticipated by a graduated scale, so as to preclude monopoly, every legitimate right which the consumer has to possess cheap bread, in this highly-rated, tithed, and taxed country, may be possessed. I have the honour to be, my Lord Duke, your obedient humble servant,

C. T. Tower.

Weald Hall, June 8, 1843.

ON THE PROPOSED REMEDIES FOR THE PRESENT DEPRESSION IN THE AGRICULTURAL AND COMMERCIAL INTERESTS OF THIS COUNTRY.

Paper III.

BY GEORGE THOMPSON, JUNIOR.

"In every country the condition of its agriculture must be a subject of the very first importance. An inconsiderable state or colony may, it is true, without much danger or inconvenience, exist under circumstances which oblige it to be habitually dependent upon the soil of other countries for the food of its inhabitants; but a very little enquiry, and a very simple calculation, would suffice to convince us that this can never be the case with a numerous people. To supply the United Kingdom with the single article of wheat would call for the employment of more than twice the amount of shipping which now annually enters our ports, if indeed it would be possible to procure the grain from other countries in sufficient quantity; and to bring to our shores every article of agricultural produce in the abundance we now enjoy, would probably give constant occupation to the mercantile navy of the whole world.

"These are assertions which every one can in a moment verify or disprove, by estimating the average consumption of each inhabitant of the kingdom, and multiplying its annual amount by the number of the population. If they are true, it must be equally true that *every country which makes great and rapid progress in population must make equal progress in the production of food.* A trifling addition to the number of the people might be met either by importations from abroad, or by a diminution of the proportion of food which they consume. But the first of these expedients is impossible when any great accession is made to the population; and it is a proposition, the truth of which will hardly be questioned, that when the people are deprived of any considerable proportion of their accustomed supply of food, it is highly improbable that their numbers should increase." *

These are the words of an eminent statist, and one too who decidedly advocates the principles of free trade. He cannot deny the truth of the great principle that each nation must supply its own population with food; and we only differ from him in the means by which this is to be accomplished in the British Empire. He gives us tables, compiled from authentic sources, to show that the quantity of corn imported into this country in the five years ending 1835, was less by 1,440,261 quarters, than in the five years ending 1805; yet during these thirty years the population of this kingdom had increased 8,489,000. Now this increase in the number of persons would require the like number of quarters of grain to support them. Where, we may ask, was this increased quantity of grain obtained from? Did the price of corn rise, and thus give a premium to the cultivation of waste lands, hitherto considered too poor for the purpose? No, for we find that the average price of wheat in the first five years alluded to was 77s. 8d. per quarter; whilst in the last five years it was but 52s. 8d., a reduction of nearly *one-third.* It is plain, therefore, that although much waste land *was* brought into cultivation, yet that an improved system of agriculture must have been adopted, to lower the price of corn in the face of an increasing population, with a decreasing importation of foreign corn. This deduction will prove to be valuable in drawing conclusions respecting our future policy.

Our former papers have been devoted to the consideration of arguments drawn from the past; their object has been to lay before the readers facts which are now matters of history, and to place them in juxta-position with the arguments urged by the supporters and opponents of the present corn laws. Our object in this paper is to show, by a reference to the conclusions we have already drawn, occasionally illustrated by the statements of eminent political writers, what course it would be most consistent to adopt in future, with respect to this question. We would earnestly crave attention to our arguments, as being actuated by no other impulse than that of a sincere desire for the common good. Why should the British make this such a *party* question? Why should each side accuse each other of being influenced solely by selfish motives? We verily believe that some there are who have taken up certain views on this important question, which they are determined to support, heedless alike of all serious considerations and of the welfare of the community; determined to support the party they have joined. But this is an imprudent step. We have already stated that the interests of the majority should invariably be studied in the government of a country possessing civil liberty; and this question of the corn laws, therefore, should be discussed as becomes members of a free community. The corn laws are either beneficial or injurious—necessary or unnecessary; if they are essential to the welfare of the majority, they are essential to all: whatever operates injuriously on the interests of the majority, operates directly or indirectly, injuriously to all. Let us then discuss this question in the spirit

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* Porter's Progress of the Nation, 1836.

of impartiality; let the manufacturer abandon all selfish views, and in the spirit of Christian charity, ask himself the important question, Would the abrogation of the corn laws, at the present period, prove advantageous to the country at large? Let the landowner and the landholder ask themselves the same question in a similar spirit, and they will then be more likely to promote, by their efforts, the general welfare, and with it their own. Why should one portion of the community divide themselves against another portion, and entitling themselves the "League," declare their purpose to be the fulfilment of a certain design, the abrogation of a certain law, accompanying their declaration with accusations of the most violent and unjust character, against the majority of their fellow-countrymen? Under the plea that "union is strength," they contradict their own actions. If union *is* strength, then strength would consist in the whole community being united. "Every kingdom divided against itself is brought to desolation."* Those who are the most violent in supporting the repeal of the corn laws, assert that they are upheld by the landowners for their own exclusive advantage, yet they declare that a repeal would be advantageous to the majority; they even state—"if it can be shown that a steady and constantly increasing supply of corn, at a moderate and remunerating price, is the true interest of the public, there cannot be a doubt but that it is at the same time the true interest of the tenant farmer, and, ultimately, the landowner."† Thus attempting to prove that the abrogation of the corn laws would be advantageous to the landowners. Now, if this is true, the landowners are opposing their own interests; and if opposing their own interests, they are *mistaken* men, not necessarily *selfish*. Then why array a factious League against them, which is much more probable to increase their opposition, than to convince them of their error? *Physical force, violent harangues, mere numbers, never yet carried conviction; they may sometimes effect their purposes, but they invariably produce greater evils than they remedy.*

We have already shown, in former papers, that the nations of Europe can afford and would gladly send us large supplies of wheat; but we have no fair reason to expect that they would take our manufactures in return: indeed, we have proved, by the arguments of the repealers, that they could only take our manufactures to the extent to which we took their corn; hence that we should merely, in the event of their taking our manufactures to that extent, change our customers; and this would be of itself a serious loss, as our new producers would not consume so great a proportion per head as our original customers. We may here just observe that the arguments of the corn law repealers are founded upon impossibilities; they imagine that we should retain our old customers, as well as gain new ones. Do they suppose that the British would consume more than *sufficient* corn under a free trade? If they do, they commit a serious mistake. We should merely then, as now, obtain a sufficiency; and taking foreign corn, we should take so much less home-grown corn. Being less produce at home, there would be fewer producers; and the producers who would be thrown out of employment in Great Britain would become manufacturers. Thus we should have persons producing corn who would consume a smaller proportion of our manufactured articles, and we should have a greater number engaged in manufacturing. A very pretty remedy for our present depression!

It now becomes a question, if our own physical resources are capable of that expansion which would adapt itself to the demands of an increasing population, with respect to the supply of food? If it is impossible that we can continue to supply our own population with food at a *reasonable* cost, it is obviously of importance that we should seek some means of achieving this desirable end. But, on the other hand, if we find that we have abundant means of supplying our population with food, and it appears that the individuals who may be employed in raising this food, will consume a greater proportion of our manufactured articles than any other people on the face of the earth; if it appears, moreover, that the advantage we should obtain from this consumption of our manufactures would more than counterbalance the disadvantage of the greater price of corn, then there cannot be a doubt that our wisest course will be to continue our corn laws.

Porter informs us, in his "Progress of the Nation," that the quantity of cultivated land in Great Britain, in the year 1827, was 46,522,970 acres; that the quantity of land uncultivated, but capable of improvement, was 15,000,000 acres; and that there were 15,871,463 acres considered as incapable of cultivation. We shall firstly endeavour to show that the land under cultivation is susceptible of increasing productiveness.

In 1827 the quantity of cultivated land, we have stated, was 46,522,970 acres, and the population at that time, estimating it at its probable increase from 1821, was 23,061,414; whilst the importation of wheat and meal in the same year amounted to 572,733 quarters.* The land brought into cultivation, by inclosure acts to 1835, was 247,050 acres, but the population had increased to 25,765,121 souls, being an addition of 2,703,707. Supposing the enclosed lands produced on the average that which was tantamount to two quarters of grain per acre, per annum, we should have an increased area sufficient for the support of 494,100 persons; but what becomes of the remaining 2,209,607 individuals, when the quantity of corn imported was less by 544,250 quarters than it was in the year 1827? It may be stated in reply that the harvest of 1835 was a very abundant one, but we find that the quantity of foreign and colonial wheat imported and entered for home consumption in 1841, when there was a deficiency in the general crop, was but 2,647,808 quarters,† whilst the population had increased to 26,840,034 souls, showing an increase of 3,778,620. We observe, from this calculation, that the quantity of foreign corn imported in 1841 was 2,075,075 quarters more than in 1827. Now, if we take the usual estimate that one quarter of corn is sufficient for the sustenance of each individual, on the average, for one year, we have an increased number of 1,703,545 persons, whose food must have been raised from our own internal resources; and estimating that two quarters of

* St. Matt. xii. 25.

† Prize Essay of the Anti-Corn-Law League, by Arthur Morse.

* Porter's Progress of the Nation.

† No. 7 of "Facts and Figures." Hooper, Pall-Mall.

wheat per annum, or their equivalent, would be produced from the ground brought into cultivation under the inclosure acts, we must necessarily prove that 851,773 acres of ground were brought into cultivation between the years 1827 and 1841; a supposition which cannot for one moment be entertained, as 247,050 acres* was the total quantity added to the productive portion of the soil, down to 1836, and it is highly improbable that 150,000 acres have been since enclosed. It is obvious, then, that the produce of at least 450,000 acres has been obtained from the soil by means of improved cultivation; thus proving the important theory that the land is capable of increasing productiveness. In confirmation of the fact that the land has increased its fertility, we may quote the words of Earl Fitzwilliam, in his "Second Address to the Landowners of England on the Corn Laws," published in 1835:—"I am satisfied that the breadth of land under the plough (taking that as the criterion, though it is none, and I only take it in deference to those with whom I am arguing) is greater than it was in 1814, *and that the produce of equal surfaces of ploughed land has increased in a still greater ratio.*" Indeed, when we reflect on the immense tracts of land that are imperfectly drained, or even not at all; when we contemplate the assistance which science is rendering to the practical agriculturist, in not only diminishing the costs, but in rendering more certain the results of the application of manures; and when we consider the various less important improvements which are daily brought into operation in the agricultural world, we must conclude that the future will afford increasing supplies from equal surfaces, and we can none of us hardly dare to estimate to what extent this increasing productiveness will go.

But, independent of the expansible nature of the productiveness of the soil at present under cultivation, it appears that there were 15,000,000 acres uncultivated in 1827, which may be brought into cultivation; of this quantity it does not appear, according to a foregoing estimate, that more than 450,000 acres have since been converted into profitable soil. Here, then, is a vast reserve, sufficient to supply the probable increase to our population with food for many years to come. Independent of this we have previously stated that there were 15,871,463 acres considered as incapable of improvement in 1827: now the veriest dunce in the land is aware of the extraordinary progress which has been made in agriculture since that period. Many lands have been brought into cultivation that were previously considered to be irremediably barren; and it is not irrational to suppose that the greater portion of the quantity last spoken of is, even in the present infant state of agriculture, capable of being brought into profitable cultivation. "There are also thousands of acres—perhaps millions—that are at present *worse than lying waste*, causing whole districts to be unhealthy to man and beast—acres that will not support a goose, or at best a sheep, per acre; *some* let to farmers at from 2s. 6d. to 5s. per acre, all of which, with little exception, if properly drained and well cultivated in a regular course of alternate husbandry, would increase in value from 150 to 300 per cent., forward the harvest from fourteen to twenty days, improve the climate of the country, and add to the produce in a direct ratio to the higher value of the land."* We have seen, in this neighbourhood, solid rock of the new red sandstone formation *stocked up* to the depth of *eighteen inches*, where there was previously not a particle of soil, and more than twelve tons of carrots per acre taken off it the first year. Even so late as 1827 this would have been ridiculed, and we may therefore fairly infer that a very large portion of the land which was then regarded as impossible to be cultivated, is capable of profitable cultivation.

Can any sane individual, then, entertain a doubt that the soil of the British Islands is capable of supporting a very much larger number of persons than at present subsist upon it? We feel assured none of our readers will for one instant entertain such an unreasonable distrust, after dispassionately perusing the facts we have quoted.

It has been shown that the people of the continent of Europe can never be such great proportionate consumers of British manufactured articles as the British people themselves; this is evident from figures quoted in a former paper, where it is shown that whilst the Englishman takes more than *five pounds, thirteen shillings, and eightpence farthing worth* of British manufactures per annum, the Prussian takes but *threepence halfpenny worth;* being nearly *one-four-hundredth* part the consumption. This might reasonably be expected, "for nothing can be clearer than that, by a transfer of agriculture from the British Islands to the shores of the Vistula, the possible, or perhaps probable, extension of the market for our manufactures, by the increased wealth thrown into foreign states, would bear no sort of proportion to the certain diminution of the home market from the depression of our agriculture. Mr. Smith has long ago stated, that the most profitable trade for every state is that which is carried on between the town and the country, and that the home market for our manufactures is worth all foreign markets put together. It is a much more profitable thing to have a good market in our next-door neighbour than in a distant state. The habits of our own people are formed to the consumption of our own manufactures in the first instance, and the purchase of foreign luxuries only in the second. In foreign countries the case is the reverse; their principal consumption is of their own articles of luxury. A much larger proportion of the wealth derived from the sale of their produce will be employed in the purchase of our manufactures if they are fed by their own farmers, than if they are fed by those of foreign states. If ten millions' worth of Baltic grain is purchased for the British market, a considerable part of it may, perhaps, return to our operatives in the shape of an extended demand for British manufactures. But a much larger proportion of the sum will take that profitable direction, if it is laid out in the purchase of grain raised in Great Britain and Ireland. The reason is obvious. British manufactures are a necessary to the British farmers and cultivators. But to the foreign landholders or cultivators great part of our manufactures are unknown luxuries. A large portion of the agricultural wealth on the continent will be spent on *continental* luxuries, and a comparatively small proportion will be directed towards the purchase of articles manufactured in

* Porter's Progress of the Nation.

* Geo. Kimberley.

the British Islands."* No more need be written to prove that the foreign corn growers can never be so great proportionate consumers of our manufactures as the home growers; but it is not so strikingly evident that the greater consumption of our manufactured articles by the home grower will counterbalance the lower price of foreign corn.

We have previously stated that the price of imported grain would remain low sufficiently long to throw a great portion of our land out of cultivation, but the instant the home supply of corn diminished (and it assuredly would diminish, as we have shown that the greater part of our soils could not compete with foreign soils, even were they rent-free), as a natural consequence prices would rise, but not until lands had been thrown out of cultivation. Still, supposing the price of corn was permanently lower, we have already estimated that it could be sold in this country at 42s. per quarter; supposing, then, that this would be the average price, 56s. per quarter being considered a remunerating price to the British grower, we have a reduction of 14s. per quarter, which would take place under a free trade. It is essential to remind the reader that all our experience shows, that even the total abrogation of our duties upon foreign corn would be attended with no corresponding relaxation, with respect to our manufactures, on the part of other nations. They will thankfully take everything, but give nothing. This may be unreasonable, absurd, and—in the end—impolitic; but we assert it as a fact, and we must deal with mankind as they are, not risk hazardous innovations upon speculations of what they *should* be.

It would unquestionably be well for this country if by repealing the corn laws it could sell, in the aggregate, a double portion of manufactured articles, and at the same time obtain corn at a less price; as then all our surplus population might be engaged in manufacturing, and the country must eventually become richer, from a lower price of food with an increased demand for our produce. But here is the gangrene which festers in the minds of the free-traders—here is the stumbling-block to a free importation of agricultural produce. "It had been contended that the repeal of the corn laws would greatly facilitate commercial treaties between this country and other kingdoms. Let those who relied on that argument look at the manner in which our tariff had been received by other countries. Had we succeeded by it in obtaining any reciprocal advantages? Nothing of the kind. France, Russia, Prussia, the German Commercial League, and even America itself, refused to meet us in the spirit in which it was conceived. America had said, that however good it might be in theory in that house as a matter of political economy, it was of no value in a national point of view."†

But allowing the bare possibility that on our removing all restrictions from the importation of foreign corn, the continental states would make similar concessions in favour of our manufactures, is it to be expected—can the idea for one moment be entertained—that they will take *more* than the 42s. worth of our manufactures for every quarter of corn we import? "Are we cotton-spinners? so are they. Are we iron-masters? so are they. Are we silk manufacturers? so are they. Are we cutlery and hardware merchants? so are they. Are we clothiers and woollen-drapers? so are they. There is no branch of industry in which we excel, in which they are not all making the greatest and most strenuous, and sometimes successful, efforts to rival and outstrip us. It is in vain that we meet them with the signs of amity, and hold out the olive-branch in token of our desire to establish reciprocity treaties on the footing of real mutual advantage. We cannot by so doing either shut the eyes of their manufacturers to the danger of British competition, or close the vision of their governments to the dazzling spectacle of British greatness. They see that we have risen to the summit of prosperity under the system of protection to domestic industry, and they naturally imagine that it is only by following our example that they can hope to rival our success."*

If, then, they are manufacturers, will they stop their mills, close their factories—in fact, exclusively purchase British manufactures, on the introduction of their corn duty-free? Will they at once withdraw all protection from their native manufacturers? It is unreasonable in the extreme to suppose such a state of things. "They say—'It is well for you to throw down the barriers, when that your superiority in every branch of industry is incontestible. When ours is the same, we will follow your example; in the meantime, you must allow us to imitate the steps which enabled you to reach the elevated position which you now enjoy.'"† If it is not *certain* that they will allow the British manufacturer to compete on equal grounds with their own, we have no longer any fair reason to expect that they will take our manufactures to a greater amount than we take their corn. Granting that they take them to an equal amount, what advantage will this be to the British manufacturer, or his artisan? The corn which is produced to feed the people is either grown by their own countrymen or by foreigners; they will not consume more than they do at present. It is obviously of no advantage to the artisan to purchase wheat at 42s. per quarter, instead of 56s., when so much less is paid him for manufactured articles—when, instead of 56s. being expended in his articles, he receives but 42s. But this is acceding too much—it is granting a point that we are not justified in giving. All experience (and our reason ought to confirm the deduction) shows the fallacy of our opinions, that we shall ever receive reciprocal advantages in our dealings with other nations. "It is not surprising that ardent and visionary men embraced the reciprocity system. It was founded on enlarged and philanthropic views, and *it would be well for mankind if all nations could at once be brought to act upon the same wise and enlightened principles.* But experience has now demonstrated that the endeavour to introduce that system into the world is, even in the most favourable view, premature; and that, in the attempt to attain it, we have essentially injured our own commercial navy and maritime strength, without having gained so much as one single countervailing commercial advantage."‡

Foreign nations having once manufactured for

* Alison on Population.

† Speech of Mr. Miles, in the House of Commons, on Wednesday, May 10th, 1843, on the Corn Laws.

* Alison on Population.

† Ibid.

‡ Ibid.

themselves, with cheap food, and unlimited power, animate and inanimate, they will not be likely to sacrifice all these advantages. They will say, and justly too—"If we have cheaper food than England, why should we not eventually produce cheaper manufactures? Nought prevents us but a lack of ingenious mechanics, and these we shall soon obtain by encouraging and protecting our manufactures. Our course then is to prohibit the importation of British goods." This is precisely the course the British would adopt under similar circumstances, and yet they cannot see that the continental nations will *naturally* pursue the same.

It amounts to an impossibility to suppose that the continental nations of Europe, or even America, will cease to encourage their own manufacturing interests. Under such circumstances, they would only take those articles of British manufacture which they could not absolutely dispense with. They do the same now that we refuse the free importation of their corn. Hence, allowing that they would, under a free trade, take an equivalent in manufactured articles to the corn they exported, still they would not take more; consequently, nothing could at present be gained by a repeal of the corn laws. But we have already *proved*, from statistical facts and from reason, that they would not take our manufactures to the same extent to which we might take their corn. Then the argument stands thus:—If we give the British corn grower 56s. per quarter for the corn we consume, we are certain that he will expend it in purchasing our manufactures, because they are necessaries to him; but if we give the Prussian or the German 42s. per quarter for the same, we are certain that he will not expend it all in purchasing our manufactures; on the contrary, we are morally certain that the greater part will be spent in purchasing the manufactures of his own country, because they are greater necessaries to him than ours are, as ours are greater necessaries to us than his. It follows that the whole of the British corn growers' receipts will be devoted to the encouragement of the manufactures of his own country; but that *less than one-half* of the Prussian's or the German's will be applied to the same purpose.

The result of our inquiry is, *that we have abundant means of supplying our own population with food; that the individuals who may be employed in raising this food will consume a greater proportion of our manufactured articles than any other people on the face of the earth; and that the advantage we should obtain from this consumption of our manufactures would more than counterbalance the disadvantage of the greater price of corn* (the lowest permanent reduction that could be expected in the price of corn being 14s. per quarter, or 25 per cent.; whilst the decreased consumption of our manufactures, consequent on the use of foreign instead of home-grown corn, would be more than *one-half*, or 50 per cent.); *therefore that our wisest course will be to continue our corn laws. Quid erat demonstrandum.*

The foregoing are the facts upon which we are bold enough to take our stand in advising a course for the future; and we shall so counsel as that we may, in years to come, look back on these humble pages, written in the days of our youth, with feelings of pleasure. We shall so write as that when time, that great destroyer, has laid his remorseless hand on our frame, and tinged our locks with grey, we may review the opinions expressed in our earlier days with some degree of satisfaction. We belong not to that numerous class who advocate this or that view from factious motives—from a desire that a certain party may triumph; but we proudly rank ourselves with that noble few whose only object is the promotion of the general good—whose only end is their country's. We wish not the prosperity of the agriculturist at the cost of the manufacturer, nor the welfare of the manufacturer at the expense of the agriculturist. Although young, we have, by God's blessing, lived long enough to know that the protection of any one class is only right and beneficial so far as it is conducive to the welfare of all. On these grounds we advocate protection to the British agriculturist now, and for some time to come. But are we asked if we would maintain the corn laws for ever? Are we asked if we entertain the opinion that the British agriculturist will never be able to compete with the foreigner? Then we feel constrained to answer—No! And we will briefly state the reasons why we are persuaded that a period will come—when, it is impossible to say, but depending upon contingent circumstances; when the wisdom of the British legislature will be shown in abrogating any restriction on the importation of foreign corn.

Arthur Young, in his first paper in the *Annals of Agriculture*, observes:—"The wastes which disgrace this country are many of them in our richest counties, and on the most fertile soils. They are scattered over the whole kingdom under the name of commons, greens, forests, chases, moors, bogs, marshes, &c."....."To bring into culture all wastes of every denomination which are now uncultivated, not because the soil is bad, but because cursed with the rights of commonage, I consider as the very greatest object of British policy. There may be difficulties in the arrangement of the business, but no doubt of its propriety."

Although the foregoing was written in 1782, it is equally applicable to the present period. Our uncultivated lands are a disgrace to the country, at a time when we actually import two millions and a half quarters of corn per annum, paying for them in gold, thereby crippling our internal resources, and creating poverty and disaffection throughout the kingdom.

If the same talent and the same degree of exertion had been adopted in devising the best means of increasing our own agricultural produce, that has been spent in attempting to achieve the unpatriotic object of making us dependent for our bread on the soils of other countries, we should not now have been in our present depressed condition.

"Notwithstanding the importance that was attached to the importation of grain, it was an ascertained fact, that in no one year had more than about one-tenth, or one-twelfth, of the whole consumption been drawn from foreign countries. If no foreign corn had been imported, the nation would have saved sixty millions sterling. It might be said that without this importation, sixty millions' worth of our manufactures would have remained unsold; but then it is not recollected what those sixty millions would have effected if they had been expended in the improvement of our agriculture, or what increased means of purchasing our manufactures they would have given to agriculturists. If on being laid out at home they had produced these natural effects, then the country would have

added to her means of independence, and have created a market of which no external revolutions could have deprived us."

"Circumstances over which we had no control had tended to improve the agriculture of England. *Continental exclusion had advanced the cultivation of our own lands*; and the high prices occasioned by such exclusion had rendered us independent of foreign aid. Now, when we had paid the price of our independence, and produced a supply equal to our consumption, would it not be wise to prevent any great revolution, which would destroy the domestic culture of the country, and render it more dependent than it had ever been?"

"He would not stop to inquire whether it was sound policy to suffer any great country to be dependent on another for an essential article of subsistence; but it must be obvious that such an advantage would be readily seized on by any power, and used to the annoyance of the nation that exposed itself to such an evil."*

When we observe that the Council of the Anti-Corn-Law League have quoted from the above authority in favour of their views, we cannot be considered guilty of partiality in making the quotation. We earnestly invite particular attention to the opinions therein expressed, that the exclusion of continental agricultural produce tended to advance British agriculture; and that the extension of agriculture in this country creates a market of which no external revolutions can deprive us.

These are the principal reasons why we would maintain the corn laws for the future. And when we reflect, that whilst Great Britain has for the last twenty years pursued a system of liberal commercial policy, conceding time after time manifold advantages to other nations; when we reflect that, whilst in 1842, we reduced the duties on nearly all the articles which we import from other countries, not only were no similar concessions made to us, but actually Russia, Portugal, France, Belgium, America, and the Prusso-Germanic League, respectively passed hostile tariffs against the trade of this country;—we must indeed express our utter astonishment that any class of men, professing sanity, can be found to advocate still greater concessions; and our surprise is much increased when we reflect that the article they would allow to enter duty free is the one our declared enemies—enemies by those very acts—can produce in abundance, and at so cheap a rate as to undersell our present producers, and eventually place us at their mercy.

Contemplate the result of a former instance of the unlimited introduction of foreign corn to a wealthy and powerful nation. Appeal to history—to the history of one of the most powerful empires. Appeal to the history of Rome. Alison says:—"By the extension of their power over all the nations adjoining the Mediterranean, as well as by the incessant clamours of the Roman populace for *cheap bread*, the Roman government was early obliged to admit a free importation of grain from Sicily, Lybia, and Egypt—the great granaries of mankind in ancient times. And what was the result? Exactly what evidently would ensue from the application of a similar principle to the British islands. The Italian cultivation was depressed as much as the African or Egyptian was increased; the price of grain underwent no diminution to the Roman populace, but was fully higher on an average than it has been in England for the last ten years; while the small arable farms of Italy—the nursery of the legions—were absorbed in great sweeps of pasture; *the race of independent cultivators disappeared; the strength of the vitals of the state was consumed*; and, at length, the independence of the central provinces of the empire was destroyed."

It is marvellous that all these circumstances should not alter the absurd opinions of the corn law repealers. It is almost incredulous that, whilst our every attempt at liberal commercial arrangements is met with an opposite spirit by other nations, still so many should advocate free trade. Is that free trade which would make us purchase where we cannot sell? Oh, nonsense! If ever the British nation, with all their experience, allow a free trade in corn until other nations allow the free importation of our staple produce, they will justly merit their inevitable ruin.

Then, in all human probability, as far as human foresight can go, we have nothing to *gain* by a repeal of the corn laws—nothing to gain, since it is obvious that other nations (those nations which alone can supply us with corn) will persist in encouraging their manufacturing interests. But have we nothing to lose? We find that the total annual produce of the British islands amounts to £514,000,000,* whilst the exportation in 1841 amounted to £51,634,623.† Now the value of the exported produce of the country is but *one-tenth* that of the total annual produce. Upon the welfare of the home consumers, therefore, depends *nine-tenths* of the general consumption. Again, it appears that *five-sixths* of the population of this country are engaged in agriculture, in manufacturing for themselves, and in manufacturing for the agricultural portion of the community.‡ Now it is obvious that the welfare of this great portion depends on the welfare of the agriculturists, since they could not afford to manufacture for themselves, unless they had a demand from the agriculturists. Men cannot feed on manufactures; and whilst the agriculturists are producing food for all, they are manufacturing for all; neither can live without the other; in other words, *five-sixths* of the population of this country may be fairly divided into two classes mutually dependant on each other; but, as men may live without manufactures, yet not without food, they may all be fairly said to depend for their welfare on the agriculture of this country.

Thus, then, it appears that *one-sixth* of the population of the British islands is engaged in manufacturing *one-tenth* the total annual produce of the country for exportation: all the rest depend fundamentally on British agriculture. And what has maintained British agriculture? What has enabled the British farmer to reduce the remunerative price of wheat with the existing taxation, from 80s. per quarter in 1815 to 56s. in 1842? What has enabled British agriculturists to increase their produce from being sufficient for 9,546,289 persons in 1801 to being sufficient for 16,016,953 persons in 1841?‖ The corn laws—the much-abused corn laws.

It is calculated by Alison that Ireland is capable of producing food sufficient for *forty millions* of people, and that when leaving *two-thirds* of the land for other purposes, that the same proportion of England and Wales might be made to support *seventy-*

* Mr. Huskisson, May 5, 1814.

* Pebree's Statistical Tables.

† Companion to British Almanac for 1843.

‡ Alison on Population.

‖ This calculation is, of course, exclusive of Ireland.

five millions. Thus *one hundred and fifteen millions* of souls might subsist on the agricultural produce of *one-third* of England, Wales, and Ireland! But how is this to be brought about? By protecting British agriculture.

One instance may be cited to shew that the interest of the whole nation consists in supporting its own agriculture. The four years ending 1835 were years of so great agricultural plenty, that the price was reduced to thirty-nine shillings and fourpence the quarter, without any important importation of foreign corn; indeed, the country produced more than sufficient for the support of its population, yet our manufacturing interests were never more flourishing; and we exported more manufactured articles during those four years than we have since done. Surely this is a practical proof that the welfare of our agriculture is essential to the welfare of our trade and commerce.

Thus we have seen that no people will ever consume so great a proportionate share of our manufactures per head as the people of our own country—that by employing a greater number of persons, and cultivating ground that now lies waste, we may raise sufficient food for ten times the present population—that if we admit the corn of other countries duty-free, we are by no means certain, nor indeed can we expect, that they will consume our manufactures—that we shall not, by the free importation of foreign corn, eventually obtain it at a less price—that the people of this country generally never were in such a flourishing state as when their native agricultural produce was sufficient for their support. And what does this teach us? That we ought to protect our native agriculture. But the population of other nations will increase; they, like us, will press upon their agricultural limits; their wants, like ours, will increase; their habits, like ours, will become more refined; their wealth, like ours, will multiply; and with the multiplication of their wealth will come high prices; their ideas of political economy, like ours, will become more enlarged; they, like us, will discover that the true interest of nations consists in reciprocal dealings. When these things come about we shall shew our wisdom by allowing the free importation of corn, as well as all other articles. If we do impose any tax for the purpose of revenue, we should then shew our wisdom by imposing it on the imported and the home-produced alike. Even now the schoolmaster is abroad, who will teach mankind, of all nations, all colours, and all tongues, that national jealousy, distrust, and competition, is inconsistent with national prosperity. Time will come when the universally received political creed will be, that it is to the true interest of nations to throw aside all vain ideas of superiority, all ill-judged attempts at despotic rule, all wish to be the rulers of other nations, where each and all will know, acknowledge, and apply the golden principle, that the Creator made one country to produce one necessary, and another country another necessary; and that India is equally essential to the happiness of the Norwegian as it is to that of the Indian. The time assuredly will come when "He shall judge among the nations, and shall rebuke many people: and they shall beat their swords into *ploughshares*, and their spears into *pruning-hooks*: nation shall not lift up sword against nation, neither shall they learn war any more."*

But, whilst other nations contemplate with envy our greatness, we must not do that which may place us within their power. If we throw our lands out of cultivation, if we stay the progress of agriculture, we can never recover ourselves. Corn cannot be grown in one day; and, once placing ourselves at the mercy of other nations, they may easily take advantage of circumstances to cut off our supply: famine and disaffection would be the result, and the total ruin of the empire would inevitably follow.

Until reciprocity governs the actions of foreign legislatures, then—until our land has been brought into that state of cultivation which will make the cost of importation a sufficient protection—until such time as the free importation of foreign corn will not injure our mainstay, the native agriculturists—until then we would continue the corn laws.

In conclusion, we will quote the words of G. R. Robinson, Esq., in his pamphlet entitled "Facts *v.* Theory," with reference to free trade:—"Free trade, in its most comprehensive signification, appears to me the mere chimera of dreaming philosophy—a pleasing vision, to be realised only when jarring interests, mutual jealousies, and national prejudices shall cease throughout the world." These are exactly our views; and as they are applicable to free trade in general, they are applicable to free trade in corn. With this we dismiss the question of the corn laws in the present series of papers, promising to return to them shortly in "A reply to the League packet." Our next paper will be devoted to the consideration of another proposed remedy for the present depression.

Lion-street, Kidderminster, May 16th, 1843.

* Isaiah, chap. ii. v. 4.

ON THOROUGH DRAINING.

Evidence on the Antiquity, Cheapness, and Efficacy of Thorough-Draining, or Land-Ditching, as practised throughout the Counties of Suffolk, Hertford, Essex, and Norfolk, collected by Ph. Pusey. With some Notice of Improved Machines for Tile-Making.

(From the Journal of the Royal Agricultural Society.)

I. SUFFOLK DRAINING.

1. By the Rev. Copinger Hill.

Now that Mr. Pusey has drawn public attention to the existence, for half a century, in the eastern counties, of a complete and economical system of drainage, it may not be amiss to describe in detail the practice to which he alludes.

On the heavy lands of Suffolk and the adjoining counties, under-draining at a distance of 16½ feet, and a depth of 26 or 30 inches, is as much a matter of routine as hedging and ditching. It is done almost universally at the expense of the tenant, whether his tenure be at will or on lease. The outlay is thought to be repaid by the first crop; certainly by the second. My meaning is this: usually the land is drained the year it is fallowed; and when the period recurs for draining a field, I should expect, under favourable circumstances, that the increased value of the succeeding barley-crop over what it would have been without draining, would repay the cost of the draining.

Our system is especially intended to remove that wetness of the land which is caused by water becoming stagnant on the surface, from the reten-

tive nature of the soil or surface materials; but it is also calculated to carry off the water which filtrates from higher grounds through beds of porous materials lying immediately upon impervious strata.

Much of our land has been repeatedly under-drained. The grandfather of the Messrs. Crosse, of Finborough, began under draining ninety years ago.

Ours does not profess to be a permanent system, like tile or stone draining; but we think the second time the land is drained, in which case the old drains are cut across, that an additional benefit is derived.

On our strong clays, under-draining does not enable us to feed off turnips with sheep; it reduces the amount of horse-labour, inasmuch as the land is more easily worked, and sooner fit for work after rain; two horses *abreast* are universal in the plough, except that in wet seasons the three last furrows of our nine-feet stitches or beds are ploughed with two horses at *length*, in order to avoid treading on the ploughed land.

The drill and scarifier are each adapted to cover nine-feet stitches, once going and returning, the horses walking in the furrows: the shafts of the drill being set on one side, instead of the middle of the machine, and the scarifier being worked by means of a long whipple-tree. Our wheat is mostly dibbled, and we do not "consider the practice a strangely slow process:" hands are plentiful.

Even the best-drained land does not break up in such a friable state as to permit the drill to work immediately after the plough: hence the great inducement to dibble: land upon which wheat is drilled must be either summer-fallows, or bean-land ploughed directly after harvest, and left to the influence of the weather to be pulverised. All our lands intended for barley are ploughed for the last time in autumn, and scarified in spring before drilling. The surface of the land is left almost level by the scarifier, and is seeded throughout, furrow as well as stitch.

Seed-time and harvest are undoubtedly forwarded by drainage, but to what extent it is difficult to say, there being no means of comparison, as almost all the heavy lands hereabouts are drained more or less recently. Pasture is as much benefited as arable land. The grass is improved both in quantity and quality, and comes earlier in the spring.

We can carry more stock, owing to drainage, being thereby enabled to grow root-crops, particularly mangold-wurzel, and to feed off vetches in place of a portion of the clean fallow.

Old farmers describe a variety of practices (at present unknown) which existed before under-draining became general: such as laying the land for barley in three-feet ridges, much as we do now for mangold-wurzel, and sowing broadcast; and drawing a log of wood along the furrow to let off the surface-water. They speak of the produce as increased from 16 or 18 bushels per acre of wheat to 24 and 28; while the increase in the barley-crop is quite as great.

The following extract from Dixon's "Practical Agriculture," vol. i. p. 373, new edition, published in 1807, may possibly be the means of further illustrating the advantages of under-draining; and it might be well to ascertain the present state of the farm in question, as well as the materials with which Mr. Salter filled up his drains:—

"At Michaelmas, 1795, Mr. Salter of Winburgh, East Devon, entered upon the occupation of more than 800 acres of heavy land, which had been so entirely neglected by his predecessor as to be almost altogether what it ought not to have been.

"Mr. Salter immediately saw that unless he could get rid of the surface-water all his labour must be fruitless, and his money expended in vain; he therefore began his operation by cutting 342 rods (7 yards to the rod) of river through the centre of the farm, 7 feet wide and 6 feet deep perpendicularly: in order to obtain an outlet for the water to flow from his other works, he cut 2937 rods of new and old ditches, 6 feet wide and 5 feet deep perpendicularly; 1116 rods of open drains, of various widths and depths from 4 to 5 feet wide and from $3\frac{1}{2}$ to $4\frac{1}{2}$ feet deep perpendicularly; and he cut *and filled up* 4871 *rods of under-draining*, of which the leading-drains were 36 inches and the feeding-drains to the same 30 inches deep perpendicularly. The whole of this work was executed and completed in one year. Mr. Salter has continued to do a great deal every year since 1795; between Michaelmas, 1800, and Michaelmas, 1801, he executed 4423 rods of under-draining, of widths and depths as before expressed; and he is now going on with the spirit and judgment of an experienced and an understanding agriculturist.

"*The effect has been*, that on the land which was so much impoverished by stagnant water, and so much inundated by land-springs, as not to reproduce the seed used upon it, his crops have been abundant: and while Mr. Salter reaps the benefit of his judicious exertions, he may very fairly be regarded as a public benefactor. He may almost be considered as producing a new creation around him, and should be held up by every friend to agricultural improvement to the admiration and imitation of all who have to do with *heavy land* from which it is necesary to remove the *surface-water*."

As to the districts which require draining, I do not know which to specify: all tenacious soils—I should think the neighbourhood of Hardwick, Tadlow, Gransden, in Cambridgeshire, and the bottom of the hills in Surrey and Sussex, and a large portion of Lancashire, Hertfordshire, Buckinghamshire, Kent, and Berkshire. *

In our own district, where the lands are under-drained, we detect the want of fresh draining instantly on walking across a field after wet weather: we detect it on our neighbours' land as well as our own, in passing through the country, by black spots on the surface, as the lands begin to dry in the spring.

Lands of a gently undulating nature are the most easily drained: our great difficulty is with flat land, where the watercourses are not for a sufficient distance under the control of the farmer, as is frequently the case in small occupations.

Our mode of cutting the drains is pretty uniform; the filling up varies: and here, as I am writing for the information of persons supposed to be altoge-

* As a rule, under-draining should take the place of superficial draining, and high ridges and deep furrows be discontinued. One exception occurs to me, namely, peaty land—to which I think surface is more applicable than under-draining: the peat seems to grow and fill up under-ground drains almost as soon as they are cut, and tiles are no defence against its encroachments; it finds its way through the points of junction of the tiles *readily*.

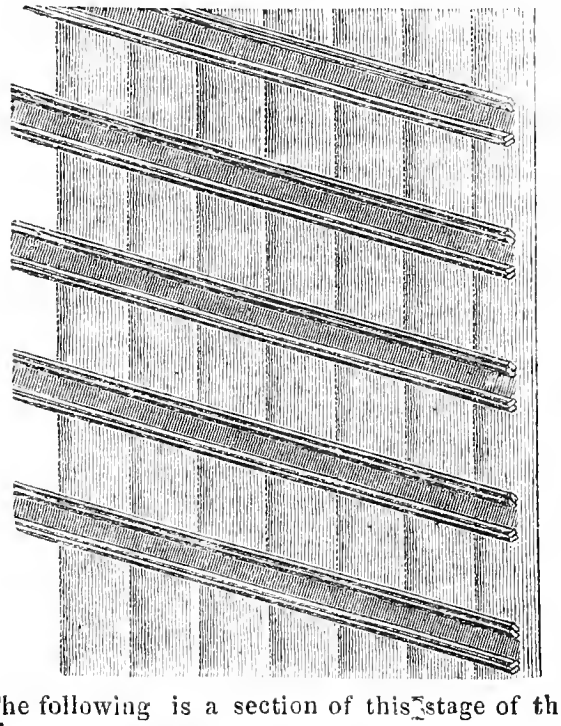
ther ignorant of the practice of draining, I would correct a misapprehension that prevails as to the term "filling up."

We do not, as in the case of stone and tile draining, "fill up" with any material through which the water drains; but our "filling up" is merely for the purpose of supporting the earth till an arch is formed; by which time the material with which we "fill up" is for the most part perished: a channel for the water is left clear beneath our "filling up."

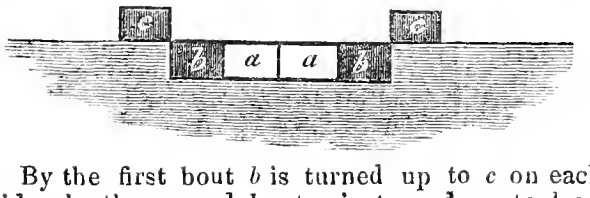
We fill up either with haulm (stubble), or ling (heath,) or a scud of straw, or turf, or hop-binds twisted. Tiles and stone are disregarded by us, except for boggy soils, even since their use has been recalled to our notice by Scotch agriculturists; for our own system answers well, and is tested by time.

The tributary drains are drawn slantingly across the slope of the ground with a moderate fall. These tributaries at their lowest points are connected together by main drains, of the same dimensions as the tributaries, in such a manner that a group of tributaries and its corresponding main may take the water from half or three-quarters of an acre of land: the main drain opens into the ditch at a spot called the "eye." We do not interpose one large drain between the main drains and the ditch. I will detail as minutely as I can the successive steps in our progress, and I wish I was sufficiently master of my pencil to be able to represent them in that way, for I think I could then convey a clearer impression of our method than comes within the power of a written description.

1st. We draw the tributaries parallel to one another by means of a common plough going *two bouts* to each drain, thus opening a furrow 18 inches wide, and 5 inches deep:

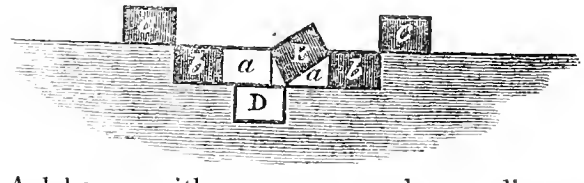


The following is a section of this stage of the drain:

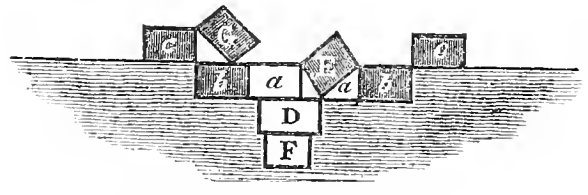


By the first bout *b* is turned up to *c* on each side; by the second bout *a* is turned up to *b* on each side. Thus leaving a furrow (*a a*) in depth 5 inches and 18 wide. Then we draw the main drains by the same plough, being guided in the direction of them by circumstances, such as shape of the field, fall of the water in the ditches, &c.

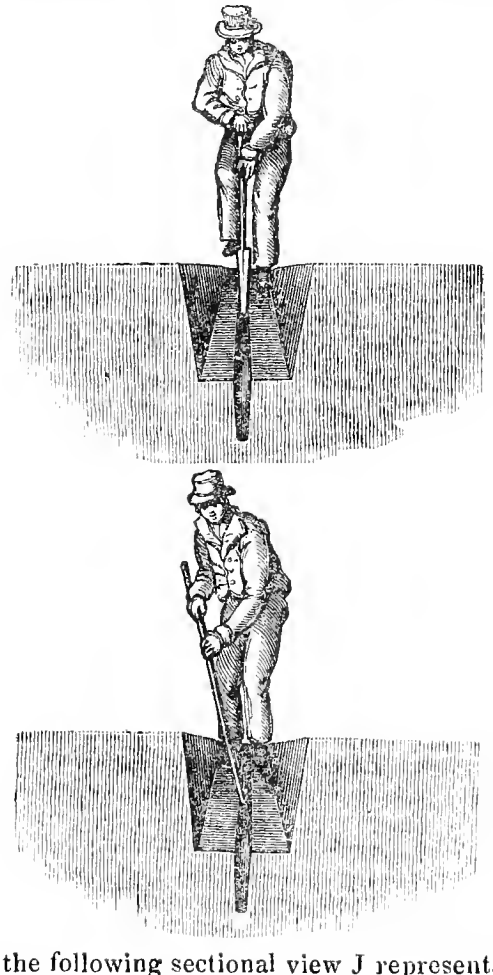
Then a large deep-breasted plough, kept for the purpose in some districts, going once down the furrow opened by the previous operations, turns out another furrow about 10 inches wide by 5 inches deep. Thus we have by means of the plough a drain 10 inches wide by 10 inches deep, as in the following figure, where E represents the slice turned out by the deep-breasted plough, and D the furrow formed by it.



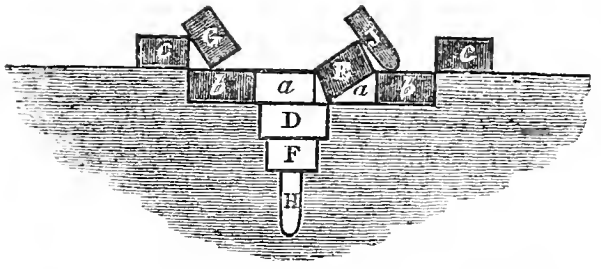
A labourer with a common spade now digs out a spit 9 inches deep, beginning at the eye, according to the following sectional view, where G represents the spit thrown out by the broad spade, and F the trench made.



Then with a narrow spade the labourer takes out 11 inches more, and scoops out the crumbs:



In the following sectional view J represents the spit thrown out by the narrow spade, and H the trench or drain left by it:



In digging with the broad spade regard is had to the inequalities of the surface; a greater or less depth is given according as the ground rises or falls; the depth of the narrow drain is uniform throughout.

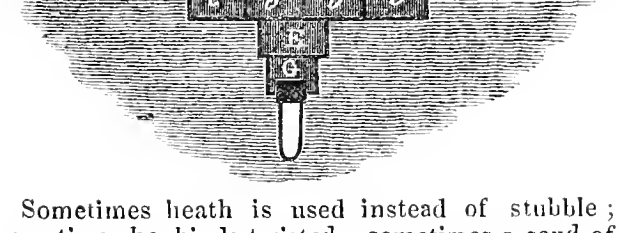
Scoop.

Narrow Spade.

If he meets with stone or gravel, he picks or digs them out, and rams down stiff clay into the holes so made, through which he cuts his drain afresh with his narrow spade.

The drains are now 30 inches deep; the narrow spade is $1\frac{1}{2}$ inches wide at bottom, and $2\frac{1}{2}$ inches wide at top; it is in depth 13 inches, but being necessarily worked in a slanting direction, only digs out 11 inches. A few years since the practice was to dig 15 inches with the narrow spade immediately after the plough: this has given way to the method above stated.

A small quantity of stubble is now laid along the narrow drain, the labourer walking in the drain presses the stubble about 3 inches down into the narrow drain with his spade. The stubble is not pressed to the bottom, but a free passage for the water is left under it. Earth, heavy or light indifferently, is then shovelled in over the haulm, and the common plough reverses its former work, as in the following figure:



Sometimes heath is used instead of stubble; sometimes hopbinds twisted; sometimes a scud of straw, made to fit the upper part of the narrow drain. Occasionally a waggon-rope is laid along the bottom of the drain before the filling up is done, and the rope is afterwards drawn along, thus securing the drain from crumbs of earth at the bottom; but this precaution is unnecessary. At other times all filling up is dispensed with, and a board of the same dimensions as the narrow drain is fitted into it; the earth is then rammed down on to the edge of the board, and the board is drawn along the drain, leaving an arched waterway behind it. A considerable farm in my neighbourhood, belonging to Sir Henry Leslie, of Cockerell's Hall, heretofore neglected, is now undergoing this operation, mainly, I believe, in consequence of the shortness of the straw-crop of 1842. The tenant informs me that some drains cut upon the farm six years ago, according to this principle, are now running well.

Sometimes faggot-wood is laid along the bottom of the drain with haulm over it, the water finding its way through the wood. A great portion of Clopton Hall Farm was drained in this way some thirty years ago; this mode is expensive, and is adopted by new men only, who feel misgivings (which are not warranted by experience) as to the stability of stubble-draining.

But, better than all, peat cut for the purpose in the fens of Cambridgeshire, in length 15 inches, and 3 inches square, is pressed gently into the top of the narrow drain, and the earth thrown in upon it; the peat swells speedily, and becomes firmly fixed, and is very durable, and has this advantage over the methods already specified, and also over tile-draining, that a fold-stake driven into it commits no damage. In peat-draining, when we come to stony or gravelly spots, two pieces of peat, instead of one, or one and a half, are placed in side by side; or, in bad cases, the sides of the drain are built with turf, as well as the top. Stubble, heath, hop-binds, straw, are quickly decomposed and washed away; peat remains. Sir H. Davy says, "Inert peaty matter remains for years exposed to water and air without undergoing change."*

In draining pasture land we only go one bout with the common plough; then one spit with the broad spade, and one with the narrow: sometimes the narrow spade is used immediately after the plough; and we do not drain pasture so closely as arable land.

As for expense: in 1841, when day wages (not the average weekly earnings throughout the year, which are one-third more than the daily wages usually quoted) were 10s. per week and beer, the broad and narrow spade-work and filling in was done for 4s. per score rods, of $16\frac{1}{2}$ feet to the rod; or 32s. per acre if the drains are a rod apart, and 6d. extra for each eye, and good earnings made; half a score poles in winter is about a day's work. If the ground is stony, the work is longer in hand; but the drainer is paid per bushel for the stones thrown out, which are carted into the roads.

The expense of filling up depends on the material used; stubble costs nothing, but robs the muck-hill. When heath or peat are within a day's cartage they are used. I used to cart heath a distance of 20 miles, occupying two entire days therein; I now cart peat a distance of 33 miles, my waggon being out three entire days.†

As for durability, I cannot do better than quote the words of my friend, Mr. Moore, of Badley:—

"In my occupation of upwards of 500 acres, I have not more than 40 upon which drains are not re-

* The writer caused one of his peat-drains to be cut transversely by a sharp spade, and found the peat firmly fixed; a portion of it had insinuated itself between the shoulder of the narrow drain and the loose earth thrown upon it, presenting the appearance of the head of a nail.

† Peat sells at the rate of 6s. per thousand; eight score of draining to the acre requires two thousand peat.

quired; all the remainder, viz., nearly 500 acres, have been once drained by me, and a considerable portion of it twice. I have not more than 5 acres whereon I have used tiles; some of which I have also twice tile-drained, in consequence of a deposit accumulated of a sandy nature. The soil in my occupation is very variable, for even in the same field I have a subsoil of light loamy sand, very strong clay, and a gravelly red loam, so full of stones that some parts of the drains are obliged to be made by a pickaxe and other iron tools previously to using the narrow draining-spade. I have this year (1843) drained where 95 bushels of large stones per acre have been dug out of the drains and collected. At the time I am writing this I am draining a field of 8 acres, and I find it is twenty years since I drained it before. This field contains all the various soils before mentioned; and my men are using in many parts pickaxes, &c., to get through the stone. Although I have exceeded my usual time in renewing draining in this field, I have not observed one of the old drains actually blown or choked; but, as a matter of course, they are in many places very nearly worn out; yet in other parts of the field, where the soil is a strong loam, the drains are in very good condition. I am by experience convinced that where under-draining is performed, as in the usual manner practised in this neighbourhood, i. e., the drains first drawn by a plough 8 or 10 inches deep, dug 10 inches with the broad spade and 10 inches with the narrow, filling the top of the narrow drain with stubble; the drains will last from twelve to twenty years."

Mr. Moore uses no other material than what is provincially called haulm (stubble) for filling up.

I can mention a curious illustration of the past practice of under-draining in England:—My friend Mr. Anderson had occasion to drain a field, and in doing so cut across the "old drains," out of which he took several bushels of "bullocks' horns:" upon enquiry he found that the field formerly belonged to a "tanner;" but no one in the parish remembers the "tanner." And upon my repeating the circumstance very lately, I heard of another instance of filling up with bullocks' horns.

I have described as well as I am able, and with a minuteness which will appear trifling to many, the practice of draining which exists among us. I cannot close this paper without one word on tile and stone draining.

We have attended to all that has been said on the subject during the last few years, but I do not think any addition has been made to our knowledge; at all events, no general change in our practice is contemplated. We were certainly under the impression that our mode of draining was well known to agriculturists; and were much surprised by the announcement made in Mr. Pusey's summary of the progress of agriculture in the last four years, that it had only recently and by accident come to his knowledge. Our drains afford a waterway of 15 square inches in section: to obtain a similar one with tile would involve an expense utterly beyond our means. Besides, they would be as liable to stoppage as our own. Such is Mr. Moore's experience, and such is my own on a small scale; tiles laid down in boggy soil on my own farm many years ago have ceased to act, and when examined are found to be full, and for the most part broken.

As for stone-draining, I am at a loss to guess where the material is to be got on heavy soils; certain it is that the road-surveyor in our neighbourhood is glad to pay 4s. for 25 bushels of picked stone carried into the roads. And I suspect stone drains would quickly choke. I made one small drain six years ago in this manner in compliment to the new system, and it failed in a year or two.

I do not suppose that my description of our mode of draining is clear enough to enable farmers to adopt it without inspecting the practice; and I think there is some danger of the system getting into disrepute if it is attempted. Surely it would be worth the while of young farmers from the undrained districts to learn the practice by a short sojourn on the farms of some of our best drainers, and thus copy the professional man, who obtains an accurate acquaintance with his particular science by studying each department of it in its own especial school.

Buxhall, Stowmarket.

I. SUFFOLK DRAINING.

2. By Samuel Jonas.

To Ph. Pusey, Esq.

Dear Sir,—I went over to my father's yesterday to obtain information respecting thorough draining, and I here forward you the information obtained. Mr. S. Jonas, of Great Thurlow, Suffolk, states that he is aged seventy years, and that his father died fifty years ago, and was aged eighty years; that he has heard his father talk of hollow draining, and that he had the tools his father's men used for that purpose, so that you may fairly conclude that hollow draining has been done in my own family a hundred years back. And as I believe in no county is this kind of work done better than in Suffolk, I send you the manner in which my father has had this work done for the last half century. He draws his ditches within 4 yards of each other, digs the ditch out two spit or 18 to 20 inches deep with the wide spade, and 10 inches with the narrow spit, making the total depth of ditch 28 to 30 inches. The soil is a close tenacious clay; he has bridges with joints, which are pieces of wood made the size of the lower drain, viz., about 8 inches deep, 3½ inches wide at top, tapering to about two inches at bottom: these are drawn along in the ditch by a lever, and the soil taken out with the narrow spade is then laid on the bridges, and then rammed down light and close over the bridge, which is then drawn forward and more soil rammed, leaving a hollow space, with a tough, compact arch of clay. Some people have objected to this plug or ramming system, stating that the water will not penetrate the earth thus rammed; but to prove how durable this plan is, as well as effectual, in the draining of the land, my father is now hollow-draining a field that was hollow-drained the same depth, viz., 30 inches, twenty years ago, and rammed, and during the twenty years has never had occasion to draw a water-furrow on the land, as it was absorbed by the soil, and ran off in the hollow drains. He never has during that time known any water to run or stand in the furrows. I think this is strong evidence of thorough draining having long existed in Suffolk.

At Radwinter, in Essex, on a farm belonging to my wife's mother, after having dug the earth out to form the ditch, we lay a plug of peat, which is obtained from the fens in Cambridgeshire. These pieces of peat are cut to a proper size and length, and laid in the lower or narrow part of the drain

this part of the ditch being narrower below than at top. The sod of peat rests on the two sides of the ditch, leaving a hollow space below of about three inches, and we find this a very good plan; but if the soil is a loose sort, so that the sides of the ditch will not stand sound, we are obliged to fill up with straw and bushes.

Yours, faithfully,
SAMUEL JONAS.

Ickleton, Saffron Walden,
April 7, 1843.

II. HERTFORDSHIRE DRAINING.

BY W. FLACK.

To Philip Pusey, Esq.

SIR,—In the last number of the *Agricultural Journal* you mention having requested Mr. Ransome to make some enquiry as to the length of time the practice of thorough or frequent draining could be traced back in the county of Suffolk; and as I happen to have it in my power to show it has been practised much longer in this neigbourhood than is there stated, I take the liberty of sending you the following statement.

I have in my possession an old day-book of Mr. Robert Climenson's (Mrs. Flack's great-grandfather), who occupied what was then the most considerable farm in this parish, in which there are various entries of payments for many hundred poles of "under-draining," beginning in 1743, and several following years, sufficient to show it was practised to a considerable extent at that time; and I have every reason to believe it has been used ever since, as my own knowledge extends to about forty years, and when a boy I have heard old labourers speak of what was considered a good day's work when they were young men.

Having thus shown that the system has been in operation in this the eastern part of the county of Hertford for a century, I will now state some of the particulars; but perhaps I ought to state previously, that, unlike most of the strong land in many of the midland and other counties, in Herts the land lies nearly flat, and therefore it is usual to cut the drains directly across the shot (as we term the course of the plough), at least as much so as can be, to get a sufficient fall for the water. I would also observe our object is to get off the *surface-water*, as we are seldom troubled with springs on these soils.

1. *Depth and width.*—A bout is first drawn with the plough deeply, casting a furrow each way; then dug 22 inches the parallel drains, and from 26 to 30 inches the leading drain; the wedge shape—10 inches at the top to 2 inches at the bottom.

2. *Distance.*—16½ feet from drain to drain.

3. *Materials.*—Thorns are preferred, but when sufficient are not to be had; we use the underwood cut from the woods: they should be laid as regularly as possible—one part lapping on to the next layer, in the way the straw is laid by the thatcher—enough to rise about four inches from the bottom of the drain when well pressed down, which is considered important; then a thin layer of straw or haulm, sufficient to prevent the soil from getting to the thorns. The top spit, which is laid as near as possible when dug, is then put in with some of the surface soil, as being the more porous. The bottom spit, when dug, is cast some on each side, and beyond the other, so that it may be spread over the surface of the land.

4. *Expense.*—The digging and filling in cost about 4s. per score poles of 16½ feet (8s. per furlong), varying a little more or less according as the land works. There is a greater variation in the expense of the materials, but the average cost is about the same as the labour, which would be—

	£	s.	d.
160 poles, digging and filling ..	1	12	0
Ditto, materials	1	12	0
Making, per acre....	3	4	0

5. *Durability.*—On the strongest clays, when well done, they will last twenty years, and sometimes more. In some lands even the strongest clays are intersected with veins and small patches of a tender crumbling substance, called by the labourers *hurrick*, which will not stand longer than the thorns last, and which soon spoils the drains—perhaps in ten or twelve years. In such cases it is usual to cut a few fresh drains across the old ones, which bleed them, and lay the land dry for some years longer.

6. *Efficiency.*—They are so efficient as completely to effect the object desired; and are considered, in most cases, to return the outlay in the first two or three crops. I should say the benefit is greatest on those soils that have a tolerably good depth of staple or useful soil. On the thin clays, though quite as necessary, the immediate improvement is not so apparent. Without draining, however, these could not be cultivated to any advantage; and here are never attempted to be so cultivated, if the occupier has the means to drain.

By means of improved machinery drain-tiles are now much reduced in price; but, after much attention to the subject, I prefer the thorn-drains, as much of our clay is of so tenacious a texture that I think it would soon become so consolidated over the tiles as to prevent the water reaching them, unless they were filled over the tiles with broken stones, or some porous material, which would very greatly increase the expense.

I remain, sir, your obedient servant,
Waters Place, Ware, W. FLACK.
January 11, 1843.

III. ESSEX DRAINING.

1.—BY ROBERT BAKER.

[*This and the two following statements were obtained for the Society by Mr. Bramston.*]

Under-draining has been long practised in Essex: the commencement of the system I have no opportunity of ascertaining; but from observations that I have heard made by others, I believe it was prevalent through all that portion of the county where the white chalk clay abounds—taking in nearly all that portion lying north of the line extending from Great Tey to Chelmsford, and from the latter place to High Ongar and Epping.

The Roothings and parishes around Dunmow have been most remarkable for its being carried out extensively; it has at a later period been introduced upon the mixed and gravelly subsoils, consisting of chalk, loam and clay, mixed in different proportions.

The chalk-clay is a deposit resting upon the London clay, and varies in thickness from 10 to 100 feet. As it approaches Cambridgeshire it be-

comes mixed with a larger proportion of chalk, and at Saffron Walden is superseded by the chalk which extends northward through that county. This soil is peculiarly adapted to draining, and produces excellent wheat and barley crops in alternate years under the system. The subsoil admits water readily, which passes off quickly into the drains, which are also very durable. As to the antiquity of the system, as carried out in this county, the earliest writer that I have met with who mentions it is the author of a work entitled "A Six Weeks' Tour through the Southern Counties in 1767," and published in 1769. This tour is stated to commence at Wells, thence to Hadleigh in Suffolk, Norfolk, Essex, Kent, &c.

Throughout the tour, extending over all the southern counties lying south of the line from Cambridge to Bristol (accurately described as to farming minutiæ), the author makes no allusion to draining until he comes into Essex. He states, "a remarkable particular I observed in their husbandry was the care with which they drain their wet lands (especially in this district, Braintree). They make hollow drains, the main ones 2 feet deep, and the branches 22 inches; they lay some small wood at the bottom, and a good deal of straw upon it, and then cover the whole with earth. The price of this work is 2d. per rod and their small beer. It were much to be wished the practice were more general, for it is an admirable one, and well deserves imitation," &c. At page 255:—"One circumstance I should not forget, and that is their hollow drains, of which they do a great deal in their wet lands; and this excellent practice I found scarce anywhere but in Essex and Suffolk."

In Vancouver's "Survey of Essex," published in 1795, draining is mentioned as peculiar to Essex. "The drains," he says, "are laid off at 2½ and 3 yards apart, 26 inches deep, and filled with wood and straw, at an expense of from 50s. to 60s. per acre."

Draining has been considered indispensable to the well cultivation of the chalk-clay lands of this nature, and is carried on extensively at the present moment.

Other modes are, however, adopted both by the 20-horse power and windlass mole-plough—the latter in many districts has superseded the use of the spade. The cost of this method at 4 to 5 yards apart, with the leaders dug and filled with wood and straw, does not exceed 20s. per acre; 15s. is the medium price, including the horse labour; the common plough is first used to the depth of from 4 to 6 inches, and the mole-plough passes at a further depth of from 12 to 16 inches. These drains draw quickly, and are durable on the best chalky-clay soils, and will if well done continue to work well from ten to fifteen years, but upon loam or gravelly subsoils the process will not succeed.

Drains in the former mode by the spade are first opened by four furrows ploughed out by a common foot-plough, transversely of the stiches, at from 5 to 6 yards apart; the drains are cut by two operations of the spade—the upper spade being about 3 inches wide at the point, and 10 inches long, the lower spade about two inches wide at the point, and 12 inches long; the drain is cleared with a long scoop; wood is carefully placed at the bottom, about 2½ inches high, and covered with straw about two inches more. In some cases straw or haulm is only used, in others the earth is rammed in upon a piece of wood made to fit the bottom of the ditch, which is drawn forward as the work proceeds, leaving a hollow drain. The cost of digging is from 3s. to 4s. per score rods, and in some cases 5s.; 8 score rods to the acre averages about 30s.; labour, the ploughing, and for wood and straw about as much more, making altogether from 2*l.* 10s. to 3*l.* per acre: if wood and straw are not used, 1*l.* per acre may be deducted.

This system is *practised* upon about two-thirds of the whole county, of which one-half is well drained. The drains upon the best soils will last from ten to fifteen years. The average time is considered to be about ten years. By actual calculations entered into with others on various occasions, the expense of maintaining a good system of draining amounts to 5s. per acre per annum by the spade, and about 2s. 6d. per acre by the mole-plough.

The tenacious lands, consisting of the London clay as the subsoil, are very retentive of moisture, and most of them will answer well for draining: the same mode as described above is resorted to; but the drains are not more than two-thirds as durable. Tile and pipes have of late been introduced, but do not answer well unless covered about 2 inches with shingle-gravel or cockle-shells, which are found in abundance on the coast. Drains of this character are very durable; but the cost is too great for tenants, unless under long leases, to introduce into practice. The cost varies from 5*l.* to 8*l.* per acre, according to the distance of cartage, and must be equivalent to as many shillings per acre on the annual rental value. The pipes of 1½ inch bore are 1 foot in length, and cost from 25s. to 30s. per thousand; tiles and bottoms cost from 40s. to 50s. per thousand. One-fourth of these lands only, it is presumed, are at present drained.

The gravelly and mixed subsoils are now pretty generally drained (where the farms are under good management), and probably answer as well as upon any other description of soils. Until within five or six years scarcely any pipes or tiles were used; but they are now more in use, but not generally so. The drains on *these* soils by the spade, as before described, and filled with wood and straw, soon become useless, but with pipes or tiles are far more durable; the cost is the same as before enumerated—but the original system is nearly as expensive as by pipe when the short duration of the drains upon *this kind of land* is taken into consideration: but the pipes are too expensive for tenants generally to adopt. About one-half of this description of soil only requires draining, and not one-half of that is drained.

The depth of 22 inches is almost universally adopted, except in a few instances, but 30 inches has been lately practised.

The drainage of bogs and morasses is not well understood in this county; there are still many hundreds of acres that might be doubled in value by a judicious application of the system, and at a less cost per acre even than by the before-described method.

If draining is well effected upon the chalky clay soils, the drains should not draw off the water too quickly, as a great portion of manure would be thereby loss. No system can be better to effect the object than the wood and straw drains cut with the spade at 5 yards apart and 22 inches in depth upon soils suitable; and the white chalky-clays are especially adapted for this process, and upon such soils I think this system nearly equal to tiles, as the latter do not draw freely unless gravel or some porous material is placed over them,

which it is difficult to obtain in these districts; and the expense to maintain a good system is also less than by tiles, taking durability and expense into consideration.

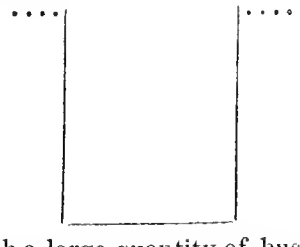
Writtle, Chelmsford, March, 1843.

III. ESSEX DRAINING.

2. By Martin Nockolds.

Question 1st.—Antiquity of Draining.

From inquiry I have made amongst the oldest farmers in this neighbourhood, I find that draining was practised 150 years ago; the system then adopted was to dig out a trench the width of a broad spade thus:—



and fill in with a large quantity of bushes. My informant could not state how long this practice continued, but he recollects that the narrow spade was used for draining as long back as the year 1780, and probably before that time.

Question 2nd.—Extent of district drained.

I am of opinion that nearly all the clay soils in this district have been underdrained at different times either by mole-plough or spade, but the drains have not been renewed so often as necessary; and ten years ago, after a succession of wet and bad seasons, attended with low prices of agricultural produce, nearly all the clay lands were in a very bad state of cultivation from want of draining. Since that time there has been a gradual improvement, but I think I am warranted in stating that as yet one-third only has been effectually drained.

Question 3rd.—Material used.

Thorn and straw universally until within the last fifteen or twenty years. The system of ramming is now introduced on sound clay, and appears to be getting into general use; the great advantage is economy, and I am informed that it draws off the water effectually if thoroughly done, but requires the master's attention more than any other mode, and is not so durable. Peat, brought from the fens in Cambridgeshire, has also been used during the last ten or fifteen years, and is considered more durable than any other material except tiles; but it is rarely used in this neighbourhood, except for leading drains and outlets. The general opinion is, that the tile will not answer the purpose on clay soils unless bushes, stones, or peat be laid over them.

Question 4th.—Interval and depth.

Usually 5 yards asunder, depth from 20 to 30 inches. Our practical men are quite at issue as to the depth of drain most suitable on the clay soils, but deep draining is, I think, getting more into practice every day.

Question 5th.—Price per rod.

Manual labour from 3s. to 5s. for 20 rods, according to depth of drain and nature of soil. The total expense is upon an average about 50s. per acre, but if rammed or dug about 20 or 22 inches deep does not exceed 40s.; and if peat is used, and the drain made 30 inches deep, the expense would be rather over 3*l.* per acre.

Question 6th.—Is the first spit raised by the plough?

Yes.

Question 7th.—Duration of drains.

From eight to sixteen years, according to the depth of drains and mode of filling.

Question 8th.—Variation in stiffness of land drained, and consequent adaptation of mode of drainage.

There is a great difference in the stiffness of land drained, but notwithstanding which the usual practice is to set out the drains about five yards asunder. The mode of drainage varies according to the opinion of the occupier.

Question 9th.—Whether thorn or tile draw off the water best on stiff clay.

Thorn. Tiles are in limited use in this neighbourhood, but it has been proved beyond doubt, that unless bushes, stones, or peat be put over them, the water will not draw off well on the stiff clays. It is the opinion of most of the practical men in this neighbourhood that peat-draining is the most effectual system adopted; the drains to be five yards asunder, and from 26 to 30 inches deep. This mode is considered to be the most durable, except tiles covered with bushes, stones, or peat.

Saffron Walden, March, 1842.

(To be continued.)

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A weekly Council was held at the Society's House, Hanover Square, on Wednesday, the 31st of May, present, Thomas Raymond Barker, Esq., in the Chair, Earl of Hardwicke, John Berners, Esq., W. R. Browne, Esq., French Burke, Esq., A. Davidson, Esq., Humphrey Gibbs, Esq., R. Brandreth Gibbs, Esq., E. W. W. Pendarves, Esq., M.P., E. S. Chandos Pole, Esq., Rev. Reginald Chandos Pole, John Read, Esq., Professor Sewell, William Shaw, Esq., George Wilbraham, Esq., M.P., and Henry Wilson, Esq.

Draining Tiles.

Mr. Read attended the Council, for the purpose of explaining the construction and adaptation of the pipe-tiles described by him in his letter to Mr. Pusey, in the part of the Journal (page 273) which had just made its appearance; and of laying before the meeting the following letter on the same subject, addressed to him by Mr. Thomas Hammond, of Penshurst, in Kent:—

"As you wish to be informed of the expences of draining with cylindrical tiles, and my opinion of their effects, I have troubled you with this letter. Porous soils, the drains 3 feet deep, placed at the distance of two rods, in parallel lines up the field, and afterwards subsoil-ploughed, will be completely drained, at the following expence per acre:—

	£	s.	d.
1350 tiles, at 21s. per thousand....	1	8	6
Cutting drains, and laying the tiles, at 4d. per rod	1	6	8
	2	15	2

I have not included the expence of fetching the tiles, at that depends on the distance; but they are made so light, that we can carry off 7000 with a single waggon, I am at this time draining on a stiff clay soil, the drains 2 feet deep, with 24 feet between the drains; expense as follows:—

	£	s.	d.
1850 tiles, at 21s. per thousand	1	16	9
Cutting drains, and laying tiles, at 3d. per rod.....	1	7	6
	3	4	3

I have this last winter drained about 10 acres with the round tiles, and am quite satisfied they act better than any others yet made, as they are not liable to be disturbed by *dioles*, or any other vermin (which the other sort admit), and can be laid with greater nicety in the drains than tiles of any other shape. I have now had twenty years' experience of the effects of draining, and am quite satisfied that no expenditure on the land will make so good a return. The soil being, by its means, relieved of stagnant water to the depth of three feet, immediately admits the atmosphere into its pores, and accordingly what was before *inert* at once becomes *active* soil; allowing the roots of plants to penetrate it, and the rain (which was previously injurious) to pass through the soil into the drains with beneficial effect. I am of opinion that the size of the tile may be still further reduced, with an equally good result, so as to reduce the cost of making and carriage 15 per cent. below the price of those I have already sent you, which were made by order for me, being smaller than any the manufacturers had made before."

Bone Dust.

An interesting communication was read on bone-dust applied as a manure on different kinds of soil comparatively with guano, and the probable indications of considerable practical improvements in the use and more economical expenditure of bones according to the particular case of their application. The further consideration of this paper was deferred until a more exact detail of the facts from which the results were derived had been obtained from the writer.

Forage Plants.

Messrs. Thos. Gibbs and Co. presented fresh specimens of Comfrey, Bokhara Clover, and Siberian Cow Parsnip, for soiling cattle; and of the winter and Chevalier Barley, coming into ear. Mr. Humphrey Gibbs stated, that since the Winter Barley had come into ear he had found that it purged the horses very much, and wished to know whether any Member of the Council had witnessed similar effects from it; he added, that the horses had been fed regularly with it, but while only in the blade no such effect had appeared. Professor Sewell undertook to try some of the horses under his care with similar green Barley, which Mr. Gibbs would supply. The Siberian Cow Parsnip produced an immense crop of green food, and the cows appeared to take it readily.

Epidemic among Cattle.

Professor Sewell reported that he had with great pleasure sent direct replies to all the Members of the Society whose cases of epidemic among their stock had been referred to him by the Council. He regretted that the nature of the present form of the disorder was such as to preclude the possibility of his furnishing the Society with any general rule for its treatment, the predominant symptoms at any given stage of the complaint being the only guide to a safe administration of remedies, a general prescription of great benefit in one case perhaps proving fatal in another, according to the peculiar condition of the animal and the nature of the attack. He was, however, happy to state that pupils of the Veterinary College well grounded in the knowledge of the diseases of cattle, as well as in those of the horse, were now sent out duly qualified, not only to almost every district in the kingdom, but to Australia, Egypt, and South America, as well as to Berlin and other parts of Germany, where a similar disorder prevailed among the cattle. He had visited the continental establishments for veterinary instruction, but he gave a decided preference to the school-practice of our own country.

Copyright of Journal.

Mr. French Burke gave notice, that at the next General Meeting of the Council, on the 7th of June, "he should call the attention of the Council to a Letter which he had received from Mr. Murray, of Albemarle-street, respecting the publication of the article on the Cookery of Food for Labourers, as pirated from the Journal of the Society; and should found thereon a motion, to the effect that, although the Council admits extracts to be made from the Journal by Newspapers or Magazines, it is yet inexpedient to allow of any separate publication, under a distinct title, and extracted from the Journal, unless under the sanction of the Council."

Local Agricultural Associations.

Mr. Shaw gave notice, that he should move at the next Monthly Council, on the 7th of June, "that a sum be subscribed from the funds of the Society, in aid of the funds of the Cowfold Agricultural Society in Sussex."

Mr. Smart, of Rainham, presented a model of his Turnwrest Plough; Mr. Lukis, a sample of fresh Guernsey Butter (churned in that island on the 19th of May, from cream poured off from milk which had been allowed to sour, the price in Guernsey market being a shilling per pound of 18 ounces, and the butter thus made having the advantage of retaining its freshness for a longer time than ordinary butter); Mr. H. White, of Warrington, a copy of the proceedings of the Daresbury Farmer's Club; the Royal Society of Agriculture at Lyons, four parts of their Annals; and Professor Seringe, of Lyons, a copy of his "Le petit Agriculteur," a work recently published by him for the purpose of instructing his younger pupils in the elementary branches of agricultural study."

The Council then adjourned to Wednesday next, the 7th of June.

PUBLIC MEETING IN CHESTER.

On Saturday, June 3, at three o'clock, pursuant to notice, a public meeting was convened in the Exchange, in this city, for the purpose of taking into consideration what steps it would be necessary to adopt in order to induce the Royal Agricultural Society of England to hold their country meeting for 1845 in this city. The meeting was appointed to be held on the Saturday principally, we presume, to accommodate the practical agriculturists who attend the Chester market. Several of the influential inhabitants and of the largest landowners in the city and neighbourhood attended the meeting. Soon after three o'clock the Mayor took the chair.

The Mayor, in opening the proceedings, said he would very shortly explain the reasons which had induced the calling of the present meeting. Mr. Brittain had lately called upon him, and expressed a wish that he would ascertain the sentiments of the Council as to the facilities which they would render to the Royal Agricultural Society if that society could be induced to hold its meeting for 1845 in this city. He (the Mayor) had therefore taken the first opportunity that presented itself of bringing the matter before the Council, and that body had passed an unanimous vote, appointing a committee to make preliminary enquiries on the subject —and so far as the opinion of the Council went, he was sure he was justified in saying that it was extremely favourable to the object in view. The committee appointed by the Council met on Tuesday last, and the result of their conference was a determination to call a public meeting to consider the matter more fully. By the direction of that committee, a few circulars had been sent to certain influential gentlemen in the neighbourhood; but as it was very possible that in the hurry many gentlemen had been overlooked, he trusted that it would in every case be attributed to inadvertence. He should now be glad to hear any proposition which the gentlemen present were prepared to submit.

R. H. Barnston, Esq., then moved the following resolution:—"The Royal Agricultural Society of England having determined to hold its annual country meeting for 1845 in this district (consisting of North Wales, and the counties of Chester, Stafford, and Salop), it has been ascertained that the place of holding such meeting will be determined in a great measure by the

facilities and accommodation offered to the society; and as the advantage to an agricultural neighbourhood to be derived from the holding of such meetings within it has been proved by experience, *it is resolved*, by the parties interested in the prosperity of the city and surrounding neighbourhood, that every effort should be used for securing such an advantage; Chester having peculiar claims, from its local situation—the facilities afforded by railway communication and steam navigation—its proximity to North Wales—and the accommodation which can be provided for the display of stock and implements of husbandry; and that with this view a committee (whose names were here mentioned) be appointed to communicate with the various agricultural bodies and interests of the district, requesting their co-operation in promoting this object."

George Johnson, Esq, of Eccleston, seconded the resolution.

A vote of thanks to the Mayor for his kindness in presiding was then moved by Geo. Johnson, Esq., and seconded by Dr. Thackeray, after which the public meeting separated, and the committee which had just been appointed proceeded to business.

The Mayor having been nominated as the chairman of the committee, George Johnson, Esq., deputy chairman, and Mr. S. Brittain, honorary secretary, the remainder of the sitting was spent in making the necessary arrangements for communicating with the various agricultural societies of the district on the matter in question.

At a Monthly Council, held at the Society's House, in Hanover Square, on Wednesday, the 7th of June, present—The Earl of Hardwicke, President, in the Chair, Duke of Richmond, Marquis of Downshire, Earl of Euston, Earl of Aylesford, Earl of Zetland, Hon. Robert Henry Clive, M.P., Colonel Austen, David Barclay, Esq., M.P., Thomas Raymond Barker, Esq., Henry Blanshard, Esq., Thomas William Bramston, Esq., M.P., F. C. Cherry, Esq., John Bell Crompton, Esq. (Mayor of Derby), E. D. Davenport, Esq., Stephen Grantham, Esq., Humphrey Gibbs, Esq., B. B. Gibbs, Esq., Colonel Hulse, George Kimberley, Esq., John Kinder, Esq., E. S. Chandos Pole, Esq., Rev. W. L. Rham, Professor Sewell, William Shaw, Esq., J. Spencer Stanhope, Esq., W. R. Crompton Stansfield, Esq., M.P., Vincent Stuckey, Esq., H. S. Thompson, Esq., and George Wilbraham, Esq., M.P.

Finances.

Mr. Raymond Barker, Chairman of the Finance Committee, presented the monthly report of the state of the funds of the society on the 31st of May, from which it appeared that the receipts during that month had been 783*l*., and the payments 545*l*. (with a transfer of credit of 500*l*. on account of the Derby Meeting), leaving a current cash balance in the banker's hands of 953*l*.

The council directed that agreeably with the recommendation of the committee the names of 57 defaulters should be struck out of the list of the society, while the names of three other parties should be retained for the purpose of further communication with them on the subject of their arrears.

Derby Meeting.

The Duke of Richmond, Chairman of the General Derby Committee, presented the Report of the progress of the works at Derby and the arrangements for the Meeting; and agreeably with the recommendation of the Committee, the Council unanimously resolved that the land in the occupation of Mr. White at Mickleover, originally selected for the trial of implements, and offered to the Society by the owner by Mr. Chandos Pole of Radborne Hall, should be retained for that purpose.

Public Invitations.

The Duke of Richmond called the attention of the Council to the inconvenience which might hereafter arise, both to the Society and the various places where the Annual Country Meetings were held, should the present practice of accepting invitations to dinner from the public authorities of a town become established as a precedent, and lead to the assumed expectation of a similar compliment at each year's meeting; when it was unanimously agreed, "that for the future, the Council would not accept the invitations given by the Mayors, and other public authorities, of the different towns and cities which the Society may visit."

Southampton Meeting.

The Council then proceeded to the appointment of the following General Southampton Committee, for the purpose of taking steps, immediately after the termination of the ensuing Derby Meeting, for the arrangements to be made in advance for that occasion: Duke of Richmond (Chairman), Colonel Challoner, Earl Spencer, Hon. Captain Spencer, J. V. Shelley, Thomas Raymond Barker, Colonel Austen, James Dean, Philip Pusey, M. P., W. Miles, M. P., W. G. Hayter, M. P., Sir John Johnstone, M. P., H. Gibbs, William Shaw, W. Fisher Hobbs, J. Fielder King, David Barclay, M. P., and Brandreth Gibbs.

Election of Council.

Mr. Childers, M. P., having withdrawn his former proposition, gave notice that he should move, at the next monthly Council on the 5th of July, "that it be a regulation for the future guidance of the Council, that they shall recommend at least eight *new* members for election each year."

Copyright of Journal.

On the motion of Mr. Burke, it was resolved, "that although the Council admits extracts to be made from the *Journal* by Newspapers or Magazines, it is yet inexpedient to allow of any separate publication, under a distinct title, and extracted from the Journal, unless under the sanction of the Council."

Grants to Local Societies.

The Council having taken into their consideration Mr. Shaw's motion on the subject of a grant of money, as solicited, from the funds of the Society, by the Cowfold Agricultural Association, decided that each local association throughout the kingdom had an equal claim on their bounty, if allowed in one case being justified in all, and resolved, accordingly, "That when the Society should be in a condition to aid other Societies, that question would be considered."

Mr. Barclay, M.P., communicated plans, by Messrs. Bonomi and Cory, of Durham, of the Earl of Zetland's Farm Buildings, at Upleatham, in Yorkshire; Mr. Houghton, of Sunninghill, his plan for the establishment of model farms, and the creating of Honorary Directors or Governors; and Mr. Joseph Crumpton, of Shrewsbury, copies of his Account and Commercial Pocket Book; all of which were referred to the Journal Committee. Mr. Bates, of Kirkleavington, addressed a letter to the President, on the subject of prizes for Stock, which was referred to the Special Council, to be held on the 28th of June, when the question of next year's prizes would be finally determined.

The Council then adjourned to Wednesday next, the 14th of June.

At a Weekly Council, held at the Society's House, in Hanover Square, on Wednesday, June 14—present, Philip Pusey, Esq., in the chair—The Hon. Robert Henry Clive, M.P., The Hon. George Henry Cavendish, M.P., Thomas Raymond Barker, Esq., T. J. M. Bartlett, Esq., John Barton, Esq., George Raymond, Barker, Esq., W. R. Browne, Esq., French Burke, Esq., F. E. Cherry, Esq., J. Walbanke Childers, Esq., M.P., Layton Cooke, Esq., A. Davidson, Esq., James Dean, Esq., Peter Fearnhead, Esq., J. H. Hodgetts Foley, Esq., Humphrey Gibbs, Esq., B. Brandreth Gibbs, Esq, W. Goodenough Hayter, Esq., M.P., Edward Holland, Esq., Sir John Johnstone,

Bart., M.P., Sir Charles Lemon, Bart. M.P., William Miles, Esq., M.P., E. W. W. Pendarves, Esq., M.P., Professor Sewell, William Shaw, Esq., R.A. Slaney, Esq., Richard Spooner, Esq., T. H. S. Estcourt Southeron, Esq., M.P., W. R. Crompton Stansfield, Esq., M.P., Thomas Tweed, Esq., and Henry Wilson, Esq.

DERBY MEETING.

Railway Conveyance.

Richard Creed, Esq., Secretary of the London and Birmingham Railway Company, informed the Council that the Board of Directors had passed a Resolution, by which every facility was to be afforded to the Members of the Society, to the Exhibitors of Stock, Implements, &c., and to the public generally, in travelling along the line of the London and Birmingham Railway, during the period of the Society's ensuing annual country Meeting, to be held at Derby in the middle of next month; no increase being guaranteed on the usual fares for passengers, while on the already reduced charges for the conveyance of Cattle and agricultural Implements, a further reduction would on that occasion be made of *one third*, for the purpose of meeting the views of the Society, and promoting the objects of the Meeting. The Directors hoped that this guarantee and concession would be satisfactory to the Council, and they had accordingly instructed their superintendent, Mr. Bruyerès, to make all the necessary preliminary arrangements with the proper parties.

The Council immediately resolved that their best thanks should be returned to the Directors of the London and Birmingham Railway for these liberal concessions in favour of the Society, and that a copy of their special train bills for the meeting should be transmitted to each of the Exhibitors.

Accommodation of Lodging.

Mr. Colvile, M. P., has called the attention of the Society to the arrangements made by the Local Committee for the comfort and convenience of Members in obtaining suitable lodgings during their stay at Derby, and stated that an office for the registration of furnished houses or apartments, similar to the one established at the Bristol Meeting last year, had been opened at No. 14, Market Place, Derby, where Mr. Moody, the Registrar, would receive and duly attend to all the wishes of parties applying to him on that subject.

Trial of Implements.

Mr. Miles, M P., having read to the Council letters which he had received from Mr. Handley and Mr. Graburn, on the character of the soil adopted for the trial of implements and the exhibition of their peculiar principles of action, expressed a hope that satisfactory arrangements would be made for this purpose; when Mr. Pusey stated that in order to test the implements on a soil with which the Derbyshire farmers were most familiar, the Council had confirmed the recommendation of the general Derby Committee, that every attempt which the weather would allow should be made to effect that trial on the strong land at Mickleover originally selected for the purpose, and which would be brought by the requisite processes of ploughing, harrowing, &c., into as favourable a state as the soil would admit of; but that enquiry should be made for a certain quantity of light land on which the trial of implements adapted for such soils might be also made.

Proposal of Prizes.

The Hon. R. H. Clive, M.P., gave notice that at the Special Council on the 28th instant, he should propose that prizes be given for long and short Down Sheep; Mr. Cherry that an alteration be made in the prizes for horses and in the mode of their designation; and Mr. Evan David, that prizes be given for Dairy Cattle.

Farming Accounts.

Mr. Clive having also proposed that a prize should on some future occasion be given for the best mode of keeping farming accounts and taking stock, the Council ordered that subject for a prize to be entered in the usual suggestion book, and to be brought before the Journal Committee at the time of their next consideration of the prizes for Essays and Reports.

Land Roller.

Mr. Cherry submitted to the Council the model of his new Land Roller in sections, having changeable points of traction; whereby comparatively uniform pressure may be given to uneven surfaces.

Portable Forge.

Mr. Cherry at the same time explained the advantages of a smith's forge, of simple construction and light weight, which he had also presented on a former occasion to the Society: and which, being easily transferable from place to place, became suitable for jobbing purposes on extensive farms.

Mr. Barton read an interesting case of self-advancement in agricultural industry, which he had met with in passing through Norfolk; Mr. Pusey communicated an account of a new variety of Rye from Mr. Taunton, and a statement of Count de Lichtenburg, of Vienna, on some new seeds he had sent him, which he intended to try, and would report the result to the Council; Mr. Kirberry, of Oxfordshire, communicated the results of his experience in the use of his Dibbling Machine; and the Rev. W. D. Bromley, of Derbyshire, the account of his mode of shedding Ewes on mountain farms. Mr. Proctor, of Chapel-street, Pentonville, presented "Le Moniteur des Eaux et Forêts;" the Geological Society of London, their proceedings; Mr. John Harrison, of Devizes, a box of his new Manure Powder; and the Cardiff Farmers' Club a copy of the printed Report of their proceedings.

The Council then adjourned to Wednesday next, the 21st of June.

A Weekly Council was held at the Society's House, Hanover-square, on Wednesday, the 21st of June, present — The Right Hon. Lord Portman, Vice President, in the Chair, Duke of Richmond, Marquis of Downshire, the Hon. Robert Henry Clive, M.P., the Hon. George Henry Cavendish, M.P., David Barclay, Esq., M.P., Thomas Raymond Barker, Esq., T. J. M. Bartlett, Esq., John Benett, Esq., M P., Thomas William Bramston, Esq., M.P., Sir Charles Burrell, Bart., M.P., Colonel Challoner, F. C. Cherry, Esq., John Walbanke Childers, Esq., M.P., Henry Colman, Esq., Charles Robert Colvile, Esq., M.P., Layton Cooke, Esq., Colonel Le Couteur, E. D. Davenport, Esq., James Dean, Esq., Sir Trayton Elliott Drake, Bart, Caledon Geo. Dupré, Esq., M.P., Edward Fellowes, Esq., M.P., A. E. Fuller, Esq., M.P., Humphrey Gibbs, Esq., B. Brandreth Gibbs, Esq., W. Fisher Hobbs, Esq., E. Holland, Esq., W. H. Hyett, Esq., Sir John Johnstone, Bart., M.P., Geo Kimberley, Esq., William Miles, Esq., M.P., E. W.W. Pendarves, Esq., M.P., Philip Pusey, Esq., M.P., Rev. W. L. Rham, Professor Sewell, William Shaw, Esq., J. Spencer Stanhope, Esq., Vincent Stuckey, Esq., and Colonel Wood, M.P.—Monsieur Aderer, Farming Steward to the Marquis of Dalmatia, was introduced by Mr. Fisher Hobbs, and had leave to be present.

Food Steamer.

Mr. Henry Colman, Agricultural Commissioner from the United States, presented to the Society a model and sectional drawing of Atwater's Steam Generator, for domestic use, for cooking food for cattle, and for several other purposes to which steam may be applied. Mr. Colman entered into a minute explanation of the construction of this new steaming apparatus, and stated that the principal advantages of the invention were the rapidity with which steam might be produced, the little cost of the machine, the small amount of fuel it required, and its portableness.

Indian Corn Sugar.

Mr. Colman likewise presented to the Society a sample of sugar, made from the stalks of Indian Corn, or

Maize (*Zea Mays*). This was a fair sugar, and in the state in which it was taken from the pans after the evaporation of the juice. Mr. Colman considered that this sugar might be made a most valuable product wherever the Indian Corn could be grown, and stated that the plant, when sugar is to be made from it, is not allowed to ripen, or even to form its seed, and that the stalk only is used. The leaves or blades and the top of the stalk, commonly called the spindle, may be saved for fodder, and the stalks, after they have been pressed, will furnish feed for cattle. Mr. Colman remarked that it had been already ascertained that more than one thousand pounds of sugar can be obtained from a single acre, and he had no doubt that probably double that amount would eventually be obtained by proper cultivation and management, the manufacture being yet in its infancy; but that in respect to cost, quality, and the facility with which farmers may supply themselves with this important article of domestic consumption, the best results might confidently be anticipated. The sample then submitted to the notice of the Council was derived from a first attempt at the production of the Indian corn sugar in America, but there was no reason why similar success should not attend the trials made in this country.

Flax.

Mr. Colman also presented to the Society several specimens of flax, prepared by steam, with a view to its being spun on common cotton machinery: namely—

Specimen, No. 1. Green flax, broken, and the fibres separated entirely by the action of machinery, and called the "stem flax."

Specimen, No. 2. Green flax, broken, the fibres separated, and the glutinous matter washed out entirely by the action of machinery and pure cold water.

Specimen, No. 3. Flax which had gone through the same processes as the two former specimens; with the addition of hot water, and a small quantity of alkali in the last water; also shortened and equalized for spinning.

Specimen, No. 4. Yarn spun from flax in Specimen, No. 3, on a cotton throstle, with the preparation and carding altered.

Mr. Colman at the same time presented a Specimen of Perennial Flax, from a plant growing wild in Calhoun County, Michigan, U. S., and transmitted to him by Mr. T. I. Walker, of Eckford.

Silk and Cotton.

The following specimens of silk and cotton were also presented by Mr. Colman to the Society:—

1. A specimen of wild silk found upon the forest tree in the interior of Mexico, produced by an insect, said to be of the spider family.

2. A specimen of silk cotton, from a tree of the Bahama Islands, and resembling floss-silk.

3. A specimen of native cotton, found growing in a wild state in the interior of Mexico, the produce of a large tree.

Mr. Pendarves, M.P., then moved a vote of thanks to Mr. Colman for the interesting specimens and details he had brought under the notice of the Council; and having dwelt on the advantages the Society would derive from the information Mr. Colman, as one of their honorary members, would from time to time lay before them during his present visit to England, he would be trusted be enabled, after his agricultural tour through the kingdom, and especially after his personal attendance and inspection at the ensuing Derby Meeting, to carry back to America a favourable report of the agricultural improvements of the old country.

The Noble Chairman was quite sure that the proposition then submitted to the Council required no seconding; and the motion being put, the vote of thanks was carried unanimously.

Pressed Tile Machine.

Mr. Davenport submitted and explained to the Council, a machine invented by his bailiff, Thomas Scragg, for making pressed tiles, at 15s. per thousand; the coal being calculated at 12s. per ton, carriage included. Mr. Davenport stated that this machine would work clay containing stones, and allow the hand to penetrate into it for their extraction.

The thanks of the Council were returned to Mr. Davenport for the favour of this inspection.

Etheredge's Tile Machine.

Mr. Pusey, M.P., informed the Council that in his paper on thorough draining in the last Journal (page 48), in referring to the tile machine of Mr. Etheredge, of the Woodlands, near Southampton, he had stated that he understood the inventor to have disposed of his patent to Messrs. Ransome, and to make his tiles without the construction of "sheds!" Having, however, been recently informed by Mr. Etheredge that he had not disposed of his patent, and that he makes his tiles without "shelves," but not without sheds, he was desirous of correcting his statement on these two points on the earliest occasion.

Pipe-Tiles.

Mr. Pusey then proceeded to read to the Council an interesting communication he had received on the manufacture and application of pipe-tiles, from Mr. Henry Dixon, of Witham, in Essex, whose experience in the use of that system of tile-draining had convinced him of its being the most permanent and economical. Mr. Hobbs stated that he could vouch for the correctness of the details then laid before the Council, and for the goodness of the tiles in question; Mr. Dixon having done more for land-draining, and care in the manipulation of tile making, than any other person in the county.

Down Sheep.

The Hon. R. H. Clive, M.P., having stated his intention, at the last Council, of proposing at the Council, on the 28th inst., that prizes should next year be given "for Hampshire Down Sheep, as well as for Sussex Down Sheep," Mr. Pusey moved that the accidental entry of that proposal as for "long and short Down Sheep," should be rectified, which was done accordingly.

Norfolk Flax.

Mr. Warnes obtained leave of the Council to submit to them various specimens of Norfolk flax, and explain the circumstances of their growth and management. These statements received the attention of the Council, and their thanks to Mr. Warnes for the trouble he had taken in submitting them to their notice.

The Council then adjourned to Wednesday next, the 28th of June.

PROGRAMME OF THE ARRANGEMENTS OF THE SOCIETY'S SHOW AT DERBY.

Friday, July 7th . Last day of receiving Implements, Seeds, &c., to be exhibited in the Implement Yard.

Saturday, 8th .... Implements to be arranged by the Stewards for the Judges' inspection.

Monday, 10th .... Judges inspect the Implements, and select those for trial.

Tuesday, 11th .... Implement Yard open for exhibition at Eight o'clock until Six in the Evening. Admission, 5s.—Cattle received from Eight in the Morning until Eight at Night.—Members of Council dine with the Mayor.

Wednesday, 12th .. Judges inspect the Stock, and award the Prizes. Implement Yard open to the Public, from Eight in the Morning until Six in the Afternoon. Admission, 5s. Public Trial of Implements.—Council Dinner at the County Hall, at Five o'clock, P.M., when the award (with the exception as applies to Horses) will be read. Door open at Four.

Thursday, 13th .. The Cattle and Implement Yards open to the Public from Six in the Morning until One o'clock, Admission, 2s. 6d.; from One o'clock till Six in the Evening, at 1s.—Dinner of the So-

ciety in the great Pavilion at Four o'clock.—Doors open at Three.

FRIDAY, 14th .....Cattle Yard opens at Seven.—Sale begins at Ten o'clock: admission, 1s.

STEWARDS OF DEPARTMENTS.

Cattle .....Earl Spencer, Hon. Capt. Spencer, Mr. Druce.
Implements.....Mr. Miles, Mr. Pusey, Mr. Shelley.
Finance .....Colonel Austen.
Tickets.....Mr. Barker.
Admission to Show Yards.....Colonel Challoner.
Pavilion and Council Dinners..Mr. Hayter, Mr. Childers.
General Arrangement of Show.. Mr. H. Gibbs.

By Order of the Council,
JAMES HUDSON, Secretary.

London, June, 1843.

N. B.—Sale of Tickets for the Pavilion Dinner, to Members of the Society, at the Pavilion, from Nine o'clock until Four on Wednesday the 12th of July, and from Eight o'clock until Three on Thursday the 13th of July.—Price, 10s. each.

NEW MEMBERS.

The following gentlemen were elected members of the Society:—

George Robert Smith, Esq., of Great Cumberland Place, London, and Selsdon, near Croydon, Surrey; Charles Arkwright, Esq., of Dunstall Lodge, near Burton-upon-Trent, Staffordshire; and Arthur John Robertson, Esq., of Inshes, near Inverness, Scotland, were elected Governors.

Alsop, Thomas, Lea Bridge, near Matlock, Derbyshire
Harrison, John, Derby
Arkwright, Peter, Willersly, near Matlock, Derbyshire
Anderson, Thomas, Little Harle Tower, Newcastle, Northumberland.
Bakewell, George, Lockington, near Derby
Barber, the Rev. William, Duffield, near Derby
Bevridge, John, Sutton-Bonnington, Loughborough
Blane, Lieut.-Colonel, 16, Lower Grosvenor-street, London
Bland, Samuel, Alfreton, Derbyshire
Bland, the Rev. Thomas Naylor, Osgathorpe, near Ashby-de-la-Zouch
Blunstone, William, Rick Hallam, Derbyshire
Breary, Thomas, Victoria Street, Derby
Bridgett, Joshua, Colney Hatch, Middlesex
Briggs, Robert, Thurlston, near Derby
Bright, Joseph, Tonbridge Wells, Kent
Briscoe, William, Ordfallings Hall, near Wolverhampton, Staffordshire
Brearly, Rowland, Derby
Brooke, William, Babworth, near Retford, Notts
Brooke, George, Haughton Hall, Shiffnal, Salop
Brough, James, Langley, Derbyshire
Broughten, the Rev. Clement, Norbury Rectory, Ashbourne, Derbyshire
Brown, John Washbourne, Ufcott, near Swindon, Wilts
Bowden, John Bruno, Southgate House, Chesterfield, Derbyshire
Busk, Edward Thomas, Ford's Grove, Edmonton, Middlesex
Cantrell, Rev. William Henry, Shardlow, near Derby
Carding, John, Pleasly, near Mansfield, Derbyshire
Carew, John Francis, Crowcombe Court, near Taunton, Somerset
Chatterton, John, jun., Derby
Cheney, Edward, Gaddesby Hall, near Leicester
Cheney, Colonel, Gaddesby Hall, near Leicester
Cholmeley, Henry Philip, Bransby, near York
Clutton, James, Edwinstone, Ollerton, Notts
Clutton, Thomas Chorlton, Chorlton Hall, Malpas, Cheshire
Crowther, the Rev. Samuel, Knowle, Warwickshire
Davidson, James, Ashby-de-la-Zouch, Leicestershire
Dester, William, jun., Lockington, Tamworth, Staffordshire
Disbrowe, Sir Edward Cromwell, H. M. Ambassador to the King of the Netherlands
Eddison, Edwin, Headingley Hill, Leeds, Yorkshire
Evans, The Rev. W. E, Burton Court, Herefordshire
Fearnhead, Peter, 26, Ely-place, Holborn
Fillingham, George, jun., Syerston, Newark, Notts
Fitzherbert, Sir Henry, Bart., Tissington Hall, near Ashbourne, Derbyshire
Fitzherbert, William, Normonton Hall, near Leicester
Fleetwood, Charles Bagnal, 12, East Suffolk-street, King's Cross
Fletcher, Major, Ulcombe-place, Maidstone, Kent
Flint, —, Leighton Buzzard, Bedfordshire
Fosbrooke, Edmund, Ravenstone, Ashby-de-la Zouch, Leicestershire
Forrester, John, Stanmore, Middlesex
Fothergill, Richard, Tredegar, Monmouthshire
Gascoyne, Joshua, Derby
Gelderd, John, Patterdale, Penrith, Cumberland
Gillett, Richard, Brooke House, Marchington, near Uttoxeter, Staffordshire
Gillett, John, Brailes, Shipston-on-Stour, Warwickshire
Goodwin, the Rev. Henry, Mappleton, near Ashbourne, Derbyshire
Gregory, William, Heanor, Derbyshire
Grundy, Joseph, Fenny Drayton, Leicestershire
Hamilton, George Alexander, M.P., Hampton, near Balbriggin, in Ireland
Haywood, —— Hanbury, Worcestershire
Haywood, James, Derby
Henchley, Samuel, Derby
Huntoke, Sir Henry, Bart., Wingeworth Hall, Chesterfield, Derbyshire
James, Charles, Bilboro Fields, near Nottingham
Jefferson, the Rev. Joseph Dunnington, Thicket Priory, Escrick, Yorkshire
Jowett, John, Potlocks, near Derby
Kearsley, Josiah, Derby
Kenward, William J., Fletching, Uckfield, Sussex
Kirkland, Sir John, East Horsley Park, Leatherhead, Surrey
Knight, John, Baverstocke, Dorchester
Kynnersley, T. C. Sneyd, Woodseat, Uttoxeter
Langham, Herbert, Cottesbrooke, Northamptonshire
Leach, Henry, Corston, near Pembroke
Logan, George, Home Farm, Blenheim Park, Woodstock, Oxon
Lomax, John, Clayton Hall, Blackburn, Lancashire
Lucas, Bernard Maynard, Highfield, near Chesterfield, Derbyshire
Marple, Robert, South Winfield, Alfreton, Derbyshire
Massey, Edward, Trumpton, near Nottingham
Master, Thomas William Chester, M.P., Knole park, Almondsbury, near Bristol
May, John, Twickenham Green, Middlesex
Melville, the Rev. W. R., Rector of Matlock, Derbyshire
Morley, Joshua, Breadsall, near Derby
Moseley, Robert, Derby
Moss, Francis, Whiston Hall, Rotherham, Yorkshire
Newbold, William, Intake, Sheffield
Oakes, James, Riddings House, Alfreton, Derbyshire
Palmer, William James, the Close, Lichfield, Staffordshire
Palmer, The Rev. Charles, Lighthorne, near Kineton, Warwickshire
Parker, William, Yanworth Hall, Westmoreland
Partridge, John, Bishop's Wood, near Ross, Herefordshire
Pearson, William, Husbands Bosworth Grange, near Market Harborough, Leicestershire
Peel, The Right Hon. William Yates, Bonehill, Fazeley, Staffordshire

Peel, Edmund, Bonehill House, Tamworth, Staffordshire
Pickford, Thomas, Mayfield, Manchester
Pigott, Sir Robert, Bart., Patshill, Wolverhampton
Pike, Walter, Derby
Porcher, Henry, Park Corner, Hitchfield, Hampshire
Proudlove, Thomas James, Tattenhall, Cheshire
Rashleigh, William, M.P., Monabilly, near Fowey, Cornwall
Rawson, James, Holme-pierrepoint, Notts
Redfern, Thomas, jun., Burton, near Nottingham
Rigden, William, Hove Farm, near Brighton
Robinson, the Rev. John, Widmerpool, Nottinghamshire
Ronald, Robert, Derby
Sanders, —— Hanbury, Worcestershire
Sherwin, John Sherwin, Bramcote Hill, Nottinghamshire
Shilcock, Thomas Beaumont, Hose Hall, near Melton-Mowbray, Leicestershire
Shuttleworth, Ashton Ashton, Hathersage, near Bakewell, Derbyshire
Smith, Thomas Deacon, Streatley, Luton, Bedfordshire
Slatter, Thomas, Park Farm, Fairford, Gloucestershire
Spooner, Luceas, Henry, Dromenagh, Iver, Bucks
Staley, John, Thorntree Inn, Ripley, near Alfreton, Derbyshire
Stares, G. H., Bishop's Waltham, Hampshire
Storer, The Rev. John, Hawksworth, near Bingham, Notts.
Storer, Charles, M.D., Nottingham
Story, John B., Lockington Hall, Derby
Strangways, Henry Bull, Shapwick, Glastonbury, Somersetshire
Strouts, Edward, Kingsdown, Sittingbourn, Kent
Taylor, Edward Moor, Hays House, near Stone, Staffordshire
Thatcher, Charles, Midsomer Norton, near Bath
Tomline, Col. George, M.P., Carlton House Terrace, London
Veal, John B., Ringmer, near Lewes, Sussex
Walters, Edward, Libbear, near Blacktorrington, Devon
Walthall, Peter, Darley Dale, Matlock, Derbyshire
Ward, Thomas, Duffield, near Derby
Watson, Samuel, Derby
Webster, Wm., Biggin, near Ashbourne, Derbyshire
Wedge, Moreton Charles, Derby
Wedge, Morton Charles, Derby
Wilson, Richard, Mayor of Kendal, Thorns, Underbarrow, Kendal, Westmoreland
Wilson, George, Maresfield, Uckfield, Sussex
Wilmer, Wilmer, 6, Old Palace Yard, Westminster
Wood, the Rev. J., Swanwick, Alfreton, Derbyshire
Woodall, Henry, Walkington Lodge, Beverley, Yorkshire
Yates, Richard Barnardiston, Rock House, Burton-on-Trent.

West Norfolk Agricultural Society.—This meeting, held last week, was numerously attended. We see by the report of the *Norwich Mercury*, that Mr. Hudson, of Castleacre Lodge, competed for eight prizes, seven of which were awarded to him. A handsome silver salver was on this occasion presented by the Society to Mr. Milnes, the honorary secretary, in testimony of the services he had rendered, and the zeal and attention with which he had promoted its interest. The salver bore the following inscription :—

"Presented to John Lansdale Milnes, Esq., by the Members of the West Norfolk and Downham Agricultural Societies, as an acknowledgment of the ability with which he originated, and of the zeal with which he promoted their objects, as Honorary Secretary for ten years.—Swaffham, June 21, 1843."

ON BURNING CLAY.

Several correspondents having inquired about the best method of burning clay, a friend has kindly furnished us with the following information on the subject, which was printed in the form of a circular, in 1815. The first extract is from a letter of Mr. Craig, agent to A. Murray, Esq., of Broughton, Galloway, to E. Boyd, Esq., of Merton-hall. Mr. Craig observes, that "the general method of proceeding to work is, to make an oblong enclosure of the dimensions of a small house, say 15 feet by 10, of green turf sods, raised to the height of 3½ or 4 feet. In the inside of this enclosure, air-pipes are drawn diagonally, which communicate with holes left at each corner of the exterior wall. These pipes are formed of sods put on edge, and the space between them so wide only as another sod can easily cover. In each of the four spaces left between the air-pipes and the outer wall, a fire is kindled with wood and dry turf, and then the whole of the inside of the enclosure or kiln filled with dry turf, which is very soon on fire; and on the top of that, when well kindled, is thrown the clay, in small quantities at a time, and repeated as often as necessary, which must be regulated by the intensity of the burning. The air-pipes are of use only at first, because, if the fire burns with tolerable keenness, the sods forming the pipe will soon be reduced to ashes. The pipe on the weather side of the kiln only is left open, the mouths of the other three being stopped up, and not opened, except the wind should veer about. As the inside of the enclosure or kiln begins to be filled up with clay, the outer wall must be raised in height, always taking care to have it at least 15 inches higher than the top of the clay, for the purpose of keeping the wind from acting upon the fire. When the fire burns through the outer wall, which it often does, and particularly when the top is overloaded with clay, the breach must be stopped up immediately, which can only be effectually done by building another sod wall from the foundation opposite to it; and the sods that formed that part of the first wall are soon reduced to ashes. The wall can be raised as high as may be convenient to throw on the clay; and the kiln may be increased to any size, by forming a new wall when the previous one is burnt through. I have them so wide, as to afford a space for a horse and cart to turn upon them; but when they are so broad, it requires the workmen to walk on the top of them when feeding with clay, which I would not recommend, because the more loosely the clay can be laid on, the more rapidly it will burn. I did not take all the trouble above stated with my kilns; having the advantage of a quantity of old moss, sticks, and tree-roots, which I split, and kindled a large parcel of them, and surrounded the fire with a quantity of dry turf; and as soon as it was well kindled, I built round a strong wall of sods, and went on, adding clay to the fire, and sods to the outer walls, when necessary, till the kilns were so large as to contain upwards of 100 loads of ashes. The principal secret in burning consists in having the outer wall made quite close and impervious to the external air, and taking care to have the top always lightly but completely covered with clay; because, if the external air should come in contact with the fire, either on the top of the kiln, or by means of its bursting through the sides, the fire will be very soon extinguished. In short, the kilns require to be attended nearly

as closely as charcoal-pits. Clay is much easier burnt than either moss or loam; it does not undergo any alteration in its shape, and, on that account, allows the fire and smoke to get up easily between the lumps; whereas moss and loam, by crumbling down, are very apt to smother the fire, unless carefully attended to. No rule can be laid down for regulating the size of the lumps of clay thrown on the kiln, as that must depend on the state of the fire; but I have found every lump completely burnt on opening the kiln, and some of them were thrown in larger than my head. Clay, no doubt, burns more readily if it be dug up and dried for a day or two before it be thrown on the kilns; but this operation is not necessary, as it will burn though thrown on quite wet. After a kiln is fairly set a-going, no coal or wood, or any sort of combustible, is necessary; and it can only be extinguished by inattention, or the carelessness of the operator, the vicissitudes of the weather having hardly any effect on the fires, if properly attended. It may perhaps be necessary to mention that when the kiln is burning with great keenness, a stranger to the operation may be apt to think that the fire is extinguished. If, therefore, any person, either through impatience or too great a curiosity, should insist on looking into the interior of the kiln, he will certainly retard, and may possibly extinguish the fire; for, as I mentioned before, the chief secret consists in keeping out the external air from the fire." From perusing these remarks, Mr. Ormiston, of Bodyllton, observes in a letter addressed to Sir W. Wynne, Bart., in the same circular, which was issued about two years after the date of the previous communication, that he "was induced to make a trial of ashes produced from burnt clay and vegetable substances as a manure. Accordingly, about the beginning of April, 1816, I set about the formation of the kilns for that purpose, close to a pit containing a quantity of peat moss, nearly in the centre of a field of about 100 acres, then under the operation of a turnip fallow. Having caused some hundred loads of the peat earth, together with a subsoil of strong adhesive blue clay, to be wheeled out of the pit around the kilns, I collected a quantity of old wood and roots of trees for the purpose of kindling the fires, and having done so according to the method described by Mr. Craig, and got them to burn well, I found one man equal to keep four kilns going. The kilns constructed by me were of larger dimensions than those described by Mr. Craig, being 30 feet long by 12 wide, inside the walls, and 2 feet high in the first instance, and increasing in height to 4 feet, as the work proceeded. Some hundred cart-loads of root-weeds, and rubbish of various descriptions, collected from the field before mentioned, were thrown on these kilns, and evidently produced superior ashes to those procured from the peat-earth and clay. The operation of burning not being finished till the end of July prevented my giving the ashes a fair trial that year, as I was, in consequence, unable to sow the turnip-seed before the 10th of August, and the crop produced was very indifferent, which I impute entirely to the lateness of the season and the unfavourable state of the ground, from wet weather. The expence of burning, as nearly as I can calculate, was about one shilling per cart-load, making no allowance for cartage of weeds and rubish from the field, as it would otherwise have been necessary to have removed them to some convenient place to be consumed in the usual manner. In the month of March, 1817, the fire in the remaining kilns was little more than extinguished. I then had the ashes carted out to an adjoining meadow, and laid them on at the rate of 50 cart-loads to an acre, where they have shown, both on the crop of hay and after-grass, a decided superiority over preparations of earth and lime compost, laid on at the rate of nearly 26 cubic yards to the acre, as an active manure for top-dressing. In April I put down a quantity of the ashes in the corner of a field intended for Swedish turnips, and as soon as the ground was prepared for sowing, I manured a small portion of the field with them, at the rate of 50 cart-loads to the acre. The turnips growing upon that part of the field are more luxuriant, and seemingly, a heavier crop than those sown with an ample quantity of good farm-yard dung; and even the place where the ashes were put down until they could be carted on the field, is most conspicuous for the luxuriance of the turnips, although they were taken up as close as possible without removing part of the soil. I am decidedly of opinion that ashes thus produced are a most valuable manure as a top-dressing for pasture and meadow ground, particularly as they would not be subject to any loss from evaporation; and in that case all vegetable manure generally used as a top-dressing for meadows might be applied to the raising of green crops, where it would suffer no loss from evaporation, which in general is very great. In the application of clay-ashes as a manure for turnips, I would not advise that they be put in the drills and covered, as is practised with farm-yard dung, but that after the ground is prepared for drilling, or ridging up, they should be spread upon the surface; and should the treading of the horses and carts in laying the ashes on, consolidate the ground too much for drilling, the scarifier might be run through it before the drills where formed; by so doing the young plants would come sooner in contact with the ashes than by putting them into the drills and covering them with the plough, as is usual in the application of common dung. From my practice of clay-burning, I am of opinion that it can be done without the aid of kilns, which must be a very considerable saving; besides, it often happens that earths of various kinds might be collected for burning, where it would be very inconvenient to obtain turf, or sods, to form the kilns; and earths so collected, such as the scrapings of roads, mud of pits, and bog-earth of any kind, will undoubtedly produce superior ashes to clay, of whatever denomination. In burning clay or soil without the aid of kilns, it is only necessary to kindle a fire, and after it becomes sufficiently strong, lay the clay or earth upon it, and continue that operation directed in kiln-burning so long as a man is able to throw it upon the fire; by this mode, I conceive, a hundred or more cart-loads of ashes may be easily obtained in one heap. I would recommend in this mode of burning, a screen, similar to those used in burning charcoal, which could be shifted round, to prevent a high wind blowing the fire too much from any side of the heap. Having made the experiment, the result was as follows:—160 square yards, manured at the rate of 50 cart-loads per acre of clay-ashes, produced 1,834 lbs. of turnips, without tops and tails; 160 ditto ditto at the rate of 25 cart-loads per acre of farm-yard dung, produced, 1,680 lbs. of ditto without ditto, 154 lbs. difference, being equal

to 2 tons 1 cwt. 2 qrs. 6 lbs. per acre in favour of crop sown with clay-ashes; an advantage which may not appear great in this instance, yet it would be very considerable if obtained from every acre of turnips grown upon this farm."

ELEMENTS OF PRACTICAL AGRICULTURE.

By Professor Low.

(Fourth Edition.)

The author has extended the present edition, adding to his former details various disquisitions of great interest on the principles and practice of agriculture. He treats at much length of the soil, which he states to be one of the most compound substances in nature, and of the action of those substances which, added to the matter of the soil, increase its productive powers; treating, under the latter head, of the various manures of mineral or organic origin, which have either been long known in the practice of agriculture, or which have recently been introduced, or which may become the subjects of useful experiment. He considers the soil—1st, with respect to its physical characters; 2nd, Its properties as determined by chemical analysis; 3rd, Its geological relations; 4th, Its vegetable productions; and 5th, The effects upon it of climate and altitude. Under the head chemical analysis, he explains the results which have been arrived at, and the uses to which this species of investigation may be applied. Under the head geological relation of soils, he gives a lucid account of the various rock formations, and of the connection between them and the properties of soils, pointing out the errors into which geologists and others have fallen in this branch of enquiry. The subject of climate and altitude gives occasion for many interesting conclusions, showing how dependent even the soil is, with respect to its productions, on the influence of temperature. In the British Islands the line of perpetual congelation just extends beyond the height of the highest mountains of Scotland, and the limits of ordinary cultivation do not reach a thousand feet, at which altitude the farmer must trust to pasturage and not to tillage for his returns. Of the instruction required for farmers he observes that the farmer must learn to perform the various labours of the farm under the conditions necessary to secure a due return. But this species of knowledge is purely agricultural—is not derived from other branches of knowledge, and is as much within the province of agriculture as the manual operations of the laboratory are within the province of chemistry, or as the study of the forms of plants is within the province of botany. If the farmer is deficient in this species of knowledge, all the others will avail him nothing as a farmer; and possessing it he may be a skilful and successful agriculturist, although his opportunities may not have extended to a study of the sciences.

"It is highly to be desired," he continues, "that the youthful farmer should improve himself in useful or liberal knowledge to the utmost degree which his opportunities will allow. This will make him a more enlightened and unprejudiced man, although it may not perhaps enable him to make more money, will render him better able to follow the progress of future discovery, and to contribute his share to it, and will connect the business of common life with a higher class of thoughts and feelings. It is impossible, in truth, to value too highly the advantages of educating the rising race of farmers well. But let it be remembered, that the study of the sciences is itself the occupation of long labour; that our youth, and especially our agricultural youth, are called to perform the active duties of life almost before the years of boyhood are expired, and must be early and laboriously engaged in the pursuits proper to their profession in order that they may succeed in it. It is well, indeed, when opportunity is afforded in any case to the young farmer to become a botanist, a geologist, a chemist, a natural philosopher; but how small must be the number who can thus employ themselves! and even if they could, their success as farmers would depend, not on their scientific, but on their agricultural knowledge. It were well if the usual branches of education in this country could be so extended as to give as much knowledge of the sciences as the condition of different classes of society would allow; but this is very different from that which many well meaning people seem to consider necessary for the instruction of the farmer. They would have him to be a botanist, a chemist, a geologist, and so forth, in a degree which few even of the most opulent classes of society ever arrive at."

While the author points out the many important aids which agriculture may derive from other branches of knowledge properly applied, he cautions against rash generalizations applied without a due knowledge of agriculture as a practical art. Of the importation of recent agricultural theories from the continent, he thus speaks:—

"The chemistry of organic bodies has, within our own times, been cultivated with vast labour and success; but what is the information which this branch of science has communicated to the practical farmer? The latest and the highest authority is an illustrious chemist of Germany, M. Liebig, who has given us, in a work designed for agriculturists, his opinions, discoveries, and conclusions. He informs us, that ammonia is of all the elements of vegetable food the most important, and that this body, with the carbon which enters into the substance of plants, is chiefly derived from the air; that it is the mineral constituents of the earth which are chiefly to be regarded by the farmer as promoting the growth of his plants; that humic acid, &c., which most chemists until now have pronounced to be the very essence of fertility in soils and manures, do not exist in them at all; and, in short, that all previous theories of vegetation which do not accord with these ideas are erroneous. Now, the opinions of the learned chemist may be right, or they may be wrong; but how is the farmer to decide between rival theories of this kind? Of what utility are such discussions to him, or what dependence ought he to place upon conclusions, when the highest authorities are at variance with respect to first principles? It is manifest that the subjects themselves are wholly without the province of agriculture; they fall within another branch of enquiry altogether, and are as useless to farmers as would have been the dreams of alchymists. The same eminent chemist makes light of experience, which the farmer knows he can never do with safety. He informs us that it is a great discovery that one of the best manures for land is burnt straw; while the farmer who understands his business, will use his straw for the purposes for which it is necessary to him, in place of burning it. He tells us that we may by and by hope to get rid

of farm yard manure, which does not contain a sufficient quantity of ammonia, and which promotes the growth of weeds; and he encourages us to hope that, in place of the present cumbrous apparatus of farm-yards and muck-wains, the farmer will have a laboratory in his fields to manufacture silicates and phosphates!

"Now such a mode of applying science to the improvement of an art is in itself unphilosophical. It is not by such speculations that chemistry has been rendered serviceable to any one art, or branch of art, to which it has been yet applied; and if ever it is to become the handmaid of agriculture, as so many imagine, it is manifest that it must be by very different means than from the promulgation of reveries of this kind. If chemists can believe that such theories fall within the province of their own science, let them confine them to it, but do not let them seek to extend them to a pursuit in which they are worse than useless. The practical farmer who would be silly enough to act upon theories of this kind, might be ruined in a single season, and, at the least, would be diverted from the course which might be useful to himself, into speculations which, in his hands, would be idle and profitless. But the more general effect to be apprehended from these misapplied speculations is to bring science itself into contempt with practical men, and to retard that application of it to agriculture which it is so much wished to promote.

"It is greatly to be desired that men of science shall be invited and induced to make the application of their acquired knowledge to the useful arts; but if this is to be done with any useful effect in the case of agriculture, it must be with just views of the ends to be arrived at, and of the means of attaining them. Agriculture, it should be kept in mind, is based on a longer series of observations than any art known to the human race, and it is idle to disregard experience in an art which is founded upon it. We sometimes hear the farmer termed obstinate and ignorant, because he will not act on new opinions, and abandon the only track in which he can travel with safety; but the obstinacy is sometimes a necessary adherence to what cannot be prudently departed from, and the ignorance generally lies with the instructor, who is himself destitute of that practical knowledge which can enable him to determine whether, and under what conditions, his principles can be applied. We sometimes hear of scientific agriculture as contra-distinguished from that which is pursued by the farmer. Few terms are more abused in the present day than the term science; but if it is to be applied to the arts at all, it is difficult to see why it should be applied to the agricultural system of a chemist and vegetable physiologist, and withheld from that of a skilful farmer. Of all the cultivators of science, the chemist has the least right to make such a distinction; the science of the chemist is itself essentially experimental, and the experiments of the farmer, although performed in a different manner, and with a relation to different results, are not less the basis of a series of deductions, and these deductions form as properly the science of the farmer as the others form the science of the chemist."

IMPORTANT TO FARMERS.—MALT DUTY.—In answer to a question put by Mr. Mainwaring, in the House of Commons, Sir G. Clerk answered, that no interruption whatever would be given by the Excise to any person steeping barley in cold water for the purpose of feeding cattle, provided it was not to be applied to the purpose of making malt.

LAND AND MANUFACTURES.

Mr. Jefferson in his notes on the state of Virginia, having argued that in the then circumstances of the United States they ought to look to the extension of their agriculture, rather than to that of manufactures, continues thus:—

"Those who labour in the earth are the chosen people of God, if ever He had a chosen people, whose breasts He has made His peculiar deposit for substantial and genuine virtue. It is the focus in which He keeps alive that sacred fire, which otherwise might escape from the face of the earth. Corruption of morals in the mass of cultivators is a phenomenon of which no age nor nation has furnished an example. It is the mark set on those who, not looking up to Heaven, to their own soil and industry, as does the husbandman, for their subsistence, depend for it on the casualities and caprice of customers. Dependence begets subservience and venality, suffocates the germ of virtue, and prepares fit tools for the designs of ambition. This, the natural progress and consequence of the arts, has sometimes been retarded by accidental circumstances; but, generally speaking, the proportion which the aggregate of the other classes of citizens bears in any state to that of its husbandmen is the proportion of its unsound to its healthy parts, and is a good enough barometer whereby to measure its degree of corruption. While we have land to labour, then let us never see our citizens occupied at a bench, or twirling a distaff. Carpenters, masons, smiths, are wanting in husbandry; but for the general operations of manufacture, let our workshops remain in Europe. It is better to carry provisions and materials to workmen there, than bring them to the provisions and materials, and with them their manners and principles. The loss by the transportation of commodities across the Atlantic will be made up in happiness and permanence of government. The mobs of great cities add so much to the support of pure government as sores do to the strength of the human body. It is the manners and spirit of a people which preserve a republic in vigour. A degeneracy in these is a canker which soon eats to the heart of its laws and constitution."

FARMERS' CLUB.—A meeting was held in the National School Rooms, Stoke Prior, near this town, on the evening of Tuesday, the 13th inst., for the purpose of establishing a Farmer's Club in the district. Mr. Robert Haines was called to the chair. It was announced that the Hon. R. H. Clive, M.P., had consented to patronise the club, and a set of rules for its formation and management were submitted to the meeting. Four of the gentlemen present were appointed a committee to take the proposed rules into consideration, and report. A vote of thanks to the chairman having been unanimously carried, the meeting was adjourned to yesterday, to be held at six o'clock in the evening, at the Golden Cross Hotel, Bromsgrove, to receive the report of the committee, and to take steps for the establishment of the club. It is remarkable, that while there are hundreds of Farmers' Clubs throughout the kingdom working well, and productive of benefit to their members, there does not, we believe, exist one in the county of Worcester. It is peculiarly needful at this time for the agriculturist to obtain all the information in his power, and we hope to see the example of the Stoke Prior farmers extensively followed in this county. If Farmers' Clubs were established in every district throughout the kingdom in connection with the respective County Agricultural Societies, and these societies in their turn were placed in communication with the Royal Agricultural Society of England, the organisation of the agricultural body would be complete.—*Worcester Chronicle.*

FACTS AS TO THE CANADA CORN TRADE.

FROM THE GREAT NORTHERN ADVERTISER.

As confessedly, under present circumstances, and until Canada shall increase in population and cultivation to such an extent as to produce a considerable surplus over and above her own consumption, and that of other British colonies adjoining, and of the West Indies, the wheat which might come here, as well as the flour into which that wheat shall be ground in Canada, must be in reality of American origin, for if it only replace the same quantity home produced which shall be exported it is tantamount to the same thing, it may be worth while to present and collate certain data of prices respectively and for terms of years past, in order to enable those more especially interested to arrive at fair conclusions as to the probability of any and what amount of competition may be created or reasonably apprehended in this country from foreign wheat or flour so introduced from that quarter, paying a duty in Canada of 3s. and here of 1s., total duty therefore 4s. per qr., surcharged with all the expences of carriage by water from the United States into Canada, of internal conveyance to the mills for grinding, of carriage afterwards per canal and the St. Lawrence to Montreal, with all the charges of trans-shipment thence for the United Kingdom. In the article in our last number from the *Boston* (Massachusetts) *Courier*, that a barrel of flour equal to five bushels of wheat could not be laid down, inclusive of duty in Canada, under 30s., or with the duty here 31s., even at the low first price of wheat at Cleveland, Ohio, where purchased, of 62s. 2 cents the bushel, say 5 dollars or 20s. 10d the qr. We may take occasion to notice here the occurrence of two misprints in the American paper, which tend to confuse the calculation. For instance, it is said that the Canadian miller "makes his barrel of flour out of 14½ bushels of wheat;" it should stand 4½ bushels. And in the final casting up of the table of figures the "24 cents" should stand 94, which, added to the 4 dollars 25 cents, gives 5 dollars 19 cents, and not "5.99" as misprinted. The barrel of flour equal to five bushels of wheat at 31s., therefore, would be at the rate of 49s. 7d. per qr. of 8 bushels. Now, the weekly average price of wheat, as made up and published in the *London Gazette* of the 19th ult., was 46s. 2d. per qr. Upon the average of years, however, it is not conceived possible that flour can be brought from Canada at a less rate than as measured per qr. of wheat 53s., and wheat not under 54s. or 55s. As wheat can be brought from the corn countries on the Baltic, where grown cheaper than in the United States, and laid down in this country on an average at even lower prices, it does not seem probable that any large quantity can come from Canada, when the averages rise and duty falls.

It may help to afford some insight into the probabilities of any large supplies from the United States direct, or through Canada, to quote and compare the prices ruling there for some years past with those for the same years in this country. We take, for America, the prices of flour, because we are without the returns of those for wheat; they are quoted from the American Almanack for 1838, and the table, therefore, is not brought down later than 1837. To give the range of years *in extenso* would exceed our limits, and therefore we shall classify and present them in the following shapes. The table represents the prices of flour in Philadelphia for the first three months of each year, from 1796 to 1837, both inclusive.

	Per barrel. Dol. Cts.		Dol. Cts.
In six different years of the term prices ranged from	11 25	to	15 0
In 13 other years, do	8 0	to	11 0
In 12 other years, do	6 0	to	7 75
In 11 other years, do	4 0	to	5 75

The lowest price in the whole term, viz., 4 dols. per brl., prevailed during one year only, the year 1821.

	s.	d.
Taking the average of the first six years of highest prices at 13 dollars only the barrel of five bushels of flour ground out of 4½ bushels of wheat, the mean price would be in sterling, per barrel	56	4
Or at the rate per qr. of wheat, omitting fractions, of	100	1
The mean price of flour, say nine dollars 50 cents, of the next 13 years, gives at the rate per qr. of wheat of	70	4
The mean price of the next 12 years, say only 6 dollars 75 cents per barrel of flour, gives per qr. of wheat at the rate of	50	0
The mean term of prices for the 11 years, say only 4 dollars 75 cents, gives per qr. of wheat	36	4

In the 11 years, however, the price of the barrel of flour was only below five dollars in four of those years.

Within the same term of years, from 1796 to 1837, both inclusive, the following corresponding facts of prices may be noted for the United Kingdom.

	Per quarter. s. d.		s. d.
In nine different years the average of prices of wheat ranged from	87 1	to	122 8
In five of which the prices were above	100 0		
In 20 years the averages ranged from	60 5	to	83 8
In 11 do., from	46 2	to	58 8
In two years, 1822 and 1835, from	39 4	to	43 6

The average prices under each head would stand thus, taking, as before, the middle term between the two extremes:—

	s.	d.	
For the first nine years	104	10	per qr.
The next 20 years	72	0	..
The 11 years	52	5	..
The two last years	41	5	..

The first broad fact indicated by these figures is the proportionately inconsiderable difference upon the whole betwixt the prices of corn in the United States and this country. The highest price during the whole period in the former country was in 1796, when wheat, as measured by flour, ruled at 111s. sterling per qr.; in England, in 1812, when it ruled at 122s. 8d., a price referrible chiefly to the depreciated and disorganised state of the currency at that time, since the crops were specially reported "favourable."

Taking the ten last years, ending with and inclusive of 1837, in the United States and Great Britain respectively, we find the average rate of price for the term in the former to be about 6 dols. 20 cents per barrel of flour; or in sterling at the rate of 45s. 10d. per qr. of wheat; and the average of the term in this country 55s. 4d. per qr.; add to the price in

American ports, say 45s. 10d., freight to Great Britain, insurance, brokerage, warehouse rent, landing charges, say only 11s.; laid down in a British port, the cost of American wheat would be, therefore, at least 56s. 10d. per qr.; and this, exclusive of importer's profit and warehouse charges in port before sale here, besides the duty to be paid. We have not at hand the rates of prices ruling for the same term of years in the ports of the Baltic and the Black Sea, so as to have the means of comparison with prices here and in the United States; but we find it stated, on what appears competent authority, that the average price of wheat in five of the principal markets in the north of Europe from 1831 to 1840, was 35s. 6d. per qr.; to which add freight, brokerage, &c., 6s. 6d.; laid down here 42s. per qr.; exclusive, of course, of profit to the importer, warehouse charges here, and duty. The average price of wheat for the same period of years, in the three great American markets of New York, Philadelphia, and Boston, is stated at 47s. per qr.; to which add freight, &c., 11s.; laid down here 58s. per qr.; exclusive of profit, duty, &c. It will be seen that the average of the ten years, 1831 to 1840 inclusive, ranges rather higher than for the ten years ending with 1837.

These various figures would seem to establish two facts. The one that, with the supplementary charges created by the circuitous route through Canada, and the 4s. duties in addition, no considerable imports of either Canadian or American bread stuffs can take place for several years. The other that, were corn laws abolished to-morrow, or a fixed duty at whatever rate levied, very little, if any, American corn or flour could come in, so long as supplies could pour in from the north of Europe and the Black Sea, *on equal terms* of duty, or no duty. The cause springs out of the different rates of labour in the old world and the new. Whilst agricultural wages in the United States are at the rate of about *two shillings* per day, and in the corn-growing provinces confining on the Baltic at *fourpence*, it is quite clear that little chance of successful competition can exist in neutral markets for the former, until with time, as with time it may come to pass, the rates of labour are reduced and brought to approximate more closely with those of northern and southern Europe.

The following returns, officially collected by the French Government, will serve to show, for the stated periods in one year, the range and fluctuations in the prices of wheat in the different markets quoted. We are not in possession of either earlier or later documents of the kind, the present having casually only come into our hands. It must be borne in mind that 1837 was a year of deficient harvests in the United States, the people being altogether more occupied then with making bank and flash bank paper money, than in tilling the ground and growing corn.

We give the measures and values as in the original:—

		Per Hectolitre.	
		Francs.	Cents.
1837	Salonica, 1st March.....	7	59
—	Odessa, 30th March.....	8	91
—	Rostock, 26th March.....	10	10
—	Alexandria, February.....	11	70
—	Lubec, 1st April.....	12	78
—	Palermo, 1st February.....	11	81
—	Hamburgh, 1st April.....	12	74
—	Dantzic, 15th March.....	14	10
—	Bremen, 1st April.....	14	37
—	France, 30th March.....	18	69
—	London, 24th March.....	24	40
—	Philadelphia, 27th February..	33	31

CALENDAR OF HORTICULTURE FOR JULY.

So confirmed is the wet weather at the time when we commence this article, that it is difficult to decide what may be practicable in the month of July. As a notice worthy of record, we would solicit the reader's attention to the meteorological phenomena that appeared to introduce the rainy spring. A few days before the period of the vernal equinox, luminous *beams* occurred on the 17th and 18th of March, decidedly terminated the fine weather which had rendered the three first weeks pre-eminently beautiful. With the equinox (21st) came also a change of wind to south-west, and a gradual depression of the mercury; and subsequently there have been repeated magnetic auroras, with a perpetual tendency to abrupt transitions of the weather. A more fickle season, indeed, has rarely been witnessed since 1799—that year of awful devastation.

The crops, however, are generally beautiful; apples are well set in most instances, and the trees are clean; pears are rather defective; gooseberries extremely fine, but not abundant; currants a full average, and vegetables excellent. We shall now venture to allude to the usual operations of July, leaving our closing observations on the weather to the latest moment at command, in order to meet those contingencies which the nature of the season shall then indicate. It will be a curious circumstance if the *early* sprouting of the *oak* trees this year, as compared with that of the *ash* (as noticed in an interesting article of the *Mark Lane Express*, June 5), should be a precursor of a fine and warm summer: may it so prove!

Vegetable Department.

In the first week, sow the latest peas; these may not succeed, especially in situations where this crop is liable to mildew; in some places, however, very fine peas come in during a sunny and warm October, which then are a delicious treat. *Kidney beans* and runners may also succeed well when the autumn is warm and sunny. Sow lettuce, endive, and salads.

Transplant broccoli two or three feet apart, cabbage one foot from each other, in rows which are two feet asunder. May-sown cauliflowers at two feet distance; Brussels sprouts a yard apart, and small green savoys eighteen inches. In doing the work, manure the soil liberally, unless it be pure, fresh loam, dig and plant row by row, and thus avoid useless walking over the ground. Celery trenches for the second transplanting should be got ready early in the month. We are but too apt to trust to the manuring of the trenches, whereas, as Judd observed many years ago, the land ought to be prepared two feet deep in the winter, incorporating abundance of manure, and in the spring giving it a second turning. At the time of transplanting if the weather be dry, a layer of three inches of leafy manure should be placed at the bottom of every trench, watered profusely, then digged and mixed with the earth, and again watered. The plants should be strong, and thickly rooted; and being planted six or eight inches asunder, ought to be thoroughly soaked with water. The depth of the trenches varies much; some (with Judd) recommend six inches, reduced to three by so much manure; others prefer eight or ten inches, and both practices succeed if the soil and future treatment be appropriate.

Celeriac, or the turnip-rooted celery, is planted in a flat open bed, equally enriched, 15 inches apart in the rows; this vegetable requires copious watering.

Onions are so late this year that it is not probable any will be bulbed, excepting those grown from small ones planted in February; yet as some may approach maturity if the weather become very hot, the stems of all which turn colour—and also ripe shallots and garlic—should be taken up and exposed to the sun in a dry open shed.

The running shoots of cucumbers sown upon ridges should be laid straight, and pegged to keep them open, and in order. Herbs for drying are mint, baum, sage, peppermint, pennyroyal, &c.; they are to be gathered when opening the blossom, as then they are replete with their aroma, or essential oil.

Stick peas, top broad beans, and scarlet runners, if the object be to keep them about six feet high; earth up the rows of all growing vegetables. Hoe, weed, and attend to every operation of routine.

Melons and Cucumbers

are in full bearing in the earlier pits, but now, if the weather be fine and warm, the later crops will require no artificial heat of any kind. The very finest melons we ever knew to be grown without any instance of failure, are produced in brick pits, the range of which consists of fifteen lights, each a yard wide, and seven feet long; the back wall is of nine-inch work, and rather more than a yard high; the front is one foot; thus the slope is two feet in seven. The ground therein was, in the first instance, removed to the depth of three feet, and the space filled with tree leaves almost reduced to mould. As strawberries have been grown every year in this vegetable soil, some garden earth was, of course, introduced, but still the bulk is leaf mould. After the strawberry-crop, the bed is manured with a layer of reduced dung, digged, and then planted in June or July with late melons—such as cantaleupe, black rock, and one variety which produces fruit of immense size. The plants prosper exceedingly; they are syringed three or four times a week, just before the sun leaves the pits, when the glasses are closed, and the warm vapour which arises keeps the leaves free from acarus, and causes luxuriant growth.

Fruit Department.

Peach and nectarine trees should receive their summer regulation in the course of this month, if the wood be sufficiently ripe to warrant a selection of the next year's bearing shoots, and all others should be discarded; after which, those retained are to be laid in orderly, to admit a full share of sun to every part of the trees. Apricot, plum, and cherry-trees should also be duly pruned and trained; otherwise a confused mass of branches will be the result. We have witnessed some lamentable effects of the continuous rains on rich ground with an ill-drained, retentive bottom. Trees that were in high health a month ago, now appear as if poisoned—the branches gumming, and the fruit checked and dying off. The ground is quite sodden; and here we obtain another lesson of the importance of thorough-draining, &c.

Spur-bearing trees, particularly the apple, should be pruned to form lateral spurs. When the lateral growths of the spring become firm, each should be cut back or snapped to within four or five eyes from its origin. Thus the lowest buds will be made to swell; and when the uppermost eye pushes again—as it will do, perhaps, to the length of four inches before the growth finally ceases—the shoot should be cut again to an eye or two below the new growth. Some persons never prune but once—i. e., late in August. Others prune at the end of June.

It is evident that the knife should never be used until the buds be comparatively silent; otherwise, the vigour of the fluids will cause the development of three or four useless wood shoots, instead of one low, fruitful, spur-eye.

Budding may be commenced. The free rising of the bark in young wood of the stock, and its perfect separation from that of the scion, are the criterions of the proper season; for, unless both be moist and juicy, an union cannot be expected. The peach and nectarine succeed well in the stock of the muscle plum, also of the peach, and occasionally, it is said, in the apricot. Apricots will do on their own or the plum stock; apples on the apple and crab, and pears on the wild pear and quince; but pears succeed best grafted in the month of March.

Strawberries may now be cultivated with great propriety, for forcing or early fruiting, with or without pots; and a simple method is the following:—Dig or fork a few inches deep the soil between rows of true Keen's seedling. As the strings advance, lay or peg them down neatly on the surface; and if the weather be warm and moderately moist, young plants will take root with great rapidity. Or a number of pots, size 60, can also be plunged in another space, so that each receive a runner plant in its centre. It should then be filled with sandy loam, the little plant placed on it, and kept in its place by a large pebble stone. By this second method a plant, with an entire ball of roots, is procured by the end of the month; but if the weather be dry, constant attention must be paid to water the pots several evenings of the week. The strawberry plants can then be transferred to broad 32 pots of rich loam and manure; and these, if properly treated, will bear very fine crops of fruit in March and April of the following years.

Miscellaneous Culture.

Sow annuals for succession; plant cuttings of sweet-william, pinks, cloves, and rockets. Layer picotees and carnations, slitting the lower well-placed shoots through one joint, and up to another; then peg down the layer in a soil consisting of road sand, sifted manure, and a little old mortar. Divide the roots of auriculas, polyanthus, and primulas. Soil for the first may be soft loam and heath mould, equal parts; leaf mould and river sand, of each about half the quantity of the previous materials: mix thoroughly.

Transplant late sown annuals, and pinks, peonies, hollyhocks, lychnises, dianthus of all kinds, and, if possible, introduce the wild orchises. These beautiful natives are removed with greatest safety when in flower, provided they be digged up entire, and a portion of soil similar to that which they grow in, be brought with them. They are captious, but frequently succeed; and we now possess *orchis maculata*, brought from a distance of ninety miles, which has regularly flowered in June and July for thirteen years in the open border.

Clip box-edgings toward the end of the month, to give figure till April. Spring cutting is soon

out-grown, whereas the late summer regulation is permanent.

Gather and preserve ripe seeds, clipping the members of the plants with scissors so as not to disfigure them.

SELECTION OF FLOWERS AND SHRUBS—OF THE SORTS GENERALLY BLOOMING AT THE SEASON.

Deciduous: roses of various kinds; azalia, particularly the hardy white. Fuchsia: the old species; and also fulgens, which bloom admirably in parterre or shrubbery; deutzia.

Evergreens: Yellow cistus, scarlet gerania, a few heaths, broad-leaved kalmia, rhododendron, pittosporum, jasmine.

Herbaceous: Musk-mallow, sweet-pea, hollyhocks, love-lies-bleeding, princes' feather, musk scabious, lobelias, dahlias, more of the new varieties of verbena, and some calceolarias.

Bulbs: Martagon and tiger-lily, pyramidal orchis and the bee ophys.

We close our paper by recurring to the weather. A more propitious change occurred suddenly on the morning of the 15th; that day and the two following were warm, and brilliantly sunny. Nature revelled in the joyous visitation; but on the 18th, with a sharp current from east by north, the weather became black, and cold as March. As, however, it has remained dry—and now, just before the sun enters Cancer, producing the longest day, the barometer has risen to a degree higher than we have seen it for many weeks—hope may be entertained that, with the turn of days, summer may be realised with all its cheering and urgently required concomitants.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

From the date of our last report, up to about the 15th of this month, the weather in nearly, or quite the whole of the United Kingdom was such as to create considerable alarm in the minds not only of the agricultural body, but of the community at large, that the most disastrous consequences would, from the unprecedented—the period of the year considered—large quantities of rain which fell in most quarters, arise to the growing crops; and this alarm was much enhanced, from the wheats and barleys on the heavy lands having assumed a very sickly complexion. As might be anticipated, these unfavourable symptoms, together with the continuance of excessive moisture, produced much effect upon the corn trade; numbers, under the impression that prices would have a permanent rise, purchased largely, hence the quotations improved from 2s. to 3s. per qr.; subsequently, however, to the 16th, a great and valuable change took place in the temperature, and, notwithstanding the wind has been constantly changing from that time up to the period we are now writing, it has proved such as to dispel all the gloomy forebodings which were indulged in at the month's commencement, and it affords us the highest degree of satisfaction in being enabled to assert that, comparatively speaking, the wheats, with the before mentioned exceptions, have suffered very little injury, while we are looking forward to a full average yield of that description of grain.

Of barley, we are not able to report so favourably, and it occurs to us that, taking into the account the small breadth of land under its culture this season, and the partial failures which are well known to have occurred, the yield will be a very scanty one, consequently it is probable that that article will assume a much higher range of value during the coming winter than for some time past.

Oats, though short in straw, are looking well, and afford a good promise for the future; while the same observations may be applied, as respects produce, to beans and peas.

We need, we apprehend, scarcely intimate that we have now arrived at a most important period as regards the corn trade, as a few weeks will determine the future value of wheat. In pursuing this topic, our first enquiry should be as to the available quantities of wheat of home produce now in England—for supply, be it observed, must inevitably govern price. So far as our observations have extended, we see no reason to alter the general tenor of our remarks on this head, which we have from time to time offered through this medium. In Essex, we find the quantity of last year's wheat on hand extremely small, which indicates pretty correctly that the growth of that season was much below that which preceded it; but in most other counties, Lincolnshire, Cambridgeshire, &c., the supply is abundant, and if we take the average of the country, it will be found good for the time of year. Again, as to that of foreign, the bonded stocks in the United Kingdom are, it is true, very small, they being under 300,000 quarters; but, though assertions have been made to the contrary, those of free wheat are nearly 600,000 quarters—a direct evidence of the miserably dull state of the trade for many months past—particularly when it is observed that the latter were mostly released for home consumption in the autumn of last year. Considering, therefore, all the circumstances bearing against the interests of the agriculturists, we are reluctantly led to the conclusion that there is little prospect of any advance—such as would compensate them for the losses they are now sustaining—being obtained in the currencies of wheat for a very lengthened period.

Since we last wrote, the Canada Corn Bill has passed into law. This sop—evidently concocted to pacify the clamours of the corn law repealers—will, we are confident, act not only as a premium on smuggling on our Canadian frontier, but inflict great injustice upon our growers and millers. That it will not satisfy the Anti Corn Law League, we are quite convinced, even though it may have the effect of considerably reducing the value of home-made flour in this country. That great class, the manufacturers, who have required the abrogation of the corn laws, have, it would appear, lost sight of the positive working of the principles of free trade. They would seek to render a measure of extreme injustice to our farmers, by the promulgation of their crotchets, never seeming to imagine that they themselves, by a reduction of duties, might be ruined. Let us see what Sir Robert Peel's tariff has done for them. It has, we find, already created a spirit of emulation and rivalry amongst the American cotton spinners, who are preparing to send immense supplies of

finished cotton goods to this country—indeed, the first consignment has already come to hand, and been submitted to public competition; but, owing to the thin attendance of dealers, only a small quantity was disposed of. The goods were *decidedly superior* in quality to those manufactured in this country, and consisted of white twills and drills. The sound were taken in at 9s. 6d. to 10s. per piece, or at an average of 6d. per yard; the damaged sold at 2½d. per yard. How will the manufacturers like this? How will they like the "reciprocal" system, about which they have made so much fuss? For our parts, to settle the present differences of opinion on this head, we would have the agricultural body petition the legislature for a further reduction in the duties on manufactured goods; we would, in fact, adopt the same line as the enemies of agriculture are now doing, and the matter would, we doubt not, speedily be set at rest.

We regret much to observe that the epidemic is still raging in our grazing and flock districts—indeed, it appears to be assuming quite as serious a form as it did last year. Large numbers of both beasts and sheep have been thus lost, and great difficulty has been experienced in transmitting the stock to the different markets.

The markets held in the early part of the month were rather scantily supplied with English wheat, the demand for which, arising from the prevailing wet weather, was active, at an advance of from 1s. to 3s. per quarter; but towards its close the sales in that article were extremely scanty, and the above improvement was lost.

Very little barley has been on show, while the enquiry for it has ruled active, at full quotations.

In malt not much business has been done, yet previous rates have been supported.

Comparatively speaking, the supplies of oats have been only to a moderate extent; yet they have proved quite adequate to meet the wants of the dealers, and the rates have remained unaltered.

Beans, peas, and flour have ruled about stationary.

Although hay-making commenced at a later period than could be desired, it is pleasing to observe that, since the 20th, considerable progress has been made, under favourable auspices, in securing the crops, which are likely to be abundant.

Store stock has not commanded much attention, and the prices have been unusually low.

Although it was generally expected that some large importations of live stock would have taken place about this time, only two cows have been received in the United Kingdom from abroad. This falling off in the receipts is solely attributed to the miserable prices which stock is now producing in this country.

Our advices from Scotland are, on the whole, satisfactory. The wheat and barley, as well as the oats, beans, and peas, are looking very promising. The corn trade has ruled steady, and no variation of moment has been noticed in prices.

In Ireland large quantities of rain have fallen, which have, it is represented, been productive of some damage to the crops. The supplies of grain offering in the various markets have been very small, in consequence of which previous rates have been maintained.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield cattle market:—The former have consisted of 11,980 beasts, 159,400 sheep and lambs, 2,200 calves, and 2,800 pigs; while the latter have ranged thus: beef, from 2s. 10d. to 4s.; mutton, 3s. to 4s. 4d.; lamb, 4s. 2d. to 5s. 4d.; Veal, 3s. to 4s. 6d.; and pork, 3s. to 4s. per 8lbs., to sink the offal.

The trade has been characterised by considerable fluctuations, and the prices may be considered fully 2d. to 4d. per 8lbs. lower. The Norfolk beasts have mostly come to hand in good condition; but those from most other quarters have been somewhat beneath the middle quality. A great scarcity of really prime Downs has been complained of; but, as will be observed on reference to our statement, the numbers of sheep have been extremely large.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, June 27, 1842, and Monday, June 26, 1843.

At per 8lbs. to sink the offals.

	June 27, 1842.		June 26, 1843.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	3 4 to	3 6 ..	2 8	2 10
Second quality do.	3 8	3 10 ..	3 0	3 4
Prime large Oxen.....	4 0	4 2 ..	3 6	3 8
Prime Scots, &c.....	4 4	4 6 ..	3 10	4 0
Coarse & inferior Sheep	3 4	3 6 ..	3 2	3 4
Second quality do.	3 8	3 10 .	3 6	3 8
Prime coarse woolled do.	3 10	4 0 .	3 10	4 0
Prime Southdown do..	4 2	4 4 ..	4 2	4 4
Lambs	5 0	6 0 ..	4 4	5 4
Large coarse Calves ..	3 8	4 0 ..	3 2	3 10
Prime small ditto	4 2	4 6 ..	4 0	4 4
Large Hogs.....	4 0	4 6 ..	3 2	3 8
Neat small Porkers ..	4 8	5 0 ..	3 10	4 0

SUPPLIES.

	June 27, 1842.	June 26, 1843.
Beasts	2,313	2,525
Sheep and Lambs	28,930	32,730
Calves	202	185
Pigs	319	357

Up to Newgate and Leadenhall markets nearly 20,000 carcases of slaughtered meat have been received in the course of the month from Scotland and various parts of England; while the supplies of that killed in London have been moderately extensive. Prime qualities have, in most instances, supported their value; but other kinds have had a downward tendency. Beef, from 2s. 4d. to 3s. 6d.; mutton, 2s. 8d. to 4s. 2d.; lamb, 4s. to 5s.; veal, 3s. 4d. to 4s.; and pork, 3s. to 4s. per 8lbs. by the carcase.

SUBSOIL PLOUGH. — Gentlemen and farmers, of whatever extent, and particularly occupiers of two ploughs labouring, and contiguous tenants of one plough each—will be gratified to learn that a new subsoil plough, of a particular construction, has recently come into operation, by which two horses will do as much work, with greater ease, than four horses can do with the ploughs in common use, and the work more perfectly executed in breaking the pan or subsoil to fully as great a depth. One of these ploughs, manufactured and improved by Mr. James Sidey, Pitcairngreen, was last week tried on a piece of hard-bottomed poor muir land, belonging to and undergoing improvement by Robert Smythe, Esq., of Methven Castle, where the efficiency of its working was fully tested to the entire satisfaction and admiration of those assembled. We believe the merit of the invention of this invaluable implement is due to William Lindsay Carnegie, Esq., Kinblethmont, Forfarshire.—*Perth Courier.*

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

APPLEBY MARKET.—SHEEP.—The number of white-faced sheep, whether half-breds or Cheviots, was fully an average. The number of black-faced sheep was rather below an average. The white-faced were, upon the whole, about 2s. a head below the prices at Staigshaw. The black-faced were lower in proportion. Half-breds may be quoted generally from about 13s. to nearly 20s.; upon an average about 17s. One very fine lot gave 21s. 6d. The best order of Cheviot ewe hogs gave about 14s.; the best wedder hogs about 15s. 6d.; some were sold rather below 8s. Upon the whole the average would be about 11s. The best black-faced ewe hogs were about 12s. 6d.; the best black-faced wedder hogs about 11s.; some sold as low as 3s. 6d.—the average would be about 8s. The best lots of three year old black-faced wedders were about 15s. 6d., shading down according to quality to about 11s. Of the various orders about 3,000 remained unsold. CATTLE.—The cattle shown on Wednesday were about an average, both as to numbers and quality. Upon the whole, the prices obtained were a shade lower than at the recent market at Dumbarton. Four year old West Highland bullocks may be quoted from about 7*l.* to 9*l.* 10s. Three year olds, of which the number shown was comparatively limited, were from about 6*l.* to 8*l.*; one very good lot gave about 8*l.* 8s. Two year olds gave from about 3*l.* 10s. to 5*l.* The best order of West Highland heifers gave rather above 8*l.* The best lots of Galloway heifers gave from 7*l.* 5s. to 7*l.* 10s. A good many inferior Highlanders and Galloways, as well as a number of inferior local cattle, remained unsold.

BRAMPTON BRIAN FAIR, held on Wednesday and Thursday, was well supplied with fat sheep and lambs, which sold readily at current prices. Fat beasts ruled at from 4½d. to 5d.; fat sheep, 5d. per lb.; a few prime lots of wethers fetched rather higher prices. At this celebrated horse mart there was a large supply, but the greater part were "unlikely" animals, which were unsaleable. The only description that were sought after were the finest and most valuable animals. Altogether the horse fair was a wofully dull one, prices being at least twenty per cent. lower than this time last year.

At BOSTON FAIR the show of stock was above the average of former years, and much business was transacted at fair prices.

At NEWARK FAT STOCK MARKET there was a larger quantity of sheep than on any former day since the establishment of the market; 800 sheep and 23 beasts penned. Many of the sheep and nearly all the beasts were sold, at about the usual prices.

NORTHAMPTON FAIR on Monday last was but poorly supplied with fat stock. Beef made from 3s. 6d. to 3s. 8d. per stone; mutton from 3s. 2d. to 3s. 6d. There was a good show of store beast, but few were sold, although offered at lower prices. The horse fair was indifferently well supplied, and no great deal of business was done.

OSWESTRY FAIR.—There was a good supply of sheep; good mutton and fat lambs sold at more than 5d. per lb.; inferior very low. Pigs were not worth so much money as last fair. There was a good supply of cattle; good beef brought full 5d. per lb.; cows and calves were much lower than at the former fair. Fresh barrens were inquired for, and were mostly sold. Store cattle were not wanted, and many were driven home without a bidding. The horse fair was still worse, though there were a good many useful nags shown.

ROSLEY-HILL MARKET.—There was fully an average show of cattle. The demand for Galloway cows and queys was very slow, and the sales made were very unfavourable to the exposers of these kinds of stock. One pretty extensive dealer did not sell a single beast; and net fewer than 300 of those driven from this district returned unsold. The demand for Highlanders was scarcely so bad, but still far from good, and the sales made disadvantageous to the exposers. The demand for stirks of the Galloway breed was considerably better; and these were mostly sold—some of hem to be exposed in our own market.

TAUNTON FAIR.—Fat bullocks, in good demand, sold at from 9s. 6d. to 10s. per score. There were many half-fat ones offered for sale, on account of the late floods, which fetched reduced prices. The supply of store bullocks was large, much out of condition, and which sold at low prices. The supply of sheep was very short; fat ones sold at 5d. per lb., poor ditto met with a dull sale. In the horse fair a great many were exhibited; but very few were of superior quality, and but little business done.

TRINITY MUIR FAIR.—The sale of sheep was about an average. With the exception of those in good order, bargains were difficult to make on any terms; and a large number remained unsold. Three-year-old black-faced hill wedders brought from 12*l.* to 16*l.*; ewes and lambs do., from 7*l.* to 13*l.* per score. Fat sheep sold freely at 4d. to 5d. per lb, to sink the offals; and all the best lots soon exchanged owners. Small hill sheep were a very bad market, the supply far exceeding the demand. The cattle market was largely supplied with all sorts of beasts, for which there was a great want of buyers. Prime fat sold readily at 7s. per Dutch stone, to sink the offals, and were nearly all sold; but small lean beasts could hardly be turned into money. The drove cattle from the northern counties were a very stiff sale, at reduced rates; and a good number remained unsold. There were some remarkably fine lots of three-year-old polled stots, the best of which brought about 18*l.* per head. Two-year-old stots and quays, in fair condition, brought from 5*l.* to 8*l.*; three-year-old do., from 7*l.* to 10*l.* Farrow cows and small Highland stots brought about 4s. 6d. per Dutch stone, estimated weight when fat. The drove cattle brought from 7*l.* to 12*l.*, according to weight and quality. The market may be said to have been fair for good fat cattle, and bitter bad for small beasts; a great number of which remained unsold.

MUIR OF ORD MARKET.—We regret to say that little business was done, and prices exceedingly low. The supply of stock was great, in consequence of the scarcity of grass, which operated also against sales. For milch cows there was some demand at from 6*l.* to 9*l.* The best lot of two-year-olds belonged to Mr. Kennedy, Bogbain, composing first-rate Highland stock, but only fetched 4*l.* 2s. 6d. Of sheep the supply was poor, and prices low. Black faced hogs were selling at about 5s. 6d. A lot of Cheviot ewes and half-bred lambs got 13s. There were but few horses of any value, and upon the whole the show stock was inferior.

BURNTISLAND.—Mr. Young's great sale of fat stock took place on Monday week, and went off briskly at high prices. One fine stot fetched 30*l.* 5s., others 29*l.*, 28*l.*, 26*l.*, 20*l.*, and downwards. Many who were there estimated some of the prime beasts at 7s. 2d. imperial (9s. Dutch) stone, and a good deal at 6s. 9d. (8s. 6d. Dutch). Upon an average this stock will stand the purchasers upwards of 6s. imperial (7s. 6d. Dutch). The bidding continued with spirit up to the very last.

PRESENTATION OF PLATE.—A handsome and expensive present of plate has been procured by Mr. Thomas Strange, silversmith, of Banbury, with the following inscription engraved on the vase:—Presented to Mr. Richard Lovell, of Edgcote, Northamptonshire, by his agricultural friends, as a memorial of respect for his father's judgment in selecting, and as a token of regard to himself for his spirited and successful efforts in improving his breed of short-horned cattle." Also a

tea-pot, sugar basin, and cream jug were presented to Mr. Lovell. The vase is large enough to contain two or three quarts, and is an elaborate fluted article, of the gourd pattern, which was well filled, after an excellent dinner at our worthy host's, Mr. Fowler, of the Red Lion Hotel, on Wednesday, with juice of the choicest vineyard. The principal agriculturists of the neighbourhood and friends and subscribers were present in honour of the occasion.—*Northampton Herald.*

DONCASTER COVERED CORN MARKET.—We have been favoured with a sight of the model and drawings of the covered corn market, which, as our readers are already aware, the Town Council have determined to erect on the spot where the business of the corn market is at present transacted. Mr. John Butterfield, who possesses, very deservedly, the good opinion and confidence of the Council, is empowered by that body to carry into effect the design of which he is the originator. It is but justice to Mr. Butterfield and to the Council to state, that the structure, as depicted on the drawings and by the model, will, in an eminent degree, promote the comfort of the farmers and merchants who are in the habit of attending our market. As will be seen by the brief detail we proceed to give, the plan secures three essential points—space, light, and shelter from the inclemency of the weather. The surface of ground covered by the erection will be 680 square yards, which give standing room to a large concourse of persons who may choose to assemble there on public occasions. Two rows of cast metal pillars, seven in each row, 16 feet high and 16 feet apart from each other, will, with the present wall, support a double roof of wrought iron rods. On these rods will be placed boards, of which the underside will be painted white, and on these boards the blue slate will be secured. On both sides of each ridge of the double roof will be a continued light of patent glass, extending downwards five feet, so that one-third of the entire roof will be glazed. The iron pillars being hollow will perform the office of spouts, and convey the rain from the roof to the main drain. The time for the receipt of estimates for this structure, of which the general appearance will be similar to that of a railway station, will, we understand, be shortly announced by advertisement.—*Doncaster Gaz.*

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JUNE.

During the last month the unfavourable state of the weather created considerable anxiety in the public mind, for the fate of the ensuing wheat crop. The same cause likewise occasioned some activity in the wheat trade, but not nearly to the extent which would some years ago have existed, was our agricultural enterest now in a sound and healthy condition. With damaged fortunes, however, and subdued enterprise and spirits, it really would appear that, for the present at all events, our farmers view the prospects of large and fine crops of wheat, and of small and damaged ones, with equal indifference; for the former cannot, in the present depressed state generally of our population, materially tend towards the restoration of prosperity to them for the future, and certainly the latter cannot much increase the amount of injury and injustice to which the alteration in our corn laws and in our Custom-house tariff of duties, has exposed them during the last corn season. The fortunate change in the weather has, however, partially removed these fears; although that injury, to a certain extent, has been done both to the wheat and to the potato crops is unfortunately too much to be apprehended. On low lands, and generally on all heavy soils, the wheat plants, in consequence of the long-continued falls of rain, have gone away by far too much into straw, and under such circumstances it is not reasonable to look for heavy ears on any portion of the wheat crop now growing in localities of the above description. It must also remain for sometime uncertain whether the straw itself be not already injured by the wet and cold to that extent which may prevent the ears from receiving that degree of nutriment from the straw hereafter, which is absolutely necessary in their progress towards a favourable maturity. The coming wheat crop, therefore, we repeat, is in an uncertain state at present, and time is necessary to show what is the extent of the actual injury, if any there be, done to it by the weather; indeed, until the straw begin to fade, all doubt on this highly important subject cannot be removed. With the average price of wheat at somewhere about 47s. per quarter, or nearly 10s. per quarter lower than—according to the declaration made by the prime minister himself, during the last session of parliament, in the House of Commons—it can be produced for without loss to the farmers in the United Kingdom, that the late aspect and present prospect of the coming wheat crop has only been attended by an advance in the value of British grown wheat of from 2s. to 4s. per quarter, according to quality, is a circumstance which should call for the immediate attention of farmer's friends in the British legislature, and likewise for the deepest reflection on the part of the British people in general; for their wages, and their means for the comfortable support of themselves and their families, mainly, if not entirely, depend on the prosperity of agriculture hereafter. In better times, when the farmer knew that his property was sufficiently protected by benevolent laws from any unfair and undue competition in our markets of consumption; with grain, the property of foreign land proprietors, and raised by the productive employment of foreign workmen, the late critical position in which the coming wheat crop was placed by the unfavourable state of the weather, and the uncertainty which still exists respecting its quality and quantity, even should the weather now continue to be favourable until the harvest be completed, would have caused much greater activity in the English wheat trade than can exist under present circumstances. Speculation is at present not directed to wheat of British growth, but entirely either to the purchase abroad of foreign wheats of the best qualities, or of foreign grown wheats now under her Majesty's bond at home. By this preference to foreign over British wheats, the speculator opens two channels of profit for his operations, one being in the legitimate advance which circumstances may occasion in its value in this country, and the other in the profits which he may gain from the declining rates of our importation duties. In fact, in the event of the wheat crop being a deficient one this season, which is very far indeed

from being an improbable supposition, he has the certainty of gaining 19s. per quarter out of the present rate of import duty; and the corn law, therefore, very naturally induces him to prefer foreign to British wheats in his speculative purchases. The corn law in fact holds up to him strong inducements to pay for the produce of foreign fields, and to employ foreign labourers in preference to those of the United Kingdom in the production of wheat intended for the consumption of the British people. This most certainly is not the best, nor yet the most patriotic plan which might be adopted by the British ministers for improving the condition of the productive classes of society at home, nor for increasing our notoriously deficient revenue. Already, we repeat, have considerable orders been transmitted abroad for the purchase of the best qualities of Polish, Silesian, and Pomeranian wheats; and these operations, must tend to the increase of our financial difficulties hereafter, and render the eventual non-payment of the half-yearly dividends perhaps less impossible than has hitherto been supposed. This event no doubt would be the infliction of a great calamity on the community at large, though certainly neither greater nor more unjust than the one which was perpetrated on the land proprietors, the farmers, and on the agricultural labourers, when in 1819 an act was passed under the auspices of the present chief minister of the crown, for the prospective alteration of the circulating medium from a paper to a metallic currency. In 1815 an act of the legislature declared that 80s. per quarter in paper money was a fair remunerating average price for wheat produced within the United Kingdom, and under the faith of this act of parliament many agricultural improvements were undertaken, and much capital was invested in land. Since then the alteration in the currency has gradually reduced the value of wheat, until it has at length declined from an average price of 80s. to one of 47s. per quarter. Previous to 1793 our national debt amounted to 260,000,000*l.*, raised at 50*l.* in money for each hundred pounds in stock. From 1793 to 1803 360,000,000*l.* were added to our debt, the average contract price of which was 57⅜; and between 1803 and the battle of Waterloo, our national debt was further increased by loans to the extent of 233,500,000*l.* at the average contract price of 60⅜ for each hundred pounds of stock. The dividends in paper money on the funded and unfunded debt amounted do nearly thirty millions sterling annually, at that period when our circulating medium was altered from a paper to a metallic currency; an alteration which immediately entailed nearly universal ruin on all ranks within the British empire, and more particularly on the productive classes of every denomination. There was then only one solitary exception to this general distress, and that was made in favour of the proprietors of the funded and unfunded debt, who continued to receive the same amount of annual dividends in the precious metals which they had previously done in paper money, and at the same time, by means of this alteration in the currency, they were enabled to purchase the necessaries of life from thirty to fifty per cent. under their previous value. It was then urged that these dividends were guaranteed by acts of parliament, and consequently by the national faith; and, no doubt, this guarantee did then exist in the most enlarged meaning of the word. But by the corn law of 1815, the growers of wheat were as solemnly guaranteed that 80s. per qr. was a fair average price in paper money for their crops. Agricultural property has been, however, subjected to the depreciated value in it, which the alteration in the currency most naturally occasioned. To have been just, this change in the value of the currency should have been made general. The average price of wheat is now 47s. per qr.; and a common rule of Cocker will show that the dividends now payable in specie on the national debt should be at the present moment considerably under twenty millions sterling, calculating the precious metals as the standard of value; for wheat at 80s. in paper money is more capable of bearing an annual charge of thirty millions sterling, than wheat at 47s. per qr. now is of bearing one of twenty millions. It is, however, far indeed from our intention, because an act of perfect spoliation has been committed on agricultural property, to recommend the repetition of a similar fraud on the property of the fund-holders; for we only mention what may eventually be done, should immediate means for the restoration of agricultural prosperity not be resorted to by her Majesty's Ministers. The late bad state of the weather, and the present doubtful appearance of the wheat crop, may however before long cause a better demand for all descriptions of wheat, and materially improve its present value; for the farmers do not hold this season anything like their usual stocks of wheat, the low prices compelling the great majority of them to deliver much more liberally than they, under more auspicious circumstances, would have done. Of foreign duty paid wheat, the quantity now remaining within the United Kingdom is likewise small; and although we may receive large foreign supplies before the conclusion of this corn season, still a material improvement in our present prices, and a considerable reduction in the present rates of our importation duties must occur, before any quantity can be profitably now entered for home consumption; for prices in the Baltic and throughout the North of Europe, have latterly risen in value in a much more considerable degree than as yet they have done in this country, and sales of the expected importations therefore cannot be profitably effected at our present prices.

The commercial intelligence received from the Baltic has been, since our last publication, as usual, in due course of post; and the state of the corn trade at these dates, in the various places of shipment, shows that foreign corn merchants do not always sleep, though their eyes be apparently closed. In our last number we stated, that the prices of wheat in Dantzig, Stettin, and other places of shipment, were then sufficiently low, for the sale of the best qualities of it in the London market, at the low prices of that period, without leaving any loss to the importer, even after payment of our maximum import duty of 20s. per qr.; thus too clearly establishing the fact that the present corn law, in the worst of times, is not nearly protective enough to the property of the wheat producers within the United Kingdom. The state of the markets in the same places, by the latest advices, now likewise sufficiently shows that the value of wheat in all of them is regulated as much by the chance of reduced importation duties in this country as by the chance of higher prices. The long continued unfavourable state of the weather in this country, had then placed before the foreign corn merchant, in all the markets within and without the Baltic Sea, additional grounds for believing that profit would arise to them from these two sources, and accordingly they

had advanced their prices by more than double the improvement which has as yet occurred in this country. We have repeatedly said, that our minimum import duty is much too low, for when high prices here reduce the rates of these duties, our public revenue solely is the sufferer. The reduction of duty goes into the pockets of the foreign corn proprietors, and never has been, nor ever can be, of the slightest benefit to the British consumer of foreign grain. When our average price of wheat rises to 65s., the duty is 8s., and at this point it should remain, whatever further advance may afterwards occur in our prices. A great deal of wheat is already on the passage from the North of Europe, and we shall receive abundance of it from all quarters during the present season, whether our prices be high or low, whether the import duty be 1s. or 20s. per qr.; for prices on the continent must and will conform themselves to appearances, value, and circumstances in this country. It is really an extraordinary benefit which our present corn law holds out to the growers of foreign wheat, to grant to them a bounty positively, under certain circumstances, for sending their grain into our markets; for the charge of nominal duties is neither more nor less than paying bounties to them out of the British revenue; and it is most unjust also towards our farmers at home, who on the average are compelled to pay in public and private taxes, poor-rates, and tithes, at least 8s. per qr. on every quarter of wheat produced by them. This reward to foreign wheat growers also comes eventually out of the pockets of the British farmer, enabling, as it does, the former to undersell the latter in all our great markets of consumption by, at all events, this 8s. per qr.

In our June publication we stated that a commercial treaty was on the tapis betwixt this country and the United States of North America; the truth of which statement, if not actually confirmed, is much strengthened by all the letters since then received from those states and from our American possessions. Mr. Webster, so lately the Secretary of State to the President, in a public address to his fellow citizens, has given his influential sanction to the formation of a treaty of commerce, to the nature of which we formerly alluded; and we must therefore again direct the attention of the farmers of the United Kingdom to a subject of more than ordinary importance, to the property still remaining to them in their farms, and likewise to their future prosperity. This American treaty may be presumed, by Mr. Webster's speech, to be founded on reciprocity in trade, although the least attention to passing events will shew, that our transatlantic brethren will gain everything, and lose nothing, by a treaty of the proposed description. Jonathan will gain a market for the surplus of his agricultural produce of all sorts at moderate duties in this country, and he will likewise improve the public revenue of the American Union, by obtaining payment of moderate duties on the importation of British manufactured goods into his republic. Under his present system of high duties, which he most properly imposed for the benefit and encouragement of native industry, he finds that the object in view has not been obtained. He finds the American markets filled with British manufactures, which, having been introduced either through Texas or through the Canadas, without the payment of any duty, can be, and actually are, sold under the prices at which he can make them at home. Jonathan, therefore, feels inclined to alter the present system, so unfavourable to himself, and to obtain all the advantages which he can from a treaty to be concluded in Washington, and not in London with us, by which our landed interest must be again injured, for the sole benefit of agriculture and of revenue throughout the United States. To our manufacturers, a commercial treaty with any foreign community can never be the smallest consequence, for it neither can increase nor decrease the amount or the value of British manufactures consumed in any foreign state. A certain quantity is necessary to foreigners, and any deficiency in that quantity, which high importation duties may occasion, will always be most amply supplied by illicit traders. On the contrary, low prices, even if they originated in bounties being given to importation, never can increase for any length of time the consumption of goods beyond the actual wants of any people. We are, therefore, well warranted in asserting that all the advantages of a commercial treaty, between the United States of America and the United Kingdom, must belong to the inhabitants of the former States, and these advantages will be solely obtained at the expense of the British and Irish landlords, tenants, and agricultural labourers. Whether this treaty be concluded or not, however, the Canadian Corn Bill eventually must confer indirectly on the citizens of the United States all the benefits which this commercial treaty would by direct means bestow on them. From the town of Chicago itself, on the Michigan lake, the produce of Ohio, of Illinois, of Michigan, and indeed of all the Western States can be and will be shipped direct to the United Kingdom, without being even once transhipped. From that lake, and even from Lake Superior itself, the navigation to the St. Lawrence has been rendered at length continuous, by means of the Great Welland Canal, and the voyage will in future be much shorter, and the expenses of transit much cheaper than if the same produce was forwarded by the usual canals and rivers, to any shipping place within the American Union. In its progress through the lakes Huron, Erie, and Ontario, the produce of those western states can be, without either trouble or expense, converted into Canadian produce. Certificates of origin can be, and will be easily procured, "that the wheat of Ohio was grown in Upper Canada, and that the cured provisions of Michigan were cured in our Canadian possessions." To prohibit smuggling either of British goods across the lakes into America, or of American agricultural produce into Canada, could not be accomplished if the whole army of England should be changed into Custom-house officers, and the British flag is the only thing necessary to the direct transit of American flour, wheat, and cured provisions from the Lakes Superior and Michigan into London or Liverpool themselves. Lord Stanley's information must have been scanty indeed, when he said that this Canadian Corn Bill could in no manner be hurtful to our agricultural interest at home. His lordship is too honourable to attempt any deception on our farmers, and yet we cannot conceive why a bill was pressed by him through Parliament, which he thought neither could benefit our fellow subjects in Canada, nor injure our agriculturists at home. Either by a commercial treaty with the United States, however, or by this most unwise Canadian Bill, few years indeed can now pass away, before all our markets of consumption must be inundated with grain, flour, cheese, cured provisions of every description, and with various other products, grown in American fields, and employing in their production many thousands of American families. Yearly must the quantity so imported be increased, and yearly must

our own agricultural interest fade away until it finally decay, and the pressure of penury amongst the agricultural labourers must also yearly become more insufferable and severe. What an exalted opinion must not Jonathan entertain, either of the magnanimity, or of the folly of John Bull, when he finds him promoting American agriculture by the sacrifice of his own, and furnishing, in the greatest abundance, productive employment to American citizens, by largely increasing idleness and pauperism among his own countrymen. This is, unfortunately however, the new mercantile philosophy by which the American people are hereafter to be raised into high prosperity, and the agricultural labourers of the United Kingdom are to be still farther reduced in their wages and circumstances—small enough already for the honest support of their families, and of their connexions. This system no doubt will, as long as it is permitted to exist, reduce the labour of Englishmen in the fields, and at the same time it must proportionably reduce the wages of the industrious, and deprive them of the means of consuming the usual quantities of tax-paying articles. The revenue is already notoriously deficient, and no income-tax can restore it to a sound and healthy state, unless the entire population be productively employed, either at home or in our colonies. This most important effect can never be produced by employing Americans and Germans, instead of Britons, in the production of the necessaries of life for the consumption of the inhabitants of the United Kingdom. A preference, on moderate terms, ought and must be given to internal, over external industry, before any alteration for the better can be effected generally in the circumstances of the British people, and most certainly before the public revenue can be again placed in a healthy and sound condition. By dates from our American possessions, to the middle of last month, we find that, by the latest letters received at Halifax, from Montreal and Quebec, flour of the best quality could be then purchased at from 16s. to 18s. per barrel of 196lbs. free on board, and that considerable shipments were then in progress for the United Kingdom. It will pay the shippers well at our present prices, even after being charged with our present importation colonial duty. In quality, American flour generally is equal to our best town-made flour, manufactured from the best white Essex wheats, and therefore one barrel of it, weighing 196lbs., will produce, when baked, about 270lbs. of the finest fancy bread. At Montreal alone, when the shipping season commenced this spring, the quantity in store was more than 45,000 barrels of flour, and, as the season progressed, still larger quantities were expected to be received. In another year, therefore, under the beneficent protection to the inhabitants generally of North America of our Canadian corn bill, our wheat growers may make up their minds that the interference in all our markets of consumption of foreign wheat and flour, with their property, must be still very materially increased by supplies from the western hemisphere. And thus are the British ministers about to reward the Canadians for their late rebellious movements against the British crown, at the expence of the British wheat and dairy farmers, and at the cost of British productive labourers of every denomination.

For British grown barley, since our last review, the demand has been anything but active, and the average price is nearly 1s. 6d. per qr. lower than it was at the above period. This has been partly occasioned by a considerable quantity of foreign barley having, during the last three months, gone into consumption, the importation of which has been attended with a fair profit, even after the payment of 9s. per qr. of duty; thus perfectly demonstrating that the present corn law, under no circumstances, is sufficiently protective of the interests of the barley growers within the United Kingdom. The principal cause, however, of the present unfortunate condition of the barley trade may be traced to our internal polity, by which the consumption of manufactured barley has been most seriously diminished, and by which the revenue itself has been, so fatally to the best interests of the community at large, materially reduced. We need only remind the cultivators of barley fields, that the malt duty for the season ending in the beginning of April, 1843, was eight hundred and eighty thousand pounds less than it was for the season ending in the same month in 1842; and then they can have no difficulty in discovering the real source in which has latterly originated the heavy losses to which they have been subjected, in their agricultural pursuits. Their produce, when manufactured, paid until lately into the treasury more than one-fifth annually of the national expenditure, the interest of the funded debt included; but still, if the malt and English spirit duties were reduced to those rates which would bring beer and spirits within the means of the great body of consumers to pay, this source of revenue might be yet most materially improved. To collect a duty of 1s. per qr. on barley to be converted into malt, and to reduce the duty now charged in England on the distillation of spirits to 5s. per gallon, would, to a certain extent at all events, remedy the evils under which the cultivators of barley are now suffering, and would, by the great addition which this important alteration must create in the consumption of manufactured barley, materially increase the public revenue. But the entire repeal of the malt duty would be indeed conferring a benefit on the community at large, as well as on the producers of barley. An Englishman would again then revert to his former comfortable mode of living. He would again manufacture his own malt, and drink his home-brewed ales. His family would also amply partake in this social cheer at home, and the necessary increase in the production of barley would be immense. At least three millions of acres of light and sandy soils, at present only valuable for the production of rabbits would be requisite to grow this additional quantity of barley, and by their cultivation, the wealth of the commonwealth would be increased proportionably to the increased enjoyments of the people. To restore agricultural prosperity even thus far, would gradually introduce higher wages amongst the productive labourers, as well agricultural as commercial and manufacturing. The trade of the smuggler likewise would be rendered hereafter unprofitable, by a material reduction being effected in the rates of duty now charged on the distillation of spirits in England, and thus the greatest school for teaching crime in the United Kingdom would be effectually closed. It is really wonderful that those most patriotic gentlemen, the Anti-Corn Law Leaguers, on this most important subject are so entirely silent, for in this channel most assuredly they may find the best method for illustrating their liberal propensities. The quantity of barley now consumed in beer and British spirits, under the present hight duty system, is not worth more than from ten to twelve millions sterling in its raw state, and the duty levied on it,

when manufactured, is about twelve millions sterling annually. The farmer can only sell his crops once in the year, while the manufacturer of goods turns his capital three, and more frequently four times within the year. Upwards of one hundred per cent. is thus charged by the excise on the cost price of barley about to undergo the operations of malting and of distillation, whilst, on the raw material of manufactured goods, no revenue charge whatever is imposed, with the exception of a nominal charge on that part of it which is of foreign growth. A reduction in the rate, if not its entire repeal, of the malt tax, would at all events wonderfully relieve the wants of the vast proportion of our native population, for it would increase the property which they possess in productive labour, and it would also render the transportation of even the smallest portion of them to the colonies hereafter unnecessary. It would create abundance of valuable labour at home, and it would much enhance the rates of wages, which are the greatest wealth after all, even of the British Empire. The wet weather has in some measure already, however, injured the barley crop in all but in light sandy soils, and therefore even if some measure be adopted by the legislature for the increase of its consumption, still the prospects of the barley growers are at present gloomy in the extreme—an evil which even a sudden favourable appearance in the barley crops could not, under the existing state of our excise laws, in any measure effectually remove; and, therefore, we must repeat, that either the malt and English home-made spirit duties must be materially reduced, or entirely repealed.

In the article of oats a small improvement of perhaps 1s. per qr. has occurred since our last publication, but this is only restoring a very small part indeed of the capital which the farmers of the United Kingdom have sacrificed in the production of this article during the last year. The alteration in the corn laws effected last year has produced amongst the cultivators of oats the greatest distress, particularly in Ireland, and the consequence having naturally been the introduction of destitution unheard of previously even in that part of the British Empire. The farmers have, during the season, been obtaining only from 6s. to 7s. for each barrel of their sound oats, but the great proportion of the last crop was so materially damaged, that 5s. per barrel was a price difficult to be obtained. Out of these prices it has been found impossible for the farmer to pay his necessary expenses in their production, and hence the starving peasantry a month ago were unable to purchase even potatoes at one penny per stone. The want of productive employment amongst them, and not any deficiency in their inclination to labour, is the cause of the deplorable situation to which they are now reduced; and corn bills, Custom-house tariffs, and the dogmas of the free traders, have, during the past year, very much increased the difficulties of those land proprietors and tenants there to whom the industrial classes have heretofore been accustomed to look up for their daily bread. In the cultivation of waste land in Ireland, the unemployed population may increase the nation's wealth to an extent which it is impossible at present to calculate. From the banks of her rivers, her morasses, and her arms of the sea, millions of acres of land may be banked off by capital, and by the labour of man, which, added to the at least three millions of acres at present also uncultivated, although not requiring the same expense to convert them into corn and feeding fields as those to which we have alluded above, would render Ireland perfectly capable of most abundantly supporting her population, was it twice larger than it now is; and only to act with common justice betwixt the north of Europe and the United Kingdom, is necessary for the accomplishment of a most benevolent alteration in the circumstances of our population at home. To protect capital, talent, and industry, embarked in agricultural improvements, is the only thing necessary to their being speedily undertaken. A preference in the great markets of consumption in Great Britain being given to the produce of Irish agriculture over that of foreign nations would, before another quarter of a century can pass away, render all corn laws and tariffs unnecessary in this country, unless for revenue purposes, and the expulsion of idleness and of penury from amongst the people would be thus the necessary result of agricultural improvements progressing throughout the United Kingdom. In Cambridgeshire and Lincolnshire the protection given by the corn law, during the last twenty years, has fully established the truth of this position. From these counties the London market, a quarter of a century ago, was chiefly supplied with oats, but in consequence of agricultural improvement the growth of wheat in both of them—a far more valuable crop both to the consumer and the producer than oats are—is now as influential, both by its quality and its quantity, in our great markets of consumption as the wheats of Essex, Kent, or any of the home counties heretofore have been in London. Efficient protection to agricultural improvements has caused this great result in Lincolnshire and Cambridgeshire, and, if it had been continued, it must eventually have been attended in Ireland by effects equally important to the real interests of the inhabitants of the United Kingdom. In Ireland under fair legal protection, the cultivation of oats would annually increase, but, as matters now unfortunately are, a greater quantity has this season been grown than is consistent with the means of the farmers, and accordingly the half of the population can obtain no employment of any description, and those who have work are reduced to the smallest rates of wages; thereby giving a convincing contradiction to the new political principle, that cheap food must be attended by abundance of productive labour, and by fair rates of wages to those by whom this labour is performed. The quantity of oats sown this spring in the north of England, in Scotland, and in Ireland, is again large, for under even the most forbidding circumstances the farmers must continue to cultivate their farms, or they must sink the remainder of their capital invested in the fields; and, although the long continuance of rain latterly created some fears respecting the fate of the next oat crop, still we believe that no damage of any consequence has been done at the time our present number goes to the press; and therefore, should the weather in future be favourable, another large crop will be grown. It is doubtful, however, whether this circumstance, should it actually occur, can, in the present disarrangement in all descriptions of property, be of any benefit to any interest whatever in the United Kingdom. That too cheap oats are not of the slightest benefit to the Irish people, is but too evident. So far, in fact, from cheapness being advantageous to the people anywhere, the deplorable condition of the inhabitants of Ireland effectually proves the reverse at the present moment.

The quality of last year's potato crop still continues to be unexceptionable. In the populous districts generally the supplies of this most useful root have been large throughout the season, and the prices have also been unusually moderate. The growing potato crop, particularly in Scotland and Ireland, has suffered from the wetness of the weather, but it is impossible to ascertain the extent of the damage. In some fields not one half of the shoots are above the ground, and on the whole appearances at the present moment are rather unfavourable than otherwise.

CURRENCY PER IMP. MEASURE.

JUNE 26.

WHEAT, Essex and Kent, red	48	51	White	52 54	56
Irish	44	46	Do.	46	50
Old, red	—	—	Do.	—	—
RYE, old	32	—	New	32	—
BARLEY, Grinding 27 30 Malting	30	32	Chevalier	32	33
Irish	24	28	Bere	22	26
MALT, Suffolk and Norfolk	56	58	Brown..	50	54
Kingston and Ware	56	60	Chevalier	60	—
OATS, Yorksh. & Lincolnsh., feed	22	23	Potato..	23	26
Youghall and Cork black	17	19	Cork,white	17 19	21
Dublin	17	18	Westport	18	20
Waterford, white 15	17	18	Black ..	18	19
Newry 19	20	21			
Galway	16	17			
Scotch feed	21	—	Potato..	21	24
Clonmel	18	20	Limerick	19 21	22
Londonderry	18	19	Sligo ..	18	19
BEANS, Tick, new	26	30	Old, small	30	34
PEAS, Grey	27	29	Maple..	28	30
White	30	31	Boilers .	30	34

FLOUR, Town-made 42 43 Suffolk 36 37 pr sk. of 280 lbs.
Stockton and Norfolk, 35 36

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	42	44			
Hamburg	36	38			
Rostock	38	42			
BARLEY	20	—			
OATS, Brew	15	17	Feed...	12	15
BEANS	15	19			
PEAS	22	24			
FLOUR, American, per brl	22	24	Baltic ..	—	22

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, June 23rd, 1843.

	s.	d.
WHEAT	48	11
BARLEY	27	3
OATS	18	6
RYE	30	7
BEANS	28	4
PEAS	29	7

AVERAGES from the corresponding Gazette in the last year, Friday, June 24th, 1842.

	s.	d.
WHEAT	63	11
BARLEY	27	6
OATS	21	7
RYE	31	7
BEANS	34	4
PEAS	33	2

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
May 13th	46	2	28	1	17	3	29	2	26	8	28	9
20th	47	2	27	9	17	5	29	2	26	10	28	2
27th	47	9	27	5	17	11	29	2	27	4	29	10
June 3rd	47	11	27	3	18	0	30	3	27	10	29	1
10th	48	4	27	3	18	5	30	5	28	3	29	7
17th	48	11	27	3	18	6	30	7	28	4	29	7
Aggregate average of the six weeks which regulates the duty	47	9	27	6	17	11	29	10	27	7	29	2
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	20	0	9	0	8	0	11	6	11	6	11	6
Do. on grain from British possessions out of Europe	5	0	2	0	2	0	2	6	1	0	1	9

STOCK OF GRAIN, &c., IN BOND, IN THE PORT OF LONDON, ON THE 5th JUNE.

Wheat.	Barley.	Oats.	Beans.	Peas.	Rye.	Flour.
qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	cwts.
118,041	7,435	15,464	44,348	5,462	—	27,178

Cloverseed, 13,926 cwts.

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th June, 1843; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.		Quantity entered for consumption.		Quantity remaining in warehouse.	
	qrs.	bush.	qrs.	bush.	qrs.	bush.
Wheat, from British Possessions	314	6	1127	6	3371	7
Peas, from do.	0	1	2	3	388	1
Indian Corn, do.	—		—		1214	5
Wheat, foreign	50328	2	8075	5	259183	0
Barley, do.	11869	6	14065	2	47175	7
Oats, do.	1442	3	0	2	40542	6
Rye, do.	—		—		57	6
Peas, do.	600	3	221	5	24025	4
Beans, do.	5630	2	2409	0	114434	0
Indian Corn, do.	0	4	167	4	9824	4
Buck Wheat, do.	—		—		—	
Malt	—		—		—	
	cwts.	qrs.lbs.	cwts.	qrs.lbs.	cwts.	qrs.lbs.
Flour and Meal from British Possessions	35	2 18	6517	3 26	26703	0 12
Flour & Meal, foreign	2538	3 4	118	1 23	40796	1 21

PRICES OF SEEDS.

JUNE 26.

Since the return of fine weather, the speculative demand for Cloverseed and Trefoil has subsided, though prices remain nominally the same.—In Hemp, Coriander, and Carraway seeds there is no alteration. Canary seed cheaper.

Clover English, red	36	56	white	none.	per cwt
Flemish, pale	40	42	fine..	44 48	nominal
New Hamburgh ..	none.		do..	50 60	nominal
Old do.	40	44	do..	40 56	nominal
French	40	48	do..	none.	nominal
Linseed, English, sowing	50	60			
Baltic	—	—	crushing	38 41	per qr.
Mediter. & Odessa	40	44			
Large, foreign	—	—			
Coriander	10	16	old....	16 20	per cwt.
Mustard, brown, new ..	9	11	white..	9 10s 6d	p.bush
Trefoil, new	18	24	old....	12 16	
Rapeseed, English new..	32*l.*	37*l.*	per ton.		
Linseed Cakes, English..	9*l.* 10s.	to 10*l.*	per 1000		
Do. Foreign..	5*l.* 10s.	to 6*l.*	per ton.		
Rapeseed Cakes	5*l.* 5s.	to 5*l.* 10s.			
Hempseed, small	34	36	large ..	36 38	per qr.
Rye Grass, English	20	25	Scotch	12 21	nominal
Tares, winter	—	—	New	3s 0d 4s 0d	p.bush.
Canary, new	75	80	fine	82 84	per qr.
Carraway, old	—	—	new	42 44	

PRICES OF HOPS.

BOROUGH, MONDAY, June 26.

For Hops we have not had any improved demand, and prices have further given way about 5*s.* per cwt. since our last, although the speculators for a rise keep up their reports of a great increase of fly. These are too well appreciated to cause any effect. Here the duty is not backed, but letters from Worcester state that the duty for that district was laid at 12,000*l.* The prices are :—

		s.	s.	
Pockets, 1842,	Wealds....	90 to	100	per cwt.
...	East Kent..	105 —	125	..
..	Mid. Kent.	100 —	115	..
..	Sussex....	88 —	100	..
Pockets, 1841,	Wealds, good	60 —	70	..
..	East Kent choice	75 —	90	..
	Mid. Kent.	70 —	85	..
	Sussex....	60 —	70	..

EAST RETFORD, June 22.—We have now arrived at the commencement of the summer solstice, and yet the hop bines are very little forwarder than they were a month ago; nevertheless we have known them equally backward and yet they produced a good crop. The present year in its main features approximates the nearest towards that of 1824 of any other within our recollection. The month of May then and until the middle of June was excessively cold and frosty, with much rain and stormy weather; about the 12th of the latter month, however, the atmosphere cleared up, and in a few days the duty, which had been started at 110,000*l.* with few backers, now rose to 138,000*l.*, and shortly after a severe storm on the 4th of July, to 150,000*l.*; from thence to the 17th the weather was moderate, after which it set in hot and dry, and continued, with few intermissions, almost intensely hot, until the 1st of September, when the thermometer reached 79 degrees, its greatest yearly maximum. The hops then continued to progress favourably, the Clays paying a duty of 1331*l.*, and the kingdom at large 148,832*l.* As we have stated on a previous occasion, we believe the present summer will be hot and dry, and, if so, then a fair crop of hops may fairly be anticipated. At present, especially on the low grounds, appearances are certainly against them; the majority being starved, and uneven in their growth; yet such are the immense resuscitative powers of this eccentric plant, that when it suits them they grow like hemp, and to all appearance produce hops from the poles; and when it does not they are as stupid, and almost as inanimate, as that upon which they depend for outward support. Some grounds are at present looking fairly, and perhaps we may get on without much filth. On the 29th of May, last year, fly was reported to be prevalent in Kent; but these did not make their appearance in the North Clays until the 2nd of June. We have now arrived at the 22nd, and find very few up to the present time.

POTATO MARKET.

SOUTHWARK WATERSIDE, June 26.

The weather of late has been very fine and highly favourable to the growth of vegetation. A good supply of new potatoes was sent to the London markets on Saturday last, and sold at prices varying from 9s. to 12s. per cwt. forward. Middlings and Cluts in proportion. Sales at the waterside have declined during the past week, the supply being abundant at this late season. The receipts since our last are as follow:—viz., from Devonshire, 540 tons; Yorkshire, 205; Scotch, 160; Kent and Essex, 90—total, 995 tons; in addition to which a large portion of the previous arrivals remain unsold in the market. Present prices as annexed:—

	Per ton. s. s.		Per ton. s. s.
York Reds	80 to 100	Wisbeach do.	— to —
Scotch do.	40 to 70	Jersey Blues from Store	— to 60
Devons,	65 to 70	Yorkshire Prince Regents	— to —
Lynn Kids	— to 70	Ditto Shaws, for planting	— to —
Kent do	— to 70		
Kent & Essex Whites	50 to 55		
Kent Kidneys	— to —		

WOOL MARKETS.

BRITISH.

JUNE 26.

	s. d.		s. d.
Southdown Ewes and Wethers	0 9	to	0 9½
Do. Teggs	0 9	—	0 10½
Half-bred Wethers	0 10	—	0 0
Do. Hogs	0 11	—	0 0
[Some Norfolk Hogs still higher]			
Merino Fleeces	0 10	—	0 11
Do. Clean Hogs	0 0	—	1 0
Devonshire Yolk	0 7	—	0 7½
Flannel Wool	0 9	—	1 0
Blanket do.	0 4	—	0 8
Skin Combing	0 9	—	0 10½

CHEPSTOW WOOL FAIR, June 22.—More than the usual quantity of wool was brought to the fair this year, and consisted chiefly of very useful, good combing wool, most of which was sold at about an average of 11s. per stone of thirteen pounds, or 10d. per pound. But little lambs' wool, and still less of the old kempy, or mountain bred fleeces, were exhibited. The quality of the wool has decidedly improved, but owing to the recent bad weather, the condition of some lots was not so good as usual.

LIVERPOOL, JUNE 24.

SCOTCH.—There has been less demand this week for Highland Laid Wool, and our quotations are barely maintained. White Highland is still scarce and enquired for. The arrival of crossed and Cheviot has been considerable, but the demand has been good at low rates.

PRESENT PRICES:

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs..	6	0	to	6	6
White do. do.....	8	6		9	0
Laid Crossed do..unwashed..	7	0		8	3
Do. washed do.....	7	6		9	0
Do. Cheviot unwashed do.	7	3		9	6
Do. washed	9	9		12	6
White do. do.	18	0		19	0

FOREIGN.—The attention of the trade being almost wholly taken up with the sales now going forward in London, there continues to be little doing by private contract.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

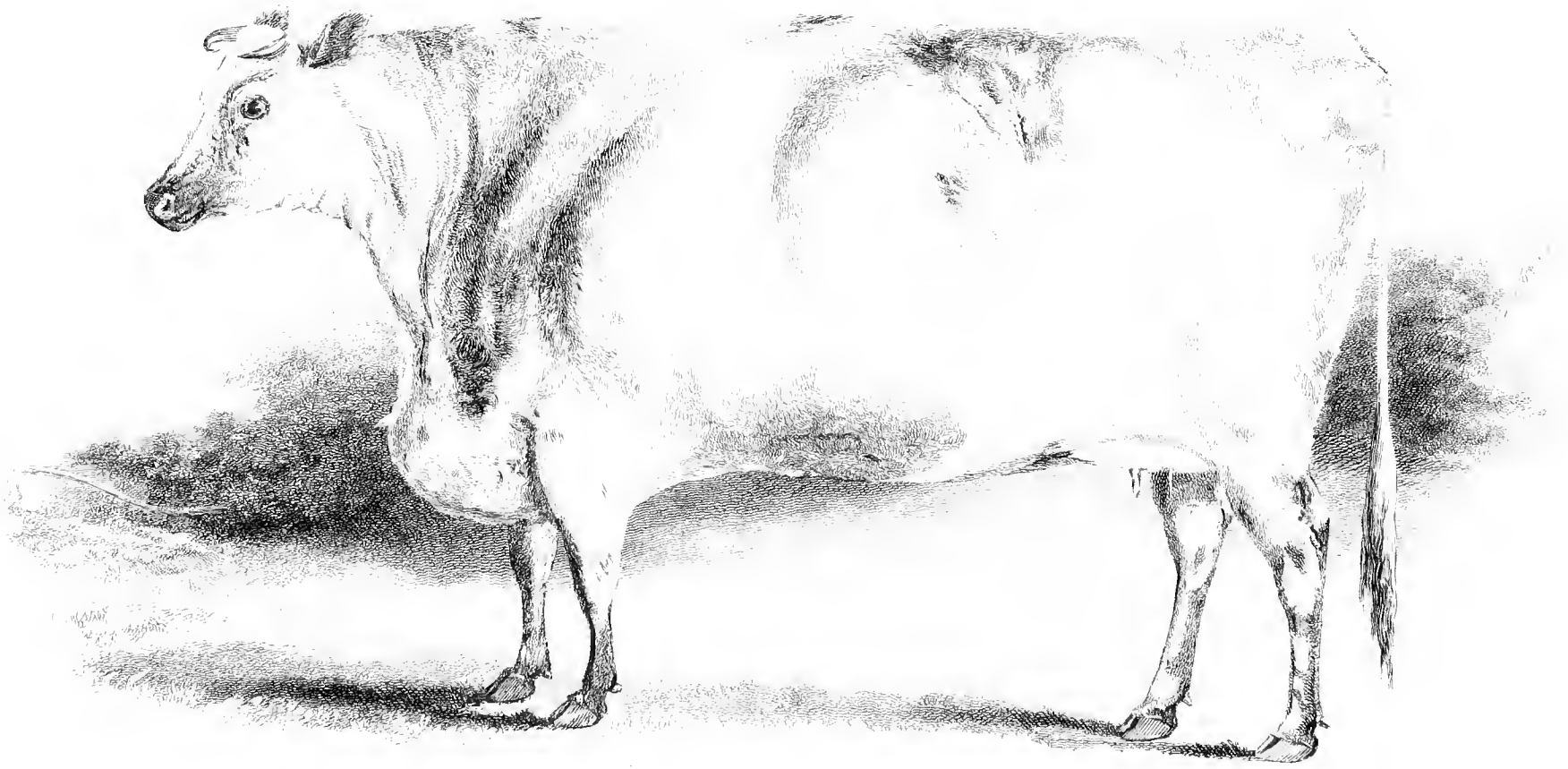
Hunt's Bone dust, 16s. per qr.
Hunt's Half-inch Bone, 14s. per qr.
Hunt's Artificial Guano, 8*l.* per ton
Rape Dust, 6*l.* to 6*l.* 10s. per ton
Rape Cake, 6*l.* 10s. to 7*l.* per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 6*l.* 10s. per ton.
Gypsum, at the waterside, 32s. 6d. per ton; landed and housed, 38s. to 42s. per ton, according to quantity.
Agricultural Salt, 34s. per ton.
Lance's Carbon, 12s. per qr.
Ditto Humus, 14s. per qr.
Soap Ashes, 10s. per ton.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Poittevin's Highly Concentrated Manure, 30s. per qr.
Nitrate of Soda, 18s. to 18s. 6d. (duty paid) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Petre Salt, 4s. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* per ton.
Chie-fou, 21s. per cwt.
Daniell's new Bristol Manure, 8s. per qr.
Hunt's new Fertilizer, 13s. 4d. per qr.
Grimwade's Preparation for Turnip Fly, 10s. 6d. per packet, sufficient for three acres.
Wolverhampton Compost (Alexander's), 12s. per qr., subject to carriage to London, or forwarded from Wolverhampton.
Guano, 10*l.* 10s. per ton, 12s. per cwt.
Potter's Artificial Guano, 15s. per cwt.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Clarke's Compost, 3*l.* 12s. 6d. per hhd., sufficient for three acres.
Wright's Alkalies, 28s. and 42s. per cwt.
Soda Ash, 14s. to 16s.
Chloride Lime, 28s. per cwt.
Sulphuric Acid, 2½d. per lb.
Sulphur for Destroying Worm on Turnips, 16s. per cwt.
Sulphate Soda, 7s. 6d. per cwt.
The Liverpool Abattoir Company's Animalised Manuring Powder, 2*l.* 10s. per ton.

PRICES OF SHARES.

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	2*l* 10sp.c.	Birmingham & Derby ..100*l* sh pd	37¾ a ½
6,300	13s 4d	Do. Thirds, iss. 8⅓ dis. 33⅓*l* sh 25*l* pd	
		Do. Eights.....1½*l* pd	
9,500	2*l* 10s	Do. and Gloucester ...100*l* sh pd	
10,000	12s 6d	Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	55½
7,500	2*l* 10s	Cheltnm.&G. Westn.100*l* sh 80*l* pd	
3,000		Clarence.....100*l* sh pd	
64,000	2s 9d	Eastern Counties ....25*l* sh 23*l* pd	9¼ a ⅜
		Ditto Scrip..... 8*l* 6s 8d pd	1⅛ a ⅛
	3s	Ditto New Registered.....	
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	10¾ a ½
12,500	3½*l* per ct	Glasgow, Paisley, and Ayrshire 50*l* sh pd	
18,000	5*l* per ct	Edinburgh & Glasgow .. 50*l* sh pd	50¼
18,000		Ditto New ..... 12½*l* sh pd	12⅜ a ½
16,000	7s 6dp.sh	Glasg., Paisl., & Grnck.,27*l* sh 25*l* pd	
10,918	10*l* per ct	Grand Junction.....100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares .....50*l* sh pd	
		Ditto Quarter Shares .. 25*l* sh pd	
10,000	2½*l* per ct	Great North of England 100*l* sh pd	
25,000	4*l* 5s p sh	Great Western .... 100*l* sh 65*l* pd	91
25,000	3*l* 5s p sh	Ditto New.....50*l* sh pd	67 a ½
37,500	5s per sh	Ditto Fifths..... 20*l* sh 12*l* pd	
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
8,000	1*l* per sh	Hull and Selby ..... 50*l* sh pd	
2,100		Leeds and Selby.....100*l* sh pd	
5,100		Liverpool & Manchester. 100*l* sh pd	
7,968		Ditto Half Shares.....50*l* sh pd	
11,475		Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l* 10sp sh	London and Brighton....50*l* sh pd	34 a ¼
		Ditto Loan Notes..... 10*l* sh pd	10⅝
48,000		London & Blackwall Av. 16*l* 13s 4d	4⅛ a 4
43,077	3s	London & Greenwich Av. 12*l* 15s 4d	
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	16⅝
	5*l* per ct	Ditto Bonds (183,300).....	
25,000	10*l* p sh	London & Birmingham 100*l* sh pd	213 a 11
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	
31,250	3*l* 4s	Ditto Thirds..... 32*l* sh pd	66¾ a 7
	2*l* 14s	Ditto New..... 32*l* sh 2*l* pd	36¾ a ½
		Ditto Bonds 1843	
46,200	3*l* 2s 6d p s	London & South West. Av. 41*l* 6s 10d	64 a ¼
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 13*l* 15s 9d	
13,000	3*l* 17s psh	Manchester & Leeds 100*l* sh 70*l* pd	
13,000	1*l* 13sp sh	Ditto New Shares ....50*l* sh 30*l* pd	
	4s	Ditto Quarter Shares.....2*l* pd	
30,000	1*l*	Manchester & Birming. 70*l* sh 40*l* pd	2⅔ a 3
		Ditto Extension.....70*l* sh 7*l* pd	
10,000	3*l*	Midland Counties.....100*l* sh pd	66 a ½
10,000	15s	Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	16½
10,000		Ditto Fifths ..... 20*l* sh 2*l* pd	
	6s	Newestl. & Darlingt. Junc. 25*l* sh 9*l* pd	
15,000	3*l* 5s	North Midland..... 100*l* sh pd	68½ a 9½
15,000	1*l* 13s 4d	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	34
22,500	1*l* 1s 8d	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	22½
10,256	2*l*	Northern & Eastern 50*l* sh 45*l* pd	33½
3,136		Do. Scrip..iss. 5 dis. 50*l* sh 15*l* pd	16½ a 17
12,208		Do. ¼ Shares...12*l* 10s sh 1*l* 5s pd	2½ a ¾
80,000		Paris and Orleans..... 20*l* sh pd	26¼
		Paris and Lyons .... 20*l* sh 2*l* pd	
72,000		Paris and Rouen ....20*l* sh 20*l* pd	26¼ a ½
40,000		Rouen and Havre.... 20*l* sh 4*l* pd	
7,000	5 per ct	Sheffield, Ashton-under-Lyne, and Manchester .... 100*l* sh 82½*l* pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000		South Eastern and Dover 50*l* sh pd	23½ a ⅞
28,000		Ditto New, iss. 25 dis. 25*l* sh 25*l* pd	23⅝ a 4¼
6,700	10*l* per ct	York & North Midland..50*l* sh pd	96½ a 7
6,700	10*l* per ct	Ditto New Shares....25*l* sh 20*l* pd	

Shares.	Div.	MINES.	Shares.
8,000		Albion Copper ..... 5*l* sh 3½*l* pd	
¼,000		Alten ..... 15*l* sh 13½*l* pd	
10,000		Anglo Mexican, iss. 5*l* p. 100*l* sh pd	
	1*l*	Ditto Subscription ..... 25*l* pd	
8,000	1*l*	Blaenavon Iron & Coal .. 50*l* sh pd	
2,000		Bolanos ..... 150*l* sh pd	
	3*l* per ct	Ditto Scrip	4¼ ex-d.
10,000	17s 6d	Brazilian Imp. iss. 5*l* p. 35*l* sh 21*l* pd	
6,000		Do. Mocaubas & Cocaes United 25*l* sh pd	
11,000		Do. St. John Del Rey..20*l* sh 15*l* pd	7 ex-d.
20,000		British Iron ..... 100*l* sh 75*l* pd	
10,000		Cata Branca .....19*l* sh 6¾*l* pd	
10,000	1*l* 10s	Candonga ..... 20*l* sh 7½*l* pd	
		Do. Registered..... 7½*l* pd	
12,000		Cobre Copper ....40*l* pd	
10,000	5*l* per ct	Comp. Copper Miners in England 100*l* sh 33*l* pd	
8,500	15s	Copiapo .....20*l* sh 13*l* pd	
10,000		Columbian iss. 5*l* pm... 55*l* sh pd	
1,500		Ditto New ....11*l* sh pd	
4,000		English..... .....25*l* sh 14*l* pd	
20,000		General Mining .....20*l* sh pd	
10,000		Hibernian ..... 50*l* sh 10½*l* pd	
15,000	6*l* per ct	Imp. Slate Company..10*l* sh 3*l* pd	
5,051		Mexican ..... 60*l* sh 59*l* pd	
20,000	10*l* per ct	Mining Comp. of Ireland 25*l* sh 7*l* pd	
11,500	10s p sh	Real del Monte, registered Av. 63*l* 10s 6d	
		Ditto Ditto unregistered	
		Ditto Loan Notes ..... 150*l* pd	
10,000	1*l*	Rhymney Iron ..... 50*l* sh pd	4
	10*l* p sh	Santiago de Cuba .. 25*l* sh 10*l* pd	
6,000		Tin Croft.....10*l* sh 7*l* pd	
30,000		United Mexican, iss. 2*l* p. 40*l* sh pd	
		Ditto Scrip	
		Ditto New Scrip.....1¼*l* pd	
		MISCELLANEOUS.	
10,000	1*l* 4s	Anglo Mexican Mint....10*l* sh pd	
10,000	1*l* 15s	Australian Agricult. 100*l* sh 30*l* pd	
5,473	6*l* per ct	Australian Trust Comp. 100*l* sh 35*l* pd	
8,600	1*l*	British Rock and Patent Salt 50*l* sh 35*l* pd	
6,000		British Ameri. Land 50*l* sh 25½*l* pd	
10,000	6*l* per ct	Canada ..... 100*l* sh 32½*l* pd	
10,000	5*l* per ct	Upper Canada Bonds.....	
	5*l* per ct	Ditto	
	4*l* per ct	City Bonds.....	
5,000	5*l* per ct	General Rever. & Invest. 100*l* sh pd	
2,700	4½ per ct	Equit. Reversionary 100*l* sh 65*l* pd	
20,000	1*l* 8s and 2s 6d bs	Gen. Steam Navigat. 15*l* sh 14*l* pd	27¾
	10*l* & bs.	Hudson's Bay Stock....100*l* sh pd	
	1*l*	London Commercial Sale Rooms Average 75*l*	
8,000	5*l* per ct	London Reversionary Int. 50*l* sh 17*l* pd	
10,000		London Wood Paving Company 10*l* sh 2*l* pd	
15,000		Metp. Wood Paving Comp. iss. 1*l* pm 10*l* sh 3*l* pd	
		Mexican & South American 10*l* sh 7*l* pd	5⅛
20,000		New Brunswick (Land).... 75*l* pd	
		New Zealand .....25*l* pd	
		Ditto New ..... 25*l* sh 12½*l* pd	
6,092	7*l* per ct	Peninsular & Orien Steam 50*l* sh pd	51½ ex-d.
3,200		Ditto ....50*l* sh 25*l* pd	
15,000		Royal Mail Steam..100*l* sh 60*l* pd	
5,387	4½*l* per ct	Reversionary Int. Soc.. 100*l* sh pd	
2,000	8*l* per ct	St. George's Steam Packet 100*l* sh pd	
8,000		Ditto ¼ Shares.....25*l* sh pd	
14,000	6*l* per ct	South Australian.... 25*l* sh 20*l* pd	
4,000		Thames Tunnel .....50*l* sh pd	
10,000	6s	Van Dieman's Land..100*l* sh 20*l* pd	

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.



THE FARMER'S MAGAZINE.

AUGUST, 1843.

No. 2.—Vol. VIII.] [Second Series.

PLATE I.

A SHORT-HORNED HEIFER.

The subject of the first plate was four years old last May. She won the premium at the Durham agricultural Meeting when a yearling; when two years old she won at the Yorkshire, the Durham, the Northumberland, and the Highland Agricultural Meetings, and last year she won, for the best three-year-old cow or heifer at the Durham County Agricultural Meeting. She has never been beaten.

PLATE II.

COTHERSTONE—Winner of the Derby, 1843.

Cotherstone is a bright bay, about fifteen hands and a half high; has fine racing points with great power; and goes and looks like a race-horse. He was bred in 1840 by Mr. Bowes, and is by Touchstone, out of Emma, by Whisker; her dam Gibside Fairy, by Hermes, out of Vicissitude, by Pipator; Beatrice, by Sir Peter, &c.

Emma, now in her nineteenth year, is also the dam of Mr. Bowes's first Derby horse, Mundig. Trustee and Jagger, too, were very fair runners, but neither of the Velocipede fillies she dropped in 1838 or '39 were worth training.

In 1842 Newmarket Houghton Meeting Cotherstone first started, and was not placed for the Criterion Stakes; Gaper winning by a length, Pine-apple second, and Testy third. 5 to 2 agst. Cotherstone. The same meeting, carrying 8st. 4lb., and ridden by Butler, he ran a dead heat, and divided the first class of the Nursery Stakes with Mr. Payne's br. f. by Muley Moloch, out of Bessy Bedlam, 7st. 13lb.; the following not placed:—Testy, 8st. 8lb.; Rook's-nest, 7st. 13lb.; colt by Velocipede, out of Galata, 7st. 11lb.; Cowslip, 7st. 10lb.; Nylghau, 7st. 7lb.; Bother'em, 7st. 6lb. 3 to 1 agst. Cotherstone. In 1843 Newmarket Craven Meeting, ridden by Butler, and carrying 8st. 4lb., he won the Monday's Riddlesworth by three lengths, beating Pompey, 8st. 7lb., and Elixir, 8st. 7lb. 6 to 5 agst. Cotherstone. The same meeting, carrying 8st. 4lb., and ridden by Butler, he won the Column by three lengths, beating Murat, 8st. 2lb.; The Brewer, 8st. 7lb.; and Extempore, 8st. 4lb. 5 to 2 on Cotherstone. Newmarket First Spring Meeting, ridden by Scott, he won the 2,000 Guineas Stakes by three lengths, beating Cornopean and Mallard. 3 to 1 on Cotherstone. At Epsom, ridden by Scott, he won the Derby by two lengths, beating Gorhambury and twenty-one others not placed. 7 to 4 agst. Cotherstone.

Cotherstone is called after a village of that name, in the North Riding of Yorkshire.

ON THE ADVANCEMENT OF ENGLISH AGRICULTURE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

If those who are not practically acquainted with agriculture were to listen only to those who declaim against the inactivity and want of enterprise which they imagine to exist amongst the English farmers, they would readily and erroneously conclude that these had done little to advance the productiveness of the soil they so skilfully cultivate. But when the general reader remembers that in the "good old days" of Queen Elizabeth, the English farmers of her glorious reign with difficulty produced enough corn to feed a population of five millions of persons, and yet that the cultivators of *the same soil*, in the reign of Queen Victoria, very nearly find food sufficient for sixteen millions; when these things are recollected, the answer to all such objectors is apparent, and the conclusion is evident, that the farmers of England have not flagged in the great march of improvement; have not been standing still when all other classes have been advancing.*

* Many casual observations in ancient books betray the great advance which has been made in the two last centuries. Thus it was about 1595 that we find entered in an old household book of the Cliffords, kept at Skipton Castle in Yorkshire, a sum of eleven shillings "for six cabbages and some caret roots bought at Hull." These were then im-

But when we thus, in justice to the farmer, acknowledge the progress which he has made in increasing the fertility of the soil, we only grant him a portion of the meed of praise to which he is justly entitled; for we ought not to omit to notice the improvements yet making, and still capable of being effected, for the same great object—efforts, which even the general reader cannot but contemplate with feelings of the highest gratification.

It naturally follows, in all countries, that the soils first brought into cultivation are those of a rich or naturally fertile description, for such lands require the least labour in their tillage, and it is only when these are fully occupied, that the farmer incurs the greater labour of bringing into cultivation the poorer descriptions, the naturally sterile sands, the adhesive clays, and the peaty soils—the two first barren from not being sufficiently supplied with water, and the latter from possessing moisture in too great an abundance. Of the first kind, and to a very large extent, are the sands of the north of Norfolk, which have been rendered productive of remunerative crops chiefly by the application of copious dressings of clay and adhesive marl, whose action in rendering the soil more firm has been materially assisted by the treading of the excellent and numerous flocks of sheep which have been folded upon them. By these means the soil has been gradually rendered sufficiently compact to produce crops of wheat, although previous to the year 1787 this was a crop never sown in many very extensive districts of Norfolk and Lincolnshire. The late Lord Leicester was one of the first great farmers who attempted to thus improve these barren, these drifting sands. "He came," says Lord Spencer (*Journal Roy. Ag. Soc.*, vol. 3, p. 2), "into the possession of his estate in the year 1776. At this time the whole district round Holkham was unenclosed, and the cultivation was of the most miserable character; the course of cropping, as long as the land would produce anything, was three white crops in succession, and then broadcast turnips. No manure was purchased, and very little, and that of no value, produced on the farm. The sheep were of the old Norfolk breed, and, with the exception of a few milch cows, there were no cattle kept on any of the farms. It happened that the lease of a large part of the land which now forms Holkham Park was within two years of its expiration. In the lease previous to the one then current this land had been let at 1s. 6d. per acre; in the then current lease it had been raised to 3s. Lord Leicester offered to the tenant to renew it at 5s.; but Mr. Brett, the tenant, who deserves to have his name recorded for the great good he unintentionally did to the country, refused to give so much for the land, upon which Lord Leicester determined to take it into his own hands. Thus the real origin of the great improvements of this district was, that Mr. Brett refused to give 5s. an acre for land which now, under an improved system of cultivation, usually produces nearly four quarters of wheat per acre."

The great efforts long successfully made by the English farmer to improve their peaty fen lands, have been in a still greater degree successful; for these were originally yet more worthless than the blowing sands, produced only rushes and peat, and were for the greater part of the year covered with the water poured on to them from the uplands. By draining them, however (at first by windmills, and now chiefly by the steam engine), these valuable districts now possess some of the richest soils of our Island; and such tracts of land are much more extensive than a person unacquainted with these great agricultural counties would perhaps suspect. They comprise, in fact, a considerable portion of the counties of Lincoln, Cambridge, Suffolk, and Norfolk, and large fen lands have even recently been either entirely reclaimed, or materially improved. Thus Mr. Glynn observes (*Brit. Farm. Mag.*, vol. 3, p. 295):—"The districts wherein I have been employed are eleven in number; the quantity of land drained or improved is about 90,000 acres, and the steam power used is equal to 620 horses."

These are instances of the drainage of land *entirely* covered with water, but this is only a slight portion of the national benefits derived from the drainage of the soil, for almost every description of land cultivated by the farmer requires in some mode or other the adoption of considerable and expensive systems of drainage, by the formation of either open or underground channels for the escape of the stagnant waters. And the march of such agricultural improvements, fortunately for the tillers of the soil, never seems now to cease. The fertility of the soil is continually, however, gradually increasing by one mode or another. There is no appearance of the land having attained to its maximum fertility.

Better descriptions of corn, improved agricultural implements, more copious supplies of powerful manures, superior rotations of crops, are on all sides appearing; and to this may be added greater economy in the management of the farm. The waste of seed under the old reckless broadcast system of sowing has long, in the best cultivated districts of our Island, given way to the drill machine and the dibble, by which means not only is a considerable portion of seed saved, but the plants are more evenly distributed, and grow with increased and more *even* luxuriance. This saving of seed is of much greater national importance than some persons would readily believe. The amount of wheat seed, for instance, when sown broadcast, amounts to about *one-eighth* of the entire wheat crop of this land, the average produce being about 24 bushels per acre, and the quantity of seed when sown broadcast being usually from 2½ to 3½ bushels per acre. It is true that the drill, as hitherto employed, does not require quite so much, and that by dibbling holes with an iron dibble, and causing the seeds to be dropped into them by children, one-half of the seed may on many soils be saved; but then the process is tedious, and not well adapted for large farms. From some experiments, however, which I have witnessed for some years, on a very considerable tract of light gravelly land in Surrey (by Mr. Hewitt Davis, of Addington), I am very certain that on very extensive districts of our Island, two-thirds of the usual quantity of seed wheat may be advantageously saved. In these experiments the seed has long been drilled at the rate of three, or at most four, pecks per acre, and the crops have been always very luxuriant and prolific. By thin sowing, in fact, many advantages are obtained to which the farmer does

ported from Flanders, from whence even Queen Catherine, in the reign of Henry VIII, had her salads. Potatoes and turnips, so far from being a field crop, were not generally known even to the gardener, until the reign of Elizabeth.

not always sufficiently attend (*Farmers' Mag.* for June, 1843). Thus by this means, the plants not being crowded together, are always vigorous, and *stool* out better—that is, throw out a multitude of ears, and do not starve each other, from being more numerous than the soil can properly support; for although it is true that in the long run the strong stifle the weaker, yet in the effort even the strongest are weakened. The straw, too, is stronger, and but rarely laid by the wind.*

If further experiments shall confirm the advantages derived from thin sowing, what an enormous extent of food is thus, by only one improvement, capable of being saved to the community! It is equal, in fact, to more than the food sufficient to maintain one-sixteenth of the entire population of our Island. And this is only one great subject amongst the many for the farmer's serious examination: there are other questions whose promise is also of very great importance, as, for instance, the more general diffusion of the best systems of drainage, the increasing the depth of almost all soils, better rotations of crops, and better varieties of those crops already employed, are only one or two of the great improvements yet to be effected in the cultivation of the soil. And even while I am making these observations, I rejoice to see that an association of Scotch cultivators have—to their honour be it recorded—just elected Professor J. F. Johnston, of Durham, to be their chemical experimentalist, to devote himself to the examination of the chemistry of agriculture. The excellent object of this association is described in their published statement as being "the improvement of agriculture by the application of chemistry, vegetable physiology, and geology." This event may be regarded as another flower in the wreath of Scotch agriculture. The advantage of the general diffusion of knowledge amongst the rural population of any district is well described in a recent paper of Professor Johnston, where he observes (*Quart. Journ.*, N. S., vol. 1, p. 2):—

"In a country where the rural population has in general received the rudiments at least of a sound elementary and religious education; where a natural intelligence sparkles in the eye of the humblest labourer; where the book-shelf is seen in every farmer's house, and the desire of knowledge, instead of requiring excitement, needs often to be restrained; where a natural perseverance, only stimulated by obstacles, does not suffer the farmer to succumb to the natural difficulties of situation and climate, but impels him rather by recurring to his task finally to overcome them; where a lurking spirit of adventure urges to the trial of new methods, and yet a proverbial caution, restraining from imprudent attempts, makes his advance more sure, though slow. Amongst such a population, the means that must be taken for the improvement of practical agriculture may be simpler and more easy of adoption than where education is deficient, intelligence dormant, ambition unawakened, the spirit depressed or broken, and prejudice impregnably intrenched behind the bulwarks of old and long prevailing custom."

And when urging the advantages which agricultural chemistry affords to the farmer, he concludes:—

"Let their officer in his excursions rally round him the farmers of various districts; let them accompany him in his tours, partake in his enquiries and conversations, listen to his observations and addresses, and the special excellences in the practical culture of the several counties will be more readily and generally diffused than by almost any other method. Let him, in his oral addresses, unfold and illustrate the relations of science to agriculture, scattering here and there a little of that knowledge, which, though existing, has not hitherto been applied to practice, and awaking here and there a more ardent mind to a desire for more; and the state of agricultural practice will rapidly approximate to that of agricultural theory. Let him conduct in his laboratory such refined analytical investigations as those I have alluded to, and the mist that still lingers around so many of the most important agricultural questions will gradually disappear. Let him suggest and direct experiments in the field, and cautiously and skilfully discuss and interpret their results; let him by his less refined investigations defend the farmer against the quackeries and adulterations of the dealers in artificial manures; let him in his correspondence give advice in regard to the qualities of soils, of limestones, and of other natural productions which are likely to be of use in the culture of the land. Let these things be done, and it will be difficult to assign a limit to the improvement which must follow."

They, indeed, who believe that the scientific resources of the English farmer are nearly exhausted, adopt a very erroneous, a very unjust conclusion. He, it is true, has to contend against uncertain events of all kinds—against varying corn laws, periods of national depression, and a climate perhaps more variable than that possessed by any other extensive body of island farmers. His efforts, therefore, are beset with all kinds of uncertainties. It is with the greatest labour only that he acquires knowledge to obtain correct conclusions: he must labour on for a series of seasons, before he can rely with confidence upon the value of any agricultural improvement. Yet, in spite of all these impediments, these endless sources of uncertainty and of disappointment, how nobly have the excellent farmers of our country persevered in the improvement of the great science they pursue so well! And there is now no danger of the march of improvement being stayed, since they are rapidly throwing away all those prejudices which used to haunt the farmers of the olden time; and they almost all now appear to feel convinced that, as all other scientific pursuits are advanced by experiment and illustrated by discussion, so agriculture is not an exception to a rule so valuable and so profitable.

* The number of ears which have been produced from a single grain of wheat is remarkable. Mrs. Gilbert, of Eastbourne, has collected several such instances. At the Battle Horticultural Show, in 1837, R. White received a prize for 61 fine ears of wheat growing from one grain; and William Bonner had a similar premium in 1838 for a root of wheat with 94 full-grown ears. At Eastbourne, in 1837, P. Brown had 345 roots, with 4,250 ears, from one grain, put in June 28, 1837, the shoots being only divided three times; and it is recorded in the "Philosophical Transactions" for 1768, that, in the same space of time, one grain of wheat produced 21,109 ears, containing 576,840 grains.

ON THE PROPOSED REMEDIES FOR THE PRESENT DEPRESSION IN THE AGRICULTURAL AND COMMERCIAL INTERESTS OF THIS COUNTRY.

PAPER IV.

BY GEORGE THOMPSON, JUN.

Drowning men will catch at straws, it is said; and we know very few circumstances under which this proverb may be more happily quoted, and to which it is more applicable, than those which form the subject of our consideration in this series of papers. All are aware of the present depression, and all experience its bitter effects. Even those whose incomes are fixed, and who may therefore be said to be removed from the direct influence of national distress (if any such can be), cannot fail to observe the hordes of unemployed who daily crave relief in our streets. None, it is to be presumed, are ignorant of the existing general distress; and very limited must their number be who are not, more or less, affected by it. Under such circumstances, numberless are the suggestions for a mitigation of the evils; and violent is the commotion consequent on their agitation. Each one who thinks on the subject at all concludes, and rightly, that there must be some cause for it—and he fancies he can trace the cause. Having, as he thinks, discovered it, he concludes its removal will effect a radical cure, and once more restore our native land to its usual and desirable state of prosperity. This is not unnatural, nor is it so culpable, as some declare it. *Drowning men will catch at straws*; and members of an unprosperous community will support any scheme, however visionary, which wears the slightest appearance of a remedy. But this perfectly natural feeling ought not to be hastily condemned; the suggestions of distressed and helpless beings should not be contemptuously dismissed, as the factious pretensions of a rebellious party. Undeniably, antidotes should be applied; but they should neither, on the one hand, be weak-minded attempts at conciliation by partial concession—nor, on the other, a bigoted and contemptuous disregard of the question, supported eventually by physical force. Of the former, we have seen the evil effects, in England, on more than one occasion; of the latter, it is well if Ireland does not speedily afford us a heart-rending example.

It is no proof of a great mind—no mark of a great statesman, to make a concession against conviction. That man must have a poor title to the thanks of his country who would grant that which he thought injurious to her interests, merely to satisfy an infuriated and ignorant populace, or because his refusal would be succeeded by a loss of office. Not the less would he display his weakness, who would disregard the cries of a distressed and unhappy people, and who would attempt to curb their efforts for relief by the iron hand of physical force.

Yet an antidote should be applied; and that antidote should be a serious, impartial, and calm study of the complaints and suggestions of the distressed, followed by a manifest desire to improve their condition, with an unprejudiced discussion of their various petitions. No factious objects should be attributed to those who can have no object but the improvement of their condition—an object which no man should be blamed for seeking.

Amid the various and conflicting proposals for the relief of the present distress, next to a free trade in corn, *the expansion and modification of the currency* is the most important.

The opposing parties in this question may be fairly classed under two heads—those who advocate a metallic basis for our currency, which shall be payable on demand at a fixed price for notes or other paper; and those who advocate the circulation of national inconvertible paper money in conjunction with metallic coin, yet the latter to be considered no standard of value, nor payable on demand for paper, but free to rise or fall in value proportionate with all marketable commodities.

It is quite immaterial that we should enter into a consideration of all the various opinions expressed in favour of either of the above systems; they all advocate the one or the other. Hence, we shall consider the two systems on general and practical grounds, with a view to ascertain whether the present arrangement is the best, or if an extensive issue of inconvertible paper money would assist in removing the present distress.

It would be denying experience to assert that our present regulations, with respect to the currency, have worked well. We do not think, with some, that they have been the *sole* cause of our commercial embarrassments; nor are we prepared to say, with others, that they have had no injurious effect upon trade and commerce. But we candidly avow it to be our conviction, that they have increased the evil to a *very great extent*; and we will, as briefly as possible, state the circumstances that have induced us to this conclusion.

In order to understand the question it is necessary that we should consult history, with a view to obtain a knowledge of the circumstances that have led to the adoption of the existing plan, and to become acquainted with the very unusual difficulties which Great Britain presents against the practice of that, which under many other conditions would be the best system,

The financial affairs of this country are in a highly artificial state, and they require an artificial currency, or medium of exchange, to render them tolerable by the people. It is the greatest error in the writings of many political economists, that they deal with the British empire as a community existing under the influence of natural causes. They attempt to control artificial circumstances by abstract and natural rules. They can see no reason why the medium of exchange should not be in the British, as in other nations, of equal value with that it is intended to represent. They forget that every day affords a palpable proof of its impracticability; and that it would be impossible our trading and commercial affairs could be conducted, unless a vast amount of money was in circulation which is *intrinsically* valueless.

The war which commenced in the latter part of the last century threw innumerable obstacles in the way of the extension, or even preservation, of our foreign trade. Nearly every port on the continent of Europe was closed against our exports; whilst the increased demand for many foreign articles indispensable to us in the conduct of a war, caused a great rise in their prices. Importing largely, at high prices, without any corresponding

exportation of our manufactures, rendered it compulsory on us to find immense amounts of bullion. The government of this country was compelled, for safety, to pass an act, in 1797, restricting the Bank of England from paying its notes in specie. Throughout the war we were compelled to make extensive purchases of foreign articles, no matter at what price, in order to enable us to sustain the war. All such imports, or nearly all, were paid for in gold and silver. At the same time, a diminished demand for our home and colonial productions—owing to the unsettled state of the continent of Europe, which rendered it imperative on foreign merchants to take precious metals in preference to any other exchanges—depressed prices at home. A great demand for the precious metals to pay for foreign goods, combined with an extensive circulation of inconvertible paper money, produced a great difference in the relative value of each. To such an extent was this the case, that in August, 1813, the difference in value between Bank of England notes and gold, was £29 4s. 1d. per cent., in favour of the latter. But in 1814 our exports increased, the value of gold consequently diminished, and prices rose. Gold, instead of being taken out of the country, flowed into it. Yet at this period, the government having large financial operations to carry out in settling the war accounts, thought fit to do so in a superabundant inconvertible paper currency. With this view the Bank Restriction Act was repeatedly renewed until 1817. At this time, owing to the Bank of England being formed solely for the benefit of its proprietary, and not being a National Bank, for the benefit of the nation at large, an immense amount of paper money was in circulation, which had forced the gold that had flowed into this country after the war, back again. The price of it was thus kept up; and the directors of the Bank of England, being aware that the continuation of the Restriction Act must soon of necessity terminate, provided a large stock of bullion, which they kept entirely out of the market, and thus increased the evil. Hence, when the resumption of cash payments took place, the market value of gold was considerably above that of bank notes, and there was an extraordinary number of the latter in circulation. The consequence of this was such an undue demand for gold, that a short time served to drain the whole of the stock which the Bank of England had provided; this rendered it necessary to pass another Restriction Act in August, 1819. However, as it was considered absolutely necessary to resume the use of a metallic currency as soon as possible, in 1819 an act was passed, commonly called "Peel's Act," which provided that from February till October, 1820, the public might demand one ounce of bullion for every £4 1s. in paper money; from that time until May, 1821, they might demand one ounce for every £3 19s. 6d.; for the next two years one ounce for every £3 17s. 10½d.; and afterwards the gold coin of the realm.

Now, this is the system under which we at present conduct our internal monetary transactions. Although this is a system which is based on a metallic currency, yet many of those who support a metallic standard of value, do not advocate our particular plan. Many say, and very justly, why should the regulation of the currency of this kingdom be left to a body of men, who obviously only seek their own prosperity? Why should we not have a national bank, over the issues of which private interests should have no control? Even admitting that it is essential that all *paper* money should merely represent so much *real* money (which, by-the-bye, we shall presently shew is impossible), yet why should it be left to the power of a wealth-seeking proprietary to contract or expand the amount in circulation, at their option, and merely with a view to their own security?

That this state of things is not a mere dream, experience fully demonstrates; for in 1825, the high prices of all British productions, which were brought about by the extreme abundance of money, caused a material relaxation in the export trade, and a great drain of bullion from this country. This alarmed the directors of the Bank of England, whose stock of bullion had decreased from £10,000,000 in April, 1825, to £1,300,000 in November of the same year; they immediately contracted the circulation, and a general want of confidence was the consequence. Many London and country banks were run upon, and numbers failed. In fact, to use Mr. Huskisson's words, "the country was within twenty-four hours of a state of barter."

Again, we have another instance of the ruinous effect of leaving a company of bankers to regulate the amount of money in circulation. In the beginning of 1836, money was plentiful, and as a necessary consequence prices were high; but at this juncture, the President of the United States of America was resolved to substitute a metallic for a paper currency; prices being high here (except the price of gold, which by some strange delusion, it is considered indispensable should always be fixed at one certain price), it was more to the interest of American merchants to receive low-priced gold, than high-priced goods in return for our imports. A drain of bullion ensued, to correct which the directors of the Bank of England took the necessary steps to lower prices; the effect has been to increase our depression, indeed we have been gradually sinking ever since; and we now see the coffers of the Bank of England full of gold, with the trade of the country languishing and producing general discontent and occasional rebellion, which the strong arm of the law cannot entirely prevent.

But supposing we had a national bank—a bank managed by able men, who should be appointed by parliament, and who should only be liable to dismissal on proof of bad management; yet unless the value of the metallic standard of the currency was allowed to rise and fall proportionately with other articles, or unless a metallic basis was entirely superseded, it is manifest that occasional and serious embarrassments must occur.

It may not be considered irrelevant to explain the nature of a circulating medium, and the peculiar circumstances which must affect it, when it is composed of any valuable material. The nature and object of money is to furnish a representative of property; something portable, yet generally acknowledged. It can be of no consequence as to the material of which it is composed, so that all acknowledge it as the representative of value; indeed, the less its intrinsic worth, the better is it calculated for the purpose, since it is then *a measure of value*, as well as the *representative of value*. In fact, money should be the *measure of value*. But the precious metals can never be correct standards of value, since that which possesses value is invariably regulated in its intrinsic worth, by its plenty or its scarcity. Gold, it is true, is maintained at nearly one price in England by legislative enactment, but this does not maintain it at one price throughout the world.

We admit its price is pretty regular generally; but

the value of an article not only depends on its supply, it depends in a great degree on the relative value of other articles: for instance, when manufactured articles are high in the British empire, that is, higher than the standard of value, it is to the interest of any other nation to take money, or the standard of value, rather than manufactured goods. Now, this would not be the case if money was either allowed to find its level proportionately to other articles, or was intrinsically valueless. *The less the value of a circulating medium of exchange, the nearer does it approach its legitimate object—the more is it a measure, as well as a representative of value.*

Our present currency regulations, or rather our present currency *derangements*, are certainly a disgrace to the most highly civilized nation on the face of the earth. They are the most impolitic that the ingenuity of man could devise. We pass a law, enacting that gold shall be the standard of value, and that it shall be the legal tender in all payments of more than 40s., that it shall be payable on demand, at the rate of £3. 17s. 10½d. per ounce. The consequence of this is, that the moment money becomes plentiful and prices rise, whereby all classes are enabled to sustain the great burden of taxation, bullion is taken out of the country to pay for imports, instead of manufactures; this is accompanied by a reduction in the amount of money in circulation by the bank of England, which lowers prices generally. And what with low and non-remunerative prices, combined with overstocked warehouses, extensive failures follow, and a want of confidence is created, which prevents the return of prosperity, even when it otherwise would possibly ensue.

It is strange that those who advocate a metallic currency as the basis of all others, cannot divest themselves of the delusion that money must necessarily possess the value it represents. It is strange that they cannot perceive the fallacy of such an opinion. It is still more remarkable that those who advocate our existing system should persuade themselves it possesses this qualification, or that such a state of things is even possible. Every day affords us proof that no country which is engaged in extensive mercantile transactions, can possibly carry them on with a metallic currency alone, or even with such a quantity of paper money as shall be, at any time, convertible into so much hard cash. As a proof that the notes in circulation are not convertible into so much hard cash, we may instance the Bank of England return, dated October 15th, 1839; the amount of bullion then in the bank was only 2,525,000*l.* but the Bank of England notes in circulation, at that time, amounted to 17,612,000*l.* How, we ask, could these notes represent so much gold or silver? Away with such nonsense! Again, according to a calculation made from the number of Stamps for Bills of Exchange issued by the Stamp office, it appears that there were bills in circulation, at one time, in 1839, to the amount of 132,123,460*l.*; supposing a general feeling of distrust to pervade the nation, where could the hard cash be found to carry on the business which was conducted by these bills of exchange? Even on the 23rd June, in the present year, the Bank of England return, showing the average weekly circulation in the past quarter, stated that the Bank had notes in circulation to the amount of 19,521,000*l.*; this is independent of country banks, yet at that time there was but 11,472,000*l.* of bullion in the Bank. If it be correct that, under the present system, paper money is convertible into hard cash at the option of the holder, where could the Bank of England have found the needful to accomplish this? The answer must be, nowhere! Then listen, you theorists who talk of a system which never did, does not, and never will, exist; listen, you statesmen who hold your country's welfare in your grasp; listen, great Sir Robert Peel! you, who can command greater ministerial power than either of your predecessors —you, who framed the present system, why will you support a law which is powerless to effect that you wish it should—which fails to produce the only advantage you enacted it for, and which increases innumerable evils, that another system might counteract? We know you as a statesmen too well to think you see the evil to its full extent, but support the existing law because you made it. We feel assured you only require to be convinced that any able system would be better, when you would immediately give it your support. Indeed, we flatter ourselves, that even now the subject engages your serious attention, and we venture to predict that no long time will elapse before you will propose a remedy. Without the slightest desire for the fulfilment of our prophecy, simply because we make it, we sincerely hope we may be correct.

Why should it be considered essential to have a convertible paper currency, which is really inconvertible? Why should the country be subjected to all the evils of a metallic currency at a fixed high value, merely to have a nominally convertible paper circulation, which is no practically convertible paper circulation at all? It is impossible that a country can carry on extensive trading and commercial transactions with a metallic currency solely; it is also impossible that it can do so with a metallic currency and a paper circulation to an equal amount; why then should it be subjected to innumerable evils, because it will be said to do so, merely to give an appearance of security? It is well known that so long as gold can be demanded for paper, at a fixed price, it will be scarce; this will be the case from the inevitable drain of gold from this country on each return of high prices. So long as the standard of value remains scarce, and a private body have the regulation of the issues, money will be scarce and prices low; and so long as prices are low, or the system exists by which they may be made so, will general prosperity be impossible.

It is indispensable to general prosperity, in a highly taxed nation like Great Britain, that prices should be permanently high. No greater error can be committed than to suppose that it is no matter whether prices are generally high or generally low, or that prices are better generally low than otherwise. Those who entertain such opinions, do so from a supposition that if prices are generally low, the individual who has to sell is not injured thereby, since he can also buy cheap; but such persons entirely forget the fact that this country is burdened with an immoveable and unvarying taxation of seventy millions per annum, and that however much prices may lower, however much the price of that which the agriculturist or the manufacturer has to sell, may be reduced, still they have the same amount of taxes to pay: This is easily explained: supposing the gross annual productions of the kingdom to amount at high prices to 280,000,000*l.* per annum, and that the annual taxation amounts to 70,000,000*l.*, there will then be five shillings of every pound sterling produced to be applied to the liquidation of the national taxation; but, supposing

prices to be reduced generally one-fourth, then the gross annual production of the empire would be but 210,000,000*l.*, and the taxation would be increased to six shillings and eight pence on every pound. Now, low prices are generally accompanied by a diminished demand, arising from diminished profits, which compels that most numerous class of consumers—those who are producers, to curtail their expenditure; thus the gross produce of the kingdom is again diminished, probably to the extent of one-third more (we are not exaggerating; those who know the present state of the manufacturing interests, will know that the proceeds of such concerns generally are less than one-half what they were in 1836). 140,000,000*l.* then will more accurately represent the proportionate produce of this kingdom under low prices; yet the gross amount of taxation remains the same, and consequently ten shillings of every pound produced has to be devoted to the payment of taxes. How important then that prices should, if possible, be kept high. Even in an untaxed community a scarcity of the circulating medium must be productive of innumerable evils; in the words of an old proverb—

"Money's like manure—it's useless unless it is spread."

What an impolitic system must that be, then, which gives to a private body the power of contracting the circulating medium at its pleasure—a power, nevertheless, which must continue to be frequently exercised, so long as the standard of value is a scarce metal at a fixed price.

It may be urged that if prices are maintained higher here than abroad, that our exports must diminish; this is by no means a correct inference, since in every highly taxed country there should be two prices—an exporting, or natural price, and a home, or artificial, or taxation price; and these two prices should be virtually equal, although nominally different. This can only be accomplished by a safe paper currency to an adequate amount, which, being circulated freely, would raise prices at home; whilst all foreign purchases would inevitably be made in a metallic currency, exchanging at an advantage to us, equivalent to the disadvantage of the lower nominal price obtained.

We have represented the evils of the present system, and the evils of any system founded on a metallic standard of value at a fixed price, which shall be payable on demand for paper. We will reserve our remarks on a national issue of inconvertible paper money, combined with the circulation of hard cash at a market value, until our next paper.

Lion Street, Kidderminster, June 12th.

ON THOROUGH DRAINING.

Evidence on the Antiquity, Cheapness, and Efficacy of Through-Draining, or Land-Ditching, as practised throughout the Counties of Suffolk, Hertford, Essex, and Norfolk, collected by Ph. Pusey. With some notice of Improved Machines for Tile-Making.

(Concluded.)

(From the Journal of the Royal Agricultural Society.)

III. ESSEX DRAINING.

3. By J. Oxley Parker.

To W. Bramston, Esq., M.P.

My dear Sir,—With respect to "the antiquity of land-draining" or *land ditching*, as it is more generally termed in this county, I am unable to arrive at any very definite conclusion; but from all that I can gather on the subject, I should be inclined to believe that the system has prevailed, as a necessary adjunct to good farming, and as far as the cutting of parallel drains, filled with wood and straw is concerned, for a good century past.* The removal of superfluous water from the land by surface drainage, or by land-ditching, appears to have been, time out of mind, an acknowledged principle of good farming, without which all applications of manure, or other acts of husbandry, would be rendered comparatively valueless and ineffectual. Indeed, it seems to have been long regarded as the *sine qua non* of good farming: and in conversing with several old labourers, with the view of learning the practice of former times, I have found that they were accustomed to the work from their boyhood, and that their fathers had been in the habit of engaging in the same kind of labour for them. I am not led to suppose from this that the system was so generally adopted as at the present day, or that anything like the improved method of drainage by pipes, tiles, &c., were adopted; but the draining of wet or springy lands by ditches, filled with wood and straw or stubble, has been much practised in this county for a long period, and, at the same time that it has increased the productiveness of the soil, has tended to improve materially the healthiness of the climate.

The districts in Essex in which land-ditching is most general, are the large extent of the clay soils of the Roothings, on the west and north-west of the county, and those portions dispersed in irregular sections, and of various extent, in other parts of the county, which are composed of gravel, loam, and clay, in different degrees of admixture.

In the districts which lie upon the substratum of porous and chalky clay, or marl, the system of shallow parallel drains filled with wood and straw, or straw only, twisted or "*scudded*," is universally adopted; and, from the porous character of the soil, the water being enabled to find its way into the drain on all sides by minute and general percolation, the drains are not subject to be washed in or choked, and remain open and clear for many years. On such land, where the subsoil is sufficiently firm and cohesive, the mole-plough is used with great advantage. The drains so formed will sometimes run well for ten, fifteen, or twenty years, and when worn out, if the lines originally formed by the mole-plough be intersected by drains cut with the spade, at the depth of two or three inches below them, the land is again most effectually relieved of superfluous moisture.

In those soils composed of irregular beds of gravel and loam, where the gravel cropping out upon the loam causes the land-springs to rise and spew

* "Mr. Bramston's deer-park at Skreens," observes Arthur Young in his 'View of the Agriculture of Essex,' vol. ii. p. 189, printed in 1807, "was made in 1664, and he has reason to know that it was never drained after being made a deer-park, till he did it; in which work the men found evident traces of very ancient drains, and pointed them out to him. Hence it is clear that this practice was known in Essex long before the period to which it is sometimes assigned." Mr. F. G. Bramston, the present owner of Skreens, to whom I showed the above passage, has no means of ascertaining whether his grandfather's data were correct.—Braybrooke.

out on the surface, drainage by tiles, as well as wood and straw, is very generally adopted; and this would be practised to a much greater extent were tiles to be obtained at a lower cost. The introduction of tiles at such a price as they can be made by Mr. Beart's, and other machines of recent invention, would, in all probability, give a new impetus to the system of tile-drainage, and many districts might, by this means, be rendered vastly more productive than at present. The ordinary farmer, unless assisted by his landlord, is unwilling to embark in an outlay of *5l. 6l.*, or *7l.* per acre, though both landlord and tenant might be induced to co-operate and join in the expense, when it is only clearly placed before their eyes that the same benefits can be made available at half the cost.

Where the soil is full of land-springs, and it is necessary to dig the ditches of greater depth, stones are frequently used over the tiles to fill in the drains; and where they can be readily obtained, nothing is better suited to fill the parallel drains than stones alone, a small portion of straw being spread over them before the earth is thrown in, and tiles being placed at the bottom of the leads to carry off the greater quantity of water accumulated in the side drains. For this purpose the stones *cannot be too small*. The finest gravel, *well sifted*, or sea shingle, are both excellent materials, but better than all is the broken cockle-shell occasionally to be procured on the sea shore. If, in the first instance, a laying of straw be placed on the top of such material, to prevent the first sediment from the upper soil settling down and choking the small cavities and interstices of the stones or shingle, the superincumbent earth will soon form an artificial stratum or crust over the top of the drains, so that the loose surface soil will not be liable to fall in and mix with the stones, and the drains will be found, after many years, as free from soil or obstruction as when first laid down, and would appear to give good promise of lasting for ever. Though it is contrary to the opinion of some persons, in draining flat land there is no kind of material which I would prefer to stone or shell, as I consider that tiles would in such case be much more liable to choke, requiring a certain declivity and readiness of fall to keep them clear.

Upon the stiff loamy clays of the hundreds of Essex, in the eastern and south-eastern parts of the county, land-ditching, by covered drains, has been only partially adopted; and many of the best practical farmers, and men, too, not blinded by prejudice to a fair consideration of the subject, doubt whether the system can be generally practised with advantage on such soils.

Where the soil is uniformly composed of that stiff and impervious texture which does not admit of the water which falls upon it soaking below the top-surface moved by the plough, it is thought better to lay up the land in ridges or stitches, from which the water is taken by the intervening furrows, and by them, at certain intervals, into cross furrows drawn by the plough at a greater depth, and afterwards dug or "*spitted*" by the spade, so as to carry off the water rapidly and freely by surface drainage. If drained at all, the ditches in such land are seldom cut deeper than 14 or 15 inches below the plough, and they are necessarily placed at frequent intervals, commonly one rod or 16½ feet apart, from the circumstance of the impervious subsoil only allowing the water to find its way into the drains by perpendicular fall, instead of the oblique and gradual percolation by which it is carried off in more porous strata. The only way to obtain a free passage to the drain below, is by filling in the cavities formed by the spade with the loose top-soil of the surface. This, as soon as the wood or straw begins to decay, the perpendicular pressure of the water will cause to fall in; whereas, should the stiff soil taken out by the spade be replaced, with the view of rendering the drains more secure, it will soon become so closely wedged into the narrow space from whence it was previously taken, that though the drain remains open at the bottom, the water will be unable to find its way down to it.

Added to this, such drains are liable to be choked by the thin silt driven by the autumn rains into the fissures caused by the drought of summer; and water is thus admitted into a subsoil from which, by good surface-drainage, it could be almost entirely excluded.

This latter remark would, I conceive, apply equally to the use of tiles in such land, as the silt driven into the fissures would effectually obstruct the drains, and throw the water out upon the surface.

The only materials capable of being used with real advantage on such soils are, I should imagine, those to which I have previously referred, viz., small stones, shingle, or shell; but these can usually only be imported from a distance, and at considerable expense, so that the consequent cost renders it almost hopeless that such a mode could ever be generally adopted.

I have entered more at length than perhaps is necessary into this subject; but the conviction, that such land would be much improved if it were possible to drain it effectually—that it would be less subject to the destructive injuries of wet seasons—that it would be more easily worked at all times—that the ploughings of autumn and wheat-seed time would be less hazardous and laborious—that the tillage of spring would be more certain and earlier—makes me feel deeply interested in the subject, and anxious to see such a system introduced as would bring about the desired result. Never having been in Scotland, I cannot speak from my own observation, but from all that I have read of the draining of the heavy lands of that country, I have never been able to conceive that the heavy lands to which effectual drainage has there been applied are equal in stiffness, in tenacity, in stubbornness, to our own; and I have always judged from such incidental observations, as "the possibility of ploughing at all times with two horses," &c., that I am in some degree justified in my conclusion. Besides this, I was struck a short time since by an observation of Mr. Hyde Greg, in his recent pamphlet on the subject, who, after extolling the practice as applicable to all land, cannot at last avoid the admission, that the land to which he has referred can hardly be so heavy as some of the heavy land of England.

Wherever land is not uniformly sound, but intersected by veins of looser soil, there drainage must of necessity be applied to let out the water which such veins have admitted; and on the tenacious loamy clays where this is the case (until some better method is introduced), drainage by shallow ditches, filled with wood and straw, and frequently renewed, is, perhaps, the best method that can be adopted.

In clay soils the drains are seldom more than a rod or a rod and a half apart; in gravelly soils,

where the water will draw more readily through the subsoil, they may be further distant, but of greater depth, so as not only to carry off the water rising from the springs below, but also to give that from the surface a readier inclination to the drains.

As regards the expense, in clay soils which dig well, the cost for labour (exclusive of materials), will be, where the drains are 14 or 15 inches deep, 2s. 6d. per score rod; when the drains are from 18 to 30 inches, from 4s. to 6s., according to the nature of the sub-soil. In hard and gravelly land, where the drains cannot be dug freely with the spade, the price must vary according to the labour. The top-soil is not often removed by the spade; the plough is generally used, and two furrows raised by it before the spade-work is commenced. Believe me, my very dear sir,

Yours, very faithfully,

J. Oxley Parker.

Woodham Mortimer Place, March 11.

IV. NORFOLK DRAINING.

By Henry Evans.

I have taken the earliest opportunity to make inquiries as to the under-draining of this county; and I have preferred Mr. Mach as an authority, as I do not believe there is a man in Norfolk who better understands the subject. The greater part of his farm is wet and requires under-draining; consequently, he is a *practical* man. I shall take the four questions you have proposed to me in their order:—

Question 1st.—How long the practice has lasted?

An old labourer, above eighty years of age, on this farm, says that his father was the first who bought tools for underdraining in this district. He thinks the practice has prevailed for a century and half.

Question 2nd.—Over what extent of country?

Throughout the whole county of Norfolk.

Question 3rd.—At what price per pole?

4d. per pole; but the providing materials and casting will add 2d. per pole.

Question 4th.—At what distance and depth?

32 inches is the depth on strong sound soil; but on soft spongy soil the depth must depend on circumstances. You will get the drains as deep as you can, generally 28 inches, but very frequently you cannot get this depth, as the soil boils up as fast as you remove it. The distance will vary from 5 to 8 yards, but 7 yards is considered the average distance. The cost of under-draining land will average about 40s. per acre.

I have thus endeavoured to answer the proposed questions, which are difficult, inasmuch as everything depends on the nature of the soil, the fall of the water, and various other local circumstances; but the information is correct as far as it goes.

Lyng, March 14, 1843.

REMARKS ON THE FOREGOING EVIDENCE.

By Ph. Pusey.

This body of evidence, for which I beg to thank those members who have furnished it, sets at rest any question as to the English origin of thorough-drainage; showing that for a century it has been used generally in the large and well-farmed counties of Essex, Suffolk, and Norfolk, as well as in Hertfordshire. But it does more; it gives us the power of improving other English counties in a cheaper and, I believe, a better manner than by the more modern processes of stone and tile draining used in the north—I mean on heavy clay lands. It is incomparably cheaper than either, and I think better; because some of the evidence shows, and I have heard and seen, that tiles alone will sometimes not draw off the water upon our heavy English clays, such as are hardly, if at all, known in Scotland. Filling drains with broken stones costs 7*l.* or 8*l.* per acre upon these clays, and the stone in many such districts is not to be found. I have tried this English method myself on 50 or 60 acres of extremely stiff land, which were drained for me last winter by the old Suffolk drillman Thomas Teago, whom I mentioned in the last number. Our Berksbire labourers soon learned to use the Suffolk tools, which are excellent;* and these fields are now filled with drains at 11 feet interval, and 30 inches of depth, for the very low expense of 3*l.* per acre. I intend to drain the whole farm in the same way; and this discovery relieves me from a great difficulty, for the farm would hardly find a tenant without draining; yet to go over 300 acres of it with tiles would have cost at least 3000*l.* I must mention one item of saving in this process of the eastern counties, which has struck me very forcibly. I found that my drainer first traced out every drain with a common plough, opening the soil to the depth of 8 inches. He told me that he reckoned the saving of labour, and consequently, of expense, effected by this simple operation at 2d. per pole, which amounts to 2*l.* per acre. Now many men have endeavoured to invent draining-ploughs, not one of which as yet has established its usefulness, yet here is a common practice of using the commonest and oldest of all implements, the plough, by which on one farm 600*l.* will be saved; yet in no work on draining has this simple process been mentioned. It is a fresh instance of a truth which is not confined to farming, that we often seek in vain for something new and uncertain, while what is good and real is lying neglected at the door. The mode of ploughing out drains is clearly stated in Mr. Hill's paper, and is there shown to be carried still further by the use of a plough made for the purpose, with, I suppose, still further economy. His drawings will enable any one to follow the good example of the eastern counties; and I strongly recommend this practice upon heavy lands, as at once the cheapest and most certain to act. The only objection is its want of permanence; but it lasts from twelve to twenty years. Now where a whole farm requires to be drained, and the means both of landlord and tenant are limited, there can scarcely be a doubt which is best for both of them—to drain 100 acres for forty years, or 300 acres for twenty years. Besides, Mr. Rham has suggested that tiles might be used as carriers to the earth-drains; and I have no doubt these would add ten years to the durability of the draining; for the earth-drain does not fall in throughout—it only becomes choked in spots, so that by cutting a few new drains across the old ones, it is found that the field becomes once more dry. If an earth-drain be 300 yards long, a single obstacle may check the water to the full length; but if it be crossed by three tile-drains, each earth-drain will have a run of 50 yards only, and that length alone can be blocked

* These tools may be obtained from Mr. Teago, of Peasenhall, Suffolk.

by a single stoppage; so that the field would only receive one-sixth of the damage that would otherwise have arisen from a given amount of decay in the drains.

On looser soils, however, earth-drains will not stand; and here we must have recourse to tiles, the expense of which has hitherto been a serious obstacle to their employment. In the last number I mentioned the great difference in their price in different parts of England, and I am glad to find that a reduction is taking place. Mr. A'Court Holmes informs me that last winter tiles cost 55s. and soles 30s. per 1,000 in the Isle of Wight, while in Huntingdonshire the same articles were selling at 22s. and 10s., at the same price of coals; large, however, as is this reduction, I have great pleasure in announcing to the society a still further abatement of *one-third* below the Huntingdonshire scale; and, which is remarkable, from three different counties, by means of four different machines. I have taken pains to inquire into their merits, and the subject is so important that I need not hesitate to lay before the society such accounts as I have obtained.

The first account was from Suffolk. The kind of tile is peculiar, being a pipe. The price of the pipe is 20s. per thousand (coals at 20s. a ton); and as no sole of course is required, we have at once a saving of 10s. in 32s. As the water can only enter the pipes where they join, it was necessary to inquire into the result of the drains which had been so filled; and I have obtained the following statement from Mr. Hersey, of Framsden, near Debenham:—

"The quantity of straw or stubble used by us here in filling up our drains, which was about a load per acre, added to the expense, while it deprived the land of manure. The cost of draining tiles, hitherto 2*l.* 2s. per thousand, was far too high to be adopted in the close method of draining we were pursuing. It was suggested that a plain tile with its two sides pressed together, so as to leave a cavity of 4 inches by 1½ inch, would be sufficient. The late Mr. Pettit, of Winston, made some pipes of this shape at his kiln three years since. He afterwards made a machine by which the clay is forced through a box containing the die which forms the hollow of the pipe. The cost of these tiles, which are now in use, as made at the Winston kilns with coals at 20s. per ton, is, for Mr. Pettitt's 20s., for Mr. Smith's 20s. and 21s. per thousand. The price of Mr. Smith's machine, which resembles Mr. Pettitt's in principle, will vary from 6*l.* to 8*l.*

"The tiles are laid in clay and other stiff soils at a depth varying from 26 to 30 inches, and the drains from 15 to 18 feet apart. The first spit, where it is practicable, is taken out with a plough, and the drain is opened by a narrow spade of 13 inches in length by 3 in width, with a scoop of the same length and width, to leave the drain perfectly clean. When the drains are 18 feet apart, the expense per acre on strong, stiff soils, including the tiles, is 3*l.* 12s., which will vary a few shillings per acre as the soil is more stony.

"They were first used about three years ago upon strong clayey soils. The water flows as freely from those drains which are filled with the whole tiles, as from those filled with the common tiles, or with straw or heath. Mr. Roby, of Willisham, has laid upwards of 100,000, and says they draw well; and several others who have used them bear the same testimony."

Those who have paid 10*l.* or 12*l.* per acre for tile-draining at 18 feet apart, will see the great saving effected when the expense is reduced, as in Suffolk, to 3*l.* 12s. I perceive, on examining Mr. Kersey's statement, that the whole saving is not effected in the price of tiles, but that the cost of cutting the drains, which commonly amounts to 4d. per pole, is also reduced one half, amounting only to 2d. This further saving of one-half in labour is evidently effected by engrafting upon the modern use of the tile the old Suffolk practice of opening the land with the plough, as described in Mr. Hill's paper, which seems to me a certain and essential improvement.

The second account, which reached me at the same time through Mr. Reid, who commenced tile-draining in 1795, is from the county of Sussex. These tiles are also pipes; they are made at a kiln adjoining the Burgess Hill station of the Brighton Railway, with a machine which, as Mr. Wood informs me, need not cost more than from 3*l.* to 5*l.* The pipes cost 20s. when burnt with brushwood. Mr. Wood has used them for two years, and has found them draw well. I have also obtained the following account of them from Mr. Hammond, of Penshurst, in Kent:—

"*Penshurst, March 27th*, 1843.

"As you wish to be informed of the expenses of draining with the cylindrical tiles, and my opinion of their effect, I have troubled you with this letter. Porous soils, with drains 3 feet deep, placed at the distance of 2 rods, in parallel lines up the field (and afterwards subsoil-ploughed), will be completely drained at the following expense per acre:—

	£	s.	d.
1350 tiles, at 21s. per thousand.....	1	8	6
Cutting drains and laying tiles, at 4d. per rod	1	6	8
	2	15	2

"I have not included the expense of fetching the tiles, as that depends on the distance, but they are made light, so that we carry 7,000 with one waggon.

"I am at this time draining on a stiff clay soil; the drains 2 feet deep, and 24 feet between the drains—expense as follows:—

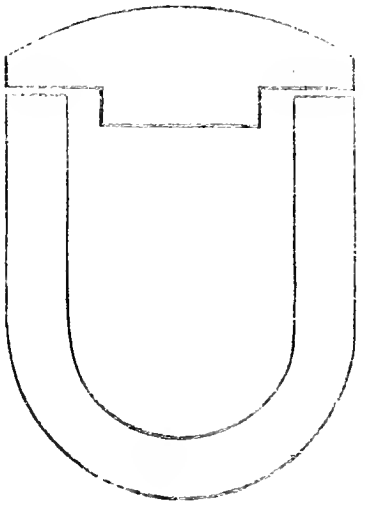
	£	s.	d.
1850 tiles, at 21s. per thousand.....	1	16	9
Cutting drains and laying tiles, at 3d. per rod	1	7	6
	3	4	3

"I have this winter drained about 10 acres with the round tiles, and I am quite satisfied they act better than any other yet made, as they are not liable to be disturbed by moles or other vermin (which the other sorts admit), and can be laid with greater nicety in the drains than any other shape. The effect of draining I have experienced for twenty years, and am quite satisfied that no expenditure on the land will make so good a return. As the effect of relieving the soil of the stagnant water to the depth of 3 feet instantly admits the atmosphere, and what before had been inert soon becomes active soil, and the root will penetrate it; and rain afterwards will pass through the soil into the drains with beneficial effects, when before it was injurious.

"I am of opinion that the size of the tiles may be still further reduced with an equally good effect,

so as to reduce the cost of making and carriage 15 per cent. lower."

Mr. Hammond's remark that 7,000 of these tiles can be carried in a waggon is not unimportant, as 1,000 tiles form, I believe, the ordinary load, so that here is a great gain for the farmer's horses. The slenderness of the pipe-tile is also a cause of its cheapness, because a much larger quantity than of the common tiles can thus be burnt with a given quantity of fuel—one of the chief items in tile-making. But I am happy to say that our prospect of cheap tile-drainage is not even limited to the Suffolk and Sussex pipes. Mr. Etheredge, of the Woodlands, near Southampton, has invented a machine, of which the well known house of Ransome, at Ipswich, think so highly, that they have purchased the patent; and this machine makes tiles and soles both, or rather tiles and lids (for the position, as the drawing shows, is reversed), at the same reduced price as the pipes only, namely, 25s. per thousand of 15-inch tiles, or 20s. per 1,000 feet, at the standard price of coals, 20s. per ton.* It will also make pipes at 16s. per 1,000 feet—but we will say 20s. And I must ask our members to look at this advantage which our society has effected. The same article which last November was selling in the Isle of Wight, where the clay lands greatly require it, for 75s., will now be procurable at Southampton for only 20s. It is certainly a most encouraging circumstance, that as the necessity for draining is more widely acknowledged, its expense, both in material and in labour also (by the Suffolk practice), should be so greatly diminished. For, use what arguments we might, while the cost was from 6*l.* to 10*l.* per acre, it was vain to hope for its general adoption. Fortunately, too, for the heavy clays, where the expense might still be serious, we find a simple ancient practice of our eastern counties, which brings our expenses again within bounds. It is therefore with great satisfaction that I lay before the society estimates again greatly reduced below those which I presented to our members last autumn.



COST OF THOROUGH-DRAINING ONE ACRE.

Distance between Drains.	Length of Drains in Furlongs of 40 Poles.	Number of Feet of Tiles.	Reduced Cost of Tiles and Lids, or of Pipes.	Making Drains 26 inches deep with Plough and Narrow Spade.	Total.
FEET.			£ s. d.	£ s. d.	£ s. d.
66	1	660	0 13 4	0 6 8	1 0 0
44	1½	990	1 0 0	0 10 0	1 10 0
33	2	1320	1 6 8	0 13 4	2 0 0
22	3	1980	2 0 0	1 0 0	3 0 0
16½	4	2640	2 13 4	1 6 8	4 0 0

The three distances of 44, 33, and 22 feet, costing now only 30s., 40s., 60s. respectively, will generally be found sufficient in practice. The only case in which the stiffness of the land might require an expenditure of 4*l.*, already points out that tiles may not be the proper material upon such land, and that we ought to have recourse to the tried practice of Suffolk and Essex, so well described by Mr. Hill, which again brings our outlay to a practicable standard.

COST OF EARTH-DRAINING ONE ACRE.

Distance between Drains in Feet.	Length of Drains in Furlongs.	Cost of Labour.	Cost of Stubble, &c., if required.	Total Cost.
		£ s. d.	£ s. d.	£ s. d.
22	3	1 4 0	0 6 0	1 10 0
16½	4	1 12 0	0 10 0	2 2 0
11	6	2 8 0	0 15 0	3 3 0

It remains only for the owners, as well as occupiers, of land to practice the means of improvement which have been put in their hands. There is little doubt that the next winter will bring with it much want of employment for country labourers; but this evil may be remedied by landlords who will employ, in the lasting improvement of their own properties, those who stand unwillingly idle; only it is necessary that their stewards should exert themselves now, and make prepara-

* Mr. Etheredge informs me that his tiles do not require sheds to be built for drying them—another important saving.

tions in time. For heavy clays I should engage a foreman from Essex or Suffolk, well acquainted with the practice of land-ditching; for more loamy soils a tile-machine should be procured, in order that the tiles may at once be got ready for the season when they will be required.

SCROLL, PROVISIONS, AND CONDITIONS OF SCOTCH GRAIN LEASE, ON APPROVED PRINCIPLES, AND IN EXTENSIVE USE IN EAST LOTHIAN AND ELSEWHERE.

By J. A.

Mount Vernon, 1843.

It is contracted, agreed, and ended between A B *on the one part*, and C D *on the other part*, in manner following—that is to say, the said A B, in consideration of the tack-duty and other prestations after specified, has set, and hereby sets, and in tack and assedation lets to the said C D and his heirs, but secluding assignees and sub-tenants, legal and conventional of every description, and under the conditions and reservations after expressed; all and whole the farm and lands of Y., with the hames, yards, parts, pendicles and pertments of the same, all as presently possessed by the said tenant C D; all lying in the barony and parish of , county of ; and that for the space of *twenty-one years*, from and after Whitsunday, 1835. As to the hames and stables, byres and grass, and the separation of the crop thereafter; as to the arable lands, and as to the barns at Lammas, 1836; at which respective periods the said C D's entry to the premises, in virtue hereof, is hereby declared to have commenced. But reserving always to the proprietor and his successors, powers and liberty to resume possession of such part or parts of the said lands as he or they may require for planting to the extent in all of *ten acres*; and for which grounds so taken off, the said C D and his foresaids are to have an annual deduction from the rent after-mentioned, according to the valuation of arbiters mutually chosen. Reserving also the whole coal, lime, freeston, marl, and other metals, minerals, and fossils within the whole of the said lands; and power to work and carry away the same, and to do everything requisite for that purpose, the proprietor and his foresaids satisfying the said C D and his foresaids for the damages thereby done to the surface of the land, as the same shall be determined by persons to be mutually chosen. And to encourage the said C D in improving the said lands by drainage, the said A. B. agrees to allow him a deduction from the rent of each of the first four years of £ , on his producing vouchers that he has expended to that extent in the purchase of drain tiles; as also to allow him a further deduction from the rent of each of the two first years of £ , on his producing vouchers that he has expended to that extent on new buildings, or in beneficial alterations on the present offices; which tack, with and under the exceptions and reservations before specified, the said A B binds and obliges himself, and the heirs succeeding to him in the said lands, to warrant to the said C D and his foresaids at all hands. For which causes, and *on the other part*, the said C D binds and obliges himself, his heirs and successors, to content and pay to the said A B, and his heirs, executors, and successors, or to their factor in their name, the quantity and value of quarters of wheat in name of rent or tack-duty for the said lands; the conversion to be taken at the medium fiar's prices of the county of for the time; and that yearly, and each year, during the currency of this tack, payable half-yearly in equal proportions at the terms of Candlemas and Lammas; declaring that the rents for the first year hereof shall be payable by equal portions at the terms of Candlemas and Lammas, in the year 1837, and so forth yearly and termly during the continuation of this tack, with a fifth part more of each terms, payment from the time the same falls due until payment. But providing and declaring that the grain-rent hereby stipulated to be paid by the said C D and his foresaids for the said lands, shall never, in reckoning the commuted value thereof, be taken at a higher rate per quarter than 70s. It being intended as a *maximum*, beyond which the quarter of wheat shall never be reckoned. And that with regard to the management of the said lands, it is hereby stipulated and agreed that the same shall be laboured, cropped, and manured in all respects agreeably to the rules of good husbandry. And particularly without prejudice to the generality of this clause, that not less than one-sixth part of the whole lands shall be yearly in grass, and that of the remainder of the said lands, or of that part which may be in tillage, not less than one-fifth part shall be yearly in summer fallows, turnips, or potatoes, well and sufficiently manured; and that no two crops of white corn shall follow one another in succession, or white crops ripening their seeds, but that a summer fallow, turnips, or potatoes, sown grass, beans, or other green crop, shall intervene. As also all the land sown off with grass seeds, shall be sown with the first crop after fallow or green crop, manured as aforesaid, and that with a sufficient quantity of good clover and rye-grass seeds. And the said C D binds and obliges himself and his foresaids in the last year but one of the lease, to sow with clover and rye-grass seeds, at a proper season, such parts of the said lands as may have been in summer fallow, turnips, or potatoes, and properly dressed and manured in the preceding year, the same being not less than one-sixth part of the whole lands hereby let as aforesaid; the said C D or his foresaids harrowing or rolling the same in a proper manner without charge, but receiving payment for the seeds sown from the proprietor or the incoming tenant, he or they having power to pasture with their sheep one-third part of the lands so sown off, until the Whitsunday of their removal from the same, but to give possession of the remainder to the proprietor or incoming tenant as soon as the corn crop is off the ground. And in the last year of this lease the proprietor or incoming tenant, shall have power to sow grass seeds at a proper season, with such part of the way-going crop as may have been summer fallow, turnips, or potatoes the preceding year; the said C D and his foresaids being paid for harrowing or rolling in the same, and for any damage or injury done thereby, as the same shall be awarded by neutral men mutually chosen. And further, the said C D or his foresaids shall, in the last year of this lease, leave to the proprietor or incoming tenant, land for fallow, equal to one-fifth part of the lands which shall be under tillage that year. And which fallow

being in entire fields as far as possible, the proprietor or incoming tenant shall have full power to enter to and plough on the 1st of March preceding the said C D's removal, and for which fallow the said C D is to be entitled to such allowance as may be ascertained by persons mutually chosen. And further, the said C D binds and obliges himself to maintain and uphold the whole hames and fences, with any hames to be built, or fences made, in good and sufficient condition, and to leave them in the same state at the expiry hereof; the said C D and his foresaids being entitled to continue in possession of two cart hames and stabling for four horses for one year after the term of removal, to enable him to thresh and market the waygoing crop, and to have straw for the said horses and servants' cows. And further, the said C D binds and obliges himself and his foresaids to consume the whole straw growing yearly on the said lands on the ground thereof, and to apply the dung to manure the same. And to leave the whole straw of the last crop as steel bow (i. e., *Anglicé*, upon the ground free of charge.) And, with regard to the dung on hand and unapplied to the waygoing crop, the said C D and his foresaids shall receive half the value thereof, and also for such part of the straw of the penult crop as may be on hand, according to its value, if converted into dung, from the proprietor or entering tenant, as the same shall be ascertained by arbiters mutually chosen. And it is further specially agreed, that in case the said C D or his foresaids shall alter the mode of management and culture hereby prescribed, or deviate therefrom in any respect, he binds and obliges himself and them to pay to the proprietor a quarter of wheat of additional rent, convertible and payable as aforesaid, for each and every acre cultivated, employed, or managed contrary to, or in a different manner from, the plan of management above prescribed, unless he shall have received the express consent of the proprietor thereto in writing, and that yearly and each year while such alteration or departure from the prescribed mode of management is observed, and which additional rent shall in nowise be considered as a penalty, but as a consideration for the advantage which the tenant may promise himself by adopting a different system of management, and as a fair compensation for the injury which the proprietor may sustain, but without prejudice nevertheless to him or her insisting for specific performance on the part of the tenant and his foresaids, of the mode of management and system of rotation hereby established as they shall see cause. And the said C D binds and obliges himself and his foresaids to flit and remove himself, wife, children, servants, goods, gear, and effects, at the expiration of this tack, and that without any previous warning or process of removing to be used for that effect. And both parties bind and oblige themselves and their foresaids to implement the respective parts of the premises to each (under) under the penalty of £ sterling, to be paid by the party failing to the party observing or willing to observe the same, over and above performance. And they consent to the registration hereof in the Book of Council and Session, or others competent for preservation, that letters of hearing on six days charge, and all other necessary execution, may pass on a decree to be interposed hereto, and for that purpose constitute their proprietors.

In witness whereof, &c., &c., &c.

PARTICULARS OF THE BREEDING STOCK,

LATE THE PROPERTY OF MR. ROBERT FOWLER, OF LITTLE ROLLRIGHT, IN THE COUNTY OF OXFORD, DECEASED,

WHICH WAS SOLD ON THE PREMISES, THE 29TH, 30TH, AND 31ST DAYS OF MARCH, 1791, BY R. PARRY, OF SHIPSTON-UPON-STOWER, AUCTIONEER.

THE PREFACE.

Having been prevailed upon to comply with many urgent solicitations to publish a particular account of the sale of the late Mr. Fowler's live stock, I embraced the first opportunity after the auction to advertise the public of my intention, lest by a surreptitious account from minutes incorrectly taken any should be misled. I immediately drew an authentic copy from my books for that purpose, inserting therein the names and places of abode of those who were real purchasers (as far as I could), in the room of those who did not buy for themselves. I then gave orders for the printing of it; but before any of the copies were printed off, I was again solicited to make an addition thereto by engravings of several of the bulls and cows sold at the sale, of which Mr. Fowler had paintings taken from life. This circumstance alone has been the occasion of delay in the publication, and I am now sorry to say that from the difficulty and further delay which would attend the execution of this design, and because I wish as soon as possible to fulfil my promise to the public, I am obliged for the present to forego my intention of complying with this request, and to publish the account without them.

We have found that in taking the first catalogue we were not quite correct in some particulars, which, from the difficulty we met with in ascertaining the true state of them, we could not avoid, a few errors also of the printer we have discovered, and have corrected them.

From the following account and extraordinary prices, I am persuaded the acknowledged superiority of Mr. Fowler's stock will fully appear. I question if tradition or history can furnish such another account in Europe.

The single circumstance of so many people, desirous of improving their breed of cattle, assembling themselves together on the occasion (from almost every county in England) is sufficient ground to evince what reputation this stock has obtained with the public; while the great prices that were offered at the hammer, and the much greater offered for many of them afterwards, is abundantly sufficient to *prove* their high estimation of it.

I will readily admit it frequently is the case at sales by auction, that people are excited by opposition, or encouraged by the coincident opinions of others to exceed their intentions. This may be termed a capricious bravery or implicit confidential boldness, resulting from the judgment or conduct of their competitors; but where, as at this sale, most of the cows, and many of the bulls, might have been resold upon the spot at considerably higher prices, and I believe none re-purchased at their first cost, no such imputation of misconduct can apply. Two heifers, of only two years old, being sold the first day out of their turns, were, at the request of the company, and

by consent of the purchasers, put up again on the second in their proper places, and resold at more than forty guineas advance. I doubt not the truth of my information that also *Garrick*, *Sultan*, and *Young Sultan*, to mention no more, might have been resold by private contract at the advanced price of two hundred and fifty guineas.

It has been matter of candid speculative enquiry by some, whether upon the principle of advantage it can answer the purpose of those who were purchasers of cow-stock at so great prices; and the question has illiberally, and as positively, been answered in the negative by others. It is more than probable the same sentence would have been pronounced by such arbitrary judges upon the conduct of Mr. Fowler on his first setting out. He began with two cows, purchased at what was then thought to be a great price, from Mr. Webster's stock, of *Canly*, in the county of *Warwick*; to these he hired a bull called *Twopenny*, of Mr. Bakewell. Hence may be dated the beginning of his improvement. And why another man, with a small number of the same kind of stock *greatly improved*, to begin with, may not make an advantage in a considerable proportion to Mr. Fowler, who had also but a small number to begin with, will I think need some reason to explain.

In the above-mentioned cows and bull Mr. Fowler was very fortunate; from them he had the two cows called *Old Long-horn Beauty* and *Old Nell*. He had several bulls of Mr. Bakewell afterwards, but since the bull called *D*, sire of *Shakespeare*, which he had of him about the year 1778, he kept entirely to his own stock.

The superiority of this kind of cows seems to be briefly this: a natural or constitutional property of furnishing meat upon those parts of them which sell for most by the pound, from a given quantity of food. I do not pretend to give a philosophical account of animal nature, or of vegetable substance; but I think if it be admitted that a given quantity of vegetable food (converted or transmuted into flesh according to the order of nature by an animal) *can* produce *only* a certain quantity of animal food, it is of great importance to determine which are the best of them to make choice of for that purpose.

To explain my meaning, I would further say, take two or more animals *equally disposed*, and the best that can be found, to furnish animal from vegetable food; I think it is probable that a given quantity of the latter, *so applied*, can only produce a *certain* (though perhaps unknown) quantity of the former. That there are a variety of cows and oxen which respectively turn what they eat to a better or worse account, I believe every grazier will readily allow; and when we hear talk of better and worse, it must be allowed that these only can be esteemed the *best* which pay most for what they eat. Hence it appears plain to me that such are those, which from the *perfect use* of natural or digestive powers produce the *most fine* (and least coarse) meat; or in other words are most inclined to fatten upon those parts of them which sell for most by the pound.

Mr. Fowler was somewhat peculiar in his conduct respecting the improvement of his stock, which I conceive to have been one reason, amongst others, of his having succeeded so well. He made it a rule, long ago, not to part with a superior cow while he entertained a hope of her being useful to him as a breeder. The great prices which he has been offered for some of them (particularly the sum of one thousand guineas for three cows and a bull), nor the advice of his friends to accept such offers, were sufficient to induce him to deviate from a plan which he had long adhered to with advantage. Perhaps one reason for his adopting this plan might have been, his having sold to Mr. Guy, of *Taddington*, three of *Twopenny's* heifers, for which he was said to have repented ever after: these he sold about the year 1771 at eighty guineas, and afterwards offered to re-possess himself with one of them called *The Painted Lady*, at the price he had taken for the three.

With these Mr. Guy set out as a breeder of this kind of stock; and although unfortunate in the choice of some bulls which he afterwards made use of, and therefore not so successful as he otherwise might have been, yet the prices of his stock, which was sold by auction in April, 1790, are sufficient to convince us of *their* esteemed superiority to most others. Some of his cows (by a bull of Mr. Fowler's) sold from thirty to upwards of forty guineas a-piece: this I mention here as another instance of advantage (although much inferior to Mr. Fowler's) derived from breeding this kind of stock from a small beginning.

Those who rightly consider the worth of an animal in which is united everything that can be esteemed essentially valuable, and are willing to allow that Mr. Fowler's stock made a nearer approach thereto than any of its kind collected and improved by any other man in these kingdoms, will commend the conduct of those who embraced this opportunity to avail themselves of the success of many years' attention, labour, and expence, bestowed in procuring them. I regret the separation of it as a great loss and misfortune to the community. I trust however there are among those who now possess the scattered parts of it, many who will endeavour to pursue his improvements. I hope that share which is kept in this part of the country will render us some compensation for the loss of those which are removed at a greater distance: we are not without expectation from six of the cows not separated from one of the best bulls (*Sultan*), which yet remain among us.

I shall not continue my observations on this part of stock further than to say, that from the circumstances of age, uncertainty of breeding, &c., it will be impossible to determine from the prices in the following catalogue which of the cows were held in the highest estimation.

I do not mean to attribute all the advantage which Mr. Fowler has received from breeding to his cow stock, although they were esteemed much superior to his stock of sheep. The merit of his sheep appears to have been derived also, directly or indirectly, from the stock of Mr. Bakewell, by whom their excellence being more fully exemplified, I shall say but little concerning them. He had for several years been endeavouring to improve this part of his stock by the use of Leicestershire rams, and of his success therein, the prices he has lately taken for the hire of some parts of it, and the prices which those brought (although not in condition for sale) at the auction give a very good account.

Notwithstanding the incontrovertible evidence of superiority in Mr. Fowler's stock, contained in the following account of the prices of them, the ultimate advantage which he has received from breeding remains yet to be proved. I am sorry to say there

are some who from envy (and I fear others from motives much worse) have with invidious exultation industriously propagated reports, with an air of credibility, which are totally unfounded in fact.

A report has been propagated far and wide that Mr. Fowler died insolvent; herein the opinion of the public must remain suspended betwixt truth and falsehood until something is offered to incline the balance. I therefore think it a duty which I owe to the deceased and his numerous friends to avail myself of this opportunity in the most unequivocal terms to contradict it. It were wrong in any man to propagate a report to the prejudice of another's reputation, more especially which he did not know to be true. It cannot be urged in justification that it was only related as the opinion of others; such a a report, like scattered fire, may operate far beyond the redress of him who spreads it. Let any who in this instance have ignorantly or wilfully injured the merits of a character, acknowledge their impropriety when I tell them from good authority that the late Mr. Fowler's abstract property amounts to much more than the produce of the auction. That part of this sum which ought to be considered as an increase to the property with which he began business is, I conceive, far more than the usual profits of cultivating an estate of equal rent and of equal value to that which he occupied.

I would willingly consent to allow, that if Mr. Fowler had not succeeded so well in the earlier pursuit of his purpose, that he nevertheless would have deserved well of the public upon the following hypothesis. Suppose a man had employed his fortune and genius in endeavouring still to improve upon the arts and improvements of others, in whatsoever instance, and those endeavours had required particular assiduity, skill, and expense, with a considerable length of time to have proved the advantage of his experiment. It would take nothing from the merit of such endeavours upon a well-concerted plan, that because the man who laid it did not meet with that ample reward in the early part of his progress which he might with greater right expect, in a more advanced stage of it. A great degree of merit is due to a man who wisely plans a difficult enterprise, but a much greater degree is due, and a much greater reward may be expected, where he resolutely and patiently perseveres in the execution of it beyond any that have gone before him.

That Mr. Fowler both planned and performed well, which I think it requires no better testimony to prove, it will require a wilful stubbornness to deny. If any suppose a better design may be pursued, let them give us proof proportionable to their profession; I heartily wish them success. Till then let Mr. Fowler's conduct remain an example for imitation to posterity for ever.

Shipston-upon-Stower,
May 14th, 1791.

BULLS.

1. Garrick: five years old, by Shakespeare, of Broken Horn Beauty, which came of Long Horn Beauty; purchased by Mr. Stone, of Quarndon, Leicestersbire; said to be for the use of himself and several others jointly, 215*l.* 5s.
2. Sultan: Two years old, by Garrick, of Garrick's mother, alias Broken Horn Beauty; purchased by Mr. Freeman, Hitcott, and Mr. Eden, Norton, Gloucestershire, 220*l.* 10s.
3. Washington: two years old, by Shakespeare, of the bow horn red cow, alias Washington's mother; purchased by Mr. Michael Buckley, Normanton, Nottinghamshire, 215*l.* 5s.
4. Young Twopenny: two years old, by Garrick, of Long Horn Beauty; the joint property of Messrs. Cox, Harrison, and Macey, Leicestershire, 68*l.* 5s.
5. Young Garrick: one year old, by Garrick, of the pillion rumped cow, alias Old Skew Horns; purchased by Mr. John Smith, Barcheston, Warwickshire, for Mr. Fowler, 49*l.* 7s.

COWS.

6. Young Brindled Beauty: two years old, a daughter of Brindled Beauty, by Shakespeare; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co., 66*l.* 3s.
7. Pillion Rump, alias Old Skew Horns: by the Hampshire bull, of a daughter of Ralph; purchased by Mr. John Millington, Burton, Wilts, for Mr. Fowler, 23*l.* 2s.
8. Bull calf, by Garrick, of Pillion Rump; purchased by Mr. Baker, Farncott, Gloucestershire, 25*l.* 4s.
9. Great Brindled Cow: by D. of Pillion Rump, alias Old Skew Horns; purchased by Mr. John Millington, Bubton, Wilts, for Mr. Fowler, 31*l.* 10s.
10. Nell*: by Sampson, of Old Nell, in-calf by Sultan; purchased by Mr. William Freeman, Hitcott, Gloucestershire, 38*l.* 17s.
11. Nell's bull calf, by Garrick; purchased by Mr. J. Allcock, Longborough, Gloucestershire, 45*l.* 3s.
12. Nell's White Back: three years old, by Garrick, of Old Nell; purchased by Lord Harborough, Leicestershire, 89*l.* 5s.
13. Young Brind:† three years old, by Garrick, of Old Nell's daughter; in calf by Washington; purchased by Mr. William Huckfield, Over Norton, Oxon, 32*l.* 11s.
14. A Bull named C.:‡ one year old, by Garrick, of Short Tail's daughter, alias the white backed cow, lot 18; purchased by Mr. J. Moore, Charlecote, Warwickshire, 52*l.* 10s.
15. Long Horned Beauty:§ by her own brother, a son of Long Horns, of Old Beauty; purchased by Mr. Francis Robbins, Lillington, Warwickshire, 44*l.* 2s.
16. Long Horned Beauty's cow calf, by Garrick; purchased by Mr. Richard Robbins, Lillington, Warwickshire, 22*l.* 1s.
17. Nancy: by Shakespeare, of a daughter of D, with a bull calf by Garrick; purchased by Mr. Brookes, Wolvers Hill, Warwickshire, 52*l.* 10s.
18. Brindled Short Tail: by Shakespeare, of a daughter of Old Short Tails, in-calf by

* Nell, a daughter of Old Nell (which was a daughter of Twopenny) for the time she has bred, which has not been more than eight years, above one thousand guineas have been made of her and her Stock, which is more than ever was made by any cow in the kingdom, and was esteemed by Mr. Fowler as some of the first breed he had on his farm.

† Of Lot 41.

‡ This bull was supposed to be the best of the yearlings, but unfortunately met with an accident before the sale.

§ Of Long Horn Beauty by a son of ditto.

Garrick; purchased by Mr. Pagett, Croxhall, Leicestershire, 43*l.* 1s.

19. Beauty: by Shakespeare, of Old Long Horn's daughter, in-calf by Garrick; purchased by Mr. John Millington, Bubton, Wilts, for Mr. Fowler, 52*l.* 10s.
20. A mottled yearling calf: by Garrick, of Long Horned Nancy; purchased by Mr. John Zouch, Millcote, Warwickshire, 27*l.* 6s.
21. Young Beauty:* a yearling calf by Garrick, of Beauty, which is grand-daughter to Old Long Horned Beauty; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co., 34*l.* 13s.
22. A light coloured Welch Nurse; purchased by Mr. Richard Leythall, Radford, Warwickshire, for Mr. Fowler, 8*l.* 8s.

BULLS.

23. Young Shakespeare: one year old, by Garrick, of the daughter of the short tail cow, alias Douk Horn; purchased by Mr. Richard Lythall, Radford, Warwickshire, for Mr. Fowler, 29*l.* 8s.
24. A bull called A,† one year old, by Garrick, of Brindled Finch, daughter of the great brindled cow; purchased by Lord Harborough, Leicestershire, 157*l.* 10s.
25. A bull called B,‡ one year old, by Garrick, of the Blue Heifer, daughter of the great brindled cow; purchased by Mr. William Seaton, Scasby, near Doncaster, Yorkshire, 85*l.* 1s.
26. Young Sultan§: one year old, by Garrick, of Nell; purchased by Messrs. Cox, Harrison, and Macey, Leicestershire, 210*l.*
27. A bull called D, one year old, by Garrick, of a daughter of Short Tails; purchased by Mr. Thomas Clarke, Lockington, Leicestershire, 88*l.* 4s.
28. A bull called E, one year old, by Garrick, of Nancy; purchased by Mr. John Zouch, Millcote, Warwickshire, 152*l.* 5s.
29. A Bull called F, one year old, by Garrick, of the bow horned red cow, alias Washington's mother; purchased by Mr. Francis Robbins, Lillington, Warwickshire, 105*l.*

COWS.

30. Brindled Beauty‖: by Shakespeare, of the Long Horn Beauty, supposed in-calf by Garrick; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co. 273*l.*
31. Garrick's Sister: by Shakespeare, of Garrick's mother, alias Broken Horn Beauty, supposed in-calf by Garrick; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co., 120*l.* 15s.
32. Washington's Mother: by a son of Old D, brother to Shakespeare, of Nell, supposed in-calf by Garrick; purchased by Mr. Astley, Odstone Hall, Leicestershire, 194*l.* 5s.
33. Long Horned Nancy: by Shakespeare, of a daughter of Old Nell, in-calf by Garrick; purchased by Mr. William Freeman, Hitcott, Gloucestershire, 110*l.* 5s.
34. Spotted Nancy; by Shakespeare, of the above daughter of Old Nell, supposed in calf by Garrick; purchased by Mr. Millington, Bubton, Wilts, for Mr. Fowler, 84*l.*
35. Black heifer: three years old, by Shakespeare, of the Brindled Beauty; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co., 141*l.* 15s.
36. Garrick's Daughter: three years old, of Garrick's Mother, alias Broken Horn Beauty, has been bulled by Sultan, purchased by Mr. Cox, Brailsford, Derbyshire, 47*l.* 5s.
37. Young Nell: by a brother of Shakespeare, of Old Nell, has been bulled by Garrick; purchased by Mr. James Moore, Charlecote, Warwickshire, 126*l.*
38. Young Nell's cow calf, by Garrick; purchased by Lord Harborough, Leicestershire, 31*l.* 10s.
39. Broken-Horn Beauty: (dam of Garrick and Sultan) of Old Long-Horn Beauty (dam of Shakespeare and of Lot 30) by the Hampshire bull, has been bulled by Garrick; purchased by Mr. Eden, Norton, Gloucestershire, 46*l.* 4s.
40. Red cow: by Shakespeare of Old Skew Horns, alias Pillion Rump, in-calf by Garrick; purchased by Mr. Cox, Brailsford, Derbyshire, 76*l.* 13s.
41. Nell's Daughter, by Shakespeare; purchased by Mr. Russell, Cubington, Warwickshire, for Messrs. Knowles and Co., 136*l.* 10s.
42. Cow calf, of Nell's daughter, by Garrick; purchased by Lord Harborough, Leicestershire, 43*l.* 1s.
43. Sall: by Shakespeare, of Old Sall, in-calf by Garrick; purchased by Mr. Richard Robbins, Lillington, Warwickshire, 63*l.*
44. Douk Horn: by Shakespeare, of Old Short Tail, with a cow-calf by Garrick; purchased by Mr. Edward Higgins, Old Stratford, Warwickshire, 81*l.* 18s.
45. Blue Heifer: four years old, by Shakespeare, of the great brindled cow, with a bull-calf by Garrick: purchased by Mr. Samuel Huckfield, Choice Hill, Oxon, 110*l.* 5s.
46. Brindled Finch: (dam of Lot 24) by Shakespeare, of the great brindled cow; purchased by Mr. Eden, Norton, Gloucestershire, 42*l.*
47. Brindled Finch's cow-calf, by Garrick: purchased by Mr. Baker, Farmcoat, Gloucestershire, 19*l.* 19s.
48. White-backed Cow: (dam of Lot 14) by Shakespeare's brother, of a daughter of the short-tail cow; purchased by Mr. Eden, Norton, Gloucestershire, 81*l.* 18*l.*
49. Cow-calf, of White-back, by Garrick; purchased by Mr. Samuel Huckfield, Choice Hill, Oxon, 32*l.* 11s.
50. White-backed broken-horn Heifer: two years old, by Shakespeare, of a daughter of Old Nell; purchased by Mr. Wm. Freeman, Hitcott, Gloucestershire, 52*l.* 10s.
51. Broken Horn: two years old, by Garrick, of the great brindled cow; purchased by Mr. Wm. Seaton, Scasby, near Doncaster, Yorkshire, 69*l.* 6s.
52. A Welch red nurse, five years old; purchased by Mr. Blundell, Southam, Warwickshire, 8*l.* 18s. 6d.
53. A red and white ditto; purchased by the Rev. Mr. Hastings, Whichford, Warwickshire, 11*l.*

(To be concluded in our next.)

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* Of Lot 19.
† Of lot 46.
‡ Of lot 45.
§ Of lot 10.
‖ Of Old Long Horn Beauty (Dam of Shakespeare).

FARMERS' CLUB HOUSE.

The members of the newly-formed Farmers' Club House held their first general meeting on Wednesday, June 28, when upwards of seventy gentlemen from different parts of the country dined together at the York Hotel, Bridge-street. By desire of the committee William Shaw, Esq., took the chair; Mr. W. Fisher Hobbs occupied the one vice chair; and Mr. Bailey, of Shenley. Amongst the members we observed—Messrs. W. R. Browne; Bennett, of Woburn; Emery, of the Grange, Banwell; Anderson, of Oakley; Purser, of Couple; Morton, of Whitfield Example Farm; Smith, of Deanston; Grantham, of Stoneham; Oakley, of Frindsbury; Baker, of Writtle; Beadel, of Witham; Thomas, of Lidlington; Price, of Hartlip; Knight, of Edmonton; Birnie, Whitehall; Nockolds, Saffron Walden; Donaldson, Salisbury Street; Ellis, Barming; Lewis, Huntingfordbury; Hanson, Stanhope Street; Osborn, Leighton Buzzard; Pocock, Sulham; Wakeley, Rainham; Fordham, Speen, &c., &c., &c. The dinner, which reflected credit on the worthy host, was served at half past five.

Upon the removal of the cloth, and grace having been said, the Chairman called upon them to fill their glasses, and they would, doubtless, anticipate what was the first toast he had to propose, a toast which was never more warmly and enthusiastically received than in those meetings where British farmers associated with each other. It was a proud satisfaction to know that their loyalty was as proverbial as their attachment to the throne was sincere. He would give them the health of the Queen. *(Loud cheers.)*.

The CHAIRMAN said the next toast in the usual order of succession was that of a Prince, who though not an Englishman, had nevertheless so far ingratiated himself with all classes, had identified himself so thoroughly and completely with English feelings, that they could not but consider him as one of themselves. While he had extended his patronage and support most liberally in favour of all our institutions, more particularly had they reason to be grateful to him, since he had evinced a disposition to place himself at the head of the farmers of England. He had enrolled himself a member of the Royal Agricultural Society of England, he had himself become a farmer, and would doubtless use his high influence for the benefit of the whole body. He felt sure, therefore, they would receive the health of Prince Albert with all the honours.

The CHAIRMAN said the toast he had now to propose was one which he was sure would be as well received as those which had preceded—it was that of the Queen Dowager, and the rest of the Royal Family. The kindly feelings of charity and benevolence so freely and extensively exercised by this noble lady, had endeared her to all classes; and though we sometimes heard dissatisfaction expressed at the large allowances granted to members of the Royal Family, yet if they were all used in the same generous manner, and applied to the same purposes as the Queen Dowager applied her income, these allowances would never be grudged. There was no fear of the throne of these realms going out of the line of succession of the present sovereign, since her Majesty had already a fine little family; and as they were probably aware, another member of the Royal Family was that day about to enter the holy state of matrimony. The toast was drunk with applause, and one additional cheer given for "the little ones."

The CHAIRMAN said it had been the good fortune of this country to enjoy perfect tranquillity during an unexampled period, such as no other nation had experienced. While the fertile fields of many countries had been trampled upon by armies in hostile array, we had been enabled to pursue our peaceful callings, and to sit undisturbed beneath our vine and fig-tree. We were disposed to ascribe a great deal to the circumstance of our insular position; but when we compared the comforts which we now enjoyed with the troubles and fears entailed upon the continent at the time when it was convulsed with war, we should find we owed a great deal to the courage, skill, and valour of our "army and navy," to which he begged, therefore, they would now drink success.

The CHAIRMAN said, whilst they owed a deep debt of gratitude to those professions which exercised the arts of war, they were no less indebted to another profession, which practised the arts of peace; a profession which contributed much to the social well being and moral prosperity of the country at large, and which, having an extensive influence over the minds of men, exercised that influence like true patriots and Christians for the general good of their fellow men. He would give them the "Clergy of the Established Church."

The CHAIRMAN said, the next toast which he had to propose was one which their presence there that evening convinced him would be received with warmth and approbation—it was "Success to the Farmer's Club-house," many anniversaries of which he hoped they would be spared to see, each excelling the other in numbers, respectability, and usefulness. It has long been a matter of surprise that a central institution of this kind had not been before established. But there have been many reasons why it has not been before originated, among which are the isolated position of the farmers, the fact of their not being so often called to town as other classes are, and the difficulty of obtaining the necessary funds to establish such a club on a firm and secure basis. The surprise, however, is greater, that local farmer's clubs, entailing no responsibility and little expense, have not been established throughout the kingdom at their own doors. It was only within the last five years that we have followed the example of Scotland in establishing a central Royal Agricultural Society. The support which that society had received was a convincing proof of a growing desire on the part of agriculturists to improve their stock of knowledge, and to band themselves together in one common bond of union for the general good. They had ever been convinced that those social institutions which are applicable to other classes are equally applicable to the farmers. But the principal difficulty, as he had before observed, has been to raise the necessary funds. He was not at all surprised that the prudence of farmers should have deterred them from speculation in these hard times, more especially when they knew that many of the clubs at the west end were in a bankrupt condition. The political clubs were indeed well supported, but they were maintained for other objects. The idea of the meeting which had called them together that day, had occurred to him about this time last year. He thought that it might be possible some hotel-keeper would be disposed to receive the club, on moderate terms, which might be mutually advantageous,

and where they might meet with the advantages and comforts of a retired and independent club at no greater cost than they would have to pay at an hotel. There were besides many collateral advantages likely to arise from farmers from distant localities meeting each other occasionally, and rubbing off the rust which they acquire from country habits and country pursuits, and exchanging those kindly feelings of social and mutual friendship which as a class they entertain for one another, and which, when individually known to each other, they are more likely to foster and cherish. He was the more convinced of the necessity for such a place of meeting when he saw around him 60 or 70 individuals, assembled from far and near to support the object they had in view, many coming from a long distance, and putting themselves to much personal inconvenience in order to evince their hearty concurrence in the purposes for which they were united, and to countenance by their presence an institution intended to place farmers and agriculturists generally in a relative position with other classes. It is not simply for the mere purposes of eating and drinking that this club has been formed. Its object is to bring into closer acquaintance, to introduce and unite on terms of personal intimacy those cultivators of the soil who are known to each other by repute as its breeders and graziers, as inventors of some valuable implement, as experimental farmers, or as talented writers in agricultural periodicals. It frequently happens that some distinguished man from the north is called to London on business at the same time as some eminent man from the south; and how pleasant would it be for each to meet and hold an interchange of ideas, and sentiments, and opinions, which would tend to the edification and improvement of both. These and other objects of business, of pleasure, and of cordiality, would, he trusted, be gained by the establishment of the farmer's club, and that at the trivial expense of one guinea a year. The arrangements which had been made were as follows:—Four rooms had been engaged for the use of the club—a dining room, a sitting room, a reading room, and a private room. The reading room would be well furnished with the leading political journals, and all the best home and foreign agricultural periodicals. Every attendance would be given for the comfort and convenience of the members, and the card of prices had been fixed as moderate as under all the circumstances could be expected. He trusted therefore they would give the committee credit for having concluded the best arrangements in their power, and moreover no liability would be incurred by any member of the club, as the acting members of that committee were the contracting parties on whom all responsibility would fall. It remained for the farmers who frequented London therefore to decide whether they would, when business called them to town, go to an hotel where they were quite strangers, isolated from all society, or whether they would frequent this club, where they would be sure to meet some brother farmer from their own or distant counties, identified with the same interests, and sharing the same feelings, and following the same pursuits as themselves. There were many who (continued the Chairman) like himself were obliged to dwell in this murky metropolis, but who still felt an interest in the green fields and valleys of the country, and in all that pertained to the welfare of agriculture. If they felt convinced of the necessity and advantages of such a place of resort, he hoped they would pledge themselves to carry out the interests of the club, and to embark their friends and neighbours in the same boat. There were other objects which might be carried out hereafter in connection with the club, which would tend to the steady support of agriculture, and perhaps render them less liable to those heavy sacrifices which they had been called upon to make from time to time. Mr. Shaw sat down amidst enthusiastic applause.

Mr. ELLIS, of Barming, said he had obtained the permission of the Chairman to propose a toast. They had heard from the excellent speech of their Chairman, how much pains and difficulty and trouble had devolved upon them in the formation and bringing to maturity of the club, and those who had not been mixed up in such labours were not aware of the difficulties which they had to contend with. He confessed, for his own part, that from the number of associations with which he had been connected, and which had been stultified in a way which had not pleased him, he had very little confidence generally in new societies. There was the Central Agricultural Association, established in London some years ago, which had fallen to the ground owing to the permission granted of saying what they thought right, and giving publicity to their complaints and grievances as a body. When he saw that association done away with, therefore, he was glad to find the Royal Agricultural Society founded on so firm a basis. It was a society which had done and which would yet do much good to the interests with which they were so closely identified. By the exertions of their worthy chairman and his colleagues in office, they had at length the satisfaction of having a club-house in London of their own, where gentlemen from all parts of the kingdom might meet and converse upon the several matters most interesting to each, and discuss the best modes of cultivation, the prospects of the season, and learn what was the best course to pursue for the general good, as well as to promote and to protect those interests which were entirely dependent on them. He begged therefore to propose their best thanks to Mr. Shaw and the gentlemen of the committee of management for their zealous and untiring exertions, and to drink their good healths. Mr. Ellis led the cheering, which was well received.

The CHAIRMAN, in returning thanks, said that had he for a moment thought that Mr. Ellis's toast referred to himself he would not have granted him permission so readily to disarrange the order of their toasts. As the committee consisted of a considerable number of gentlemen, many of whom were in the room, he could only undertake to answer for himself, his own sins were quite sufficient for him to bear. He could only assure them that his heart and soul were with the farmers of England, and that their interests were closely identified with his. Although he had now been resident in London for many years, yet his thoughts and wishes were often ruralizing, and it was quite a reprieve to get clear now and then of the smoke and din of London. He had long endeavoured, feebly perhaps, but honestly and zealously, to espouse their cause, and battle for their rights, when they needed it. He could assure them that nothing should be wanting on his part to further the interests of a class which formed the very basis of our national prosperity; and if ever this foundation were removed, the glorious fabric would become a miserable wreck.

Mr. PURSER, as a member of the Committee, also returned thanks.

Mr. EMERY said, they had been exceedingly fortunate in the choice of a Chairman that day, for they could not have selected a gentleman more competent for the task. But it was not only that day's duty they had to thank him for; they were under heavy obligations to him for services protracted over many months, in his capacity as Honorary Secretary. The laborious duties he has been called upon to perform are quite unknown to those who have never filled such an office and originated such an institution: the mass of correspondence which it entailed was alone sufficient to occupy a person's time and attention completely. They might, therefore, congratulate themselves upon obtaining the services of a gentleman so universally known, and moreover of great talent and education, as well as versed in scientific and agricultural pursuits. He would beg leave to give them a toast—it was a well-meaning but a very old-fashioned one—namely, "A long pull, a strong pull, and a pull altogether."

The CHAIRMAN next gave "The Royal Agricultural Society of England," and observed that his friend Mr. Ellis, who had some compunction about new societies generally, had yet spoken most favourably of this. He believed that a large proportion of those gentlemen now present were members of it, and it comprised an immense body of practical farmers. He felt convinced that this club would be a valuable adjunct to that society, by bringing practical farmers oftener to London, and inducing them to attend the council meetings more frequently. He (the chairman) invariably exerted himself to get as many practical farmers as possible elected annually on the council. The farmers would now have a double inducement to draw them to town, as they might at the club meet their brother farmers after the breaking up of the coucil. He would associate with the toast the name of his friend Mr. W. Fisher Hobbs, a member of the Council, who was a most zealous friend of the farmer as well as of the Society, and a constant attendant at the meetings of the council. He was one of those who well and fairly and independently represented his friends and constituents, if he might so term them—the practical farmers who were absent. His manly feeling induced him at all times to exercise his free, honest, and unbiassed judgment against the highest influence that might be brought to bear against him.

Mr. W. F. HOBBS said that in rising to respond to the toast of the leading agricultural society of England, he wished the task had devolved upon abler hands. He could only assure them that so long as he was a member of the Council he would stedfastly and zealously endeavour to advance the objects of the Society, which were so well set forth in its motto, "Science with practice." Any remarks he could make with regard to that society could not promote its interests, since it was too well known to need encomium from him. As one of the members of the committee of the club he was much gratified to see so numerous and respectable a body of members present. He was glad to find the farmers beginning to be awake to their own interests, and he trusted they would learn to know that "union was strength." He hoped they would be enabled to meet month after month, and year after year, with renewed strength, not only for their own encouragement and for social purposes, but for their mutual protection.

The CHAIRMAN next gave "the Highland and Agricultural Society of Scotland." If that and the Royal Agricultural Society of England had been even kindred associations of the same age the toast would still have been well received, but when it was the parent, the example from which similar societies in this and the sister kingdom had sprung, it was more especially deserving of approbation. When they considered that the inhabitants of a country which had usually been termed "poor Scotland," which enjoyed less advantages as regarded soil, climate, &c., had been impressed with a sincere desire to improve the agriculture of their country, been able to raise a large independent fund to establish a noble society, which had been in existence more than half a century before a similar society had been established in England; it reflected immense credit on the Scotch as a people, and on Scotland as a country. And when we contrasted with this example of patriotic exertion the apathy which had so long prevailed in rich and populous England, we could not but feel how far we were behind in the race, and should be incited to increased and renewed exertions. It was only, however, with great difficulty that those who had the influence, and the means, and power of moving in these matters could be induced to stir. He (the Chairman) felt much pleasure in being able to associate with this toast the name of a gentleman who had a world-wide fame, and whose reputation as a skilful improver had extended far and near—to the north and south the east and west. He had already done much for the improvement of agriculture in the North, and he was gratified in being able to announce that he had determined upon coming to the metropolis to fix himself among them. It was therefore with something of a selfish motive that he rejoiced at his coming among them, for he knew they must derive benefit from his judgment and experience. If landlords would only put their shoulders to the wheel, and do that which they ought to do, this gentleman would afford them the information of what would be necessary; and by the fruit of his labours, such an improvement would be made in the soil, that what has hitherto been thought Utopian would come to pass, and England would become an exporting, instead of an importing country. When he informed them that a gentleman, whose fame and talents had become known to them through the medium of the press—that Mr. Smith, of Deanston, was among them *(immense applause)*, he was sure his health would be received with the honours due to his name *(Loud cheering, the company rising as one man to do justice to the toast.)*

Mr. SMITH, in rising to return thanks, said he had not expected upon this occasion to have had the honour of rising to return thanks, either for himself or for the Highland Society of Scotland, but, as a Scotchman being proud of his country, he was also proud of that Society. It was begun a very long time ago, under many disadvantages, and when such societies were not so rife, or so highly estimated as they were now, and it had struggled on, occasionally contending with difficulties, until it had become one of the most important institutions they had in their country: its meetings and operations were at first confined to one locality (Edinburgh), the itinerating principle not having been then established; but the successive visits of the Society to different parts of the country had been found to be so beneficial, that the English Society had adopted the same plan. He had the honour of corresponding with some of the members who originated the Royal Agricultural Society of England, and he was highly gratified at the deserved success which it had met

with. It was a proud thing for Scotland that, labouring under many disadvantages—the cold of her mountains, and the sweeping waters of her vallies—they had been able to bring the face of the country into cultivation; but having once thrown off our coats to work, it is the characteristic of Scotchmen to set to work in good earnest. Looking at the practice of agriculture in England, little as he had yet seen of it, he saw much to admire and approve, and the practices in use appeared to be well suited to the particular counties. Scotchmen were very apt to form erroneous judgments from first impressions of English agriculture, and to consider this outlay extravagant, and that practice indefensible; but upon investigation and enquiry into the particular soil and climate, and hearing the reasons advanced for them, they would find the English farmer not so unreasonable a man as they had been led to suppose. He trusted the Royal Agricultural Society of England would do much in a few years to improve and change the circumstances of the English farmer. There was one thing which had particularly struck him, and which he might be permitted to mention, and that was, the practice of ploughing with three or four horses in a row. But the reason he had heard advanced in defence of this practice appeared to be a very sensible one. In many counties of England they had a soil very retentive of water, the slightest trampling on which was very injurious to the land, not only for the season in which they were ploughing, but for future seasons. It was, therefore, found better to allow the horses to walk three or four in a row, thus treading in the furrow, than to harness them three or four abreast. People were apt to scoff again at the small shallow furrows of the English, but they should know that the deeper furrow you plough in land in a certain condition, the greater injury you do the land. The Highland Society of Scotland, to which they had drunk success, could not be carried on without its coadjutors—that many tongued instrument—local societies; each working zealously and perseveringly in its own immediate neighbourhood. It was there the great work was to be done, the objects and business of the chief society being principally to collect and dispense that practical and scientific information, which could not be collected except through some common centre. His worthy friend (Mr. Shaw), whose praiseworthy zeal and intelligence in the cause of agriculture were well known to them, had informed them that he was about to settle among them, intending to stir up the English farmers to a consideration of their own interests, by bringing their land into a fitter state for general cultivation. By long practice and much attention, he had at length brought thorough draining into something of a system. He might be permitted to state that while (as every man was in duty bound to do) he should have an eye after the main chance, and study his own interests, he trusted he should always have enough to spare to expend in patriotic exertions for the benefit of agricultural improvement generally, and the country at large. Clubs of the kind they had just established were of great benefit, as they afforded opportunities of meeting together on an equal and friendly footing, and the communication of intelligence from one to another was the only way to improve, and to judge of the comparative value of new inventions and new practices. Furthermore, if at any time there was a necessity for meeting together to take the general sense of agriculturists on any particular question, and to expostulate forcibly and energetically against any attack on their interests, they had established a fulcrum upon which the whole superstructure of agriculture would hang. He trusted, however, there were none so narrow-minded and selfish as to suppose that the agricultural interest was independent of, or unconnected with, the other great interests of the country, each of which was dovetailed into the other. They were all so well balanced, that any shock made upon one injured the other; if the manufacturer saw the agriculturist in distress, he anticipated directly a fall of prices for his goods. He had been himself both an agriculturist and manufacturer, and therefore knew the feelings and sentiments of each. In conclusion, he trusted they might always have a wise and cautious legislature to guard and defend existing interests. He felt great pleasure in being a member of the Farmer's Club, and being introduced that day to so many, whom he might term the very heart and core of the agricultural interests of this country. Mr. Smith sat down amid loud cheering.

Mr. Anderson said, he had the permission of the chairman to propose the health of a nobleman who was well known to them all, and who was never so happy as when called on to be of service to the agricultural body. He had been the first president of the Royal Agricultural Society, and he was to be called into office again, which plainly proved that he was held in high and deserved estimation. He would give them the health of Lord Spencer, a first-rate breeder of cattle. *(Applause.)* He had recently attended his great cattle show, and seen some hundreds of agriculturists present, who had all admitted it was the best show ever held in Northampton as far as numbers went. There would be some animals shown at the great Smithfield Show, which would surprise them even more than the great ox shown two years ago. Having known his lordship's exertions for the last fifteen years, he would only conclude by wishing that they might always have such a nobleman as a pattern and example to breeders, and to support and patronize their shows of stock. *(Applause).*

Mr. S. Grantham briefly proposed the health of his grace the Duke of Richmond, which was most warmly received.

The Chairman said the next toast on his list was that of the local agricultural societies of England, and the manner in which they were supported by those present, was a proof that they were convinced of their utility and importance. The very fact of bringing man into competition, arouses a feeling of honest pride and honourable emulation; and that rivalry was useful in inciting to perfection was an axiom in all branches of improvement, it could not be disputed. Such societies, therefore, ought to have the good wishes and hearty support of all. He would associate with the toast the health of Mr. Beadell, of Witham.

Mr. Beadell said he had been quite unexpectedly called upon to return thanks. No one could be more impressed than he was with the value and importance of local societies. If, however, he had entertained any doubt on the subject, the observations which had fallen from Mr. Smith would have served to convince him of their utility, and he would have gone home determined to give his support to a local society. He had had the honour of originating the first local society which had been established in the southern district of Essex. He was happy to hear that Mr. Smith was about to turn the energies of his mind to the improvement of the English soil. He trusted Mr. S. would visit Essex shortly,

and if he could improve some of their soils, particularly the strong yellow clays, they would owe him a deep debt of gratitude. While he had the opportunity of addressing them, he would especially impress upon them the absolute necessity, the paramount importance of every farmer making himself distinctly acquainted with those arts and sciences, which are immediately essential to the every day operations of agriculture. Why should it be held out (continued Mr. Beadell) as a term of reproach or contempt that a man was a farmer—an agriculturist? Why should a manufacturer be looked upon as so much superior in education, in intellect, in intelligence, to a farmer? was it simply because there was more prosperity attendant upon manufactures than upon the tillage of the soil? He might be thought to speak rather plainly, but they should learn the truth, and he would tell them, one and all, that unless they improved those mental faculties with which Providence had blessed them—unless they made exertions to keep pace with the spirit and improvement of the times, they would still be cast in the back ground, and looked upon sneeringly and disparagingly. He would, by all means, urge upon them to attend and take part in their local meetings, their farmers' clubs, and agricultural societies. They should not permit the little local prejudices which ever exist to prevent them, but should go heart and soul, determined to profit by all around them. There always would be petty jealousies, for if a man pointed out a new road to riches, if he discovered a new invention, it was immediately urged that it was done to raise him above his neighbours, for the purpose of gaining money, rank, or influence. But at every local meeting which they attended, hints would be given them by the experience of others—food for after reflection, which they must needs profit by. He recommended each to try experiments, even if they only devoted one acre to the purpose, they were benefitting the general interest, and it would be well if every member of an agricultural society were compelled to bring forward the result of some experiment to entitle him to membership. They should remember that in propagating a new variety of flower, the chances of success were very small; it was perhaps only one in ten thousand that succeeded, and yet parties were not deterred from persevering. Failure should not dishearten them from continuing experiments, for if they failed they could not be blamed, and they need not publish their failure to the world. They had still done something by trying, and he would say to them, try again, and better luck next time; for no Englishman would sit down calmly content to be beaten. It was the apathy and supineness of farmers which had caused agriculture to be so far behind other arts and sciences in improvement. He trusted they would forgive him for having spoken out rather plainly. It was no use for them to meet merely to compliment each other. If there were not a "raw," to use a vulgarism, they must make one. He trusted they would each return to their own houses resolved to try their hand at something in the shape of experiment. If it failed, they would be no worse than they were before, and if it succeeded they would have the satisfaction of knowing that they had benefitted their class and their country, that they had been doing some good in their generation, and they would thence live more happy, and die contented.

The CHAIRMAN said the next toast he had to give was those valuable institutions, "Farmers' Clubs," which afforded practical and scientific farmers the opportunity of meeting for the discussion of useful topics, six or eight times in the year, and where they met for the express purpose of imparting and receiving information, and improving their mental faculties, as well as their agricultural practice. He would connect with it the name of a member of the committee of the club, who had recently entered the room, and who, though he had not been able to attend their meetings very regularly hitherto, would, he trusted, give them more of his assistance hereafter—"Mr. Robert Baker, of Writtle, and success to Farmers' Clubs."

Mr. BAKER spoke to the toast. He considered farmers' clubs as so many points converging to a focus in the particular district in which they were situate. In congregating there accidentally, or purposely, they would be enabled to discuss and disseminate those principles of action which were necessary to be carried out in their respective positions in society. There was a channel open to all, and that channel the public press, which, he was sorry to say, was little resorted to by experimental farmers; but the diffusion of their opinions, and the results of their experiments, through such a channel, would prove extremely beneficial to the country at large. It was now about thirty years ago since he had entered the field, and he had availed himself on many occasions of the press to give publicity to his communications. It had been urged by some against the publication of improvements, that it was making information too cheap, and rendering your landlords as wise as yourselves, who might probably be induced to turn your own weapons against you, and take the business into their own hands; and thus it was urged that more harm than good would be done. But there was very little reason in such an argument. He had been many years an agriculturist; and although it was not an art which might be rendered so profitable, or in which one might amass wealth so speedily as in manufactures, yet he was devoted to the pursuit, and brought all his energies to bear on the subject. As had been well observed by Mr. Smith, there were peculiar customs and modes of tillage prevalent in certain districts, which experience had proved to be those best adapted to the locality. As regarded draining, there were perhaps few counties in which it had been carried on to greater extent than in Essex. In the Roothing districts, for instance, they adopted a cheap and simple mode of draining, which consisted merely of drains filled up with wood and straw, at an expense of from 30s. to 50s. per acre. These drains, which were cut entirely at the expense of the tenants, were found to operate well at periods of from ten to twenty years. If they were to endeavour to introduce the expensive system of tile-draining where they were unprotected by any long leases, and where the work was done at the expense of the tenant, it never could answer. That system therefore which was carried out with the least expense, was the most profitable and effectual in the end. There were some soils, again, so tenacious that no under-draining would benefit them, and from which the only water that could be carried off was that which was received on the surface. These things, therefore, went to show that, although old customs were frequently ridiculed as antiquated and worthless, yet that our forefathers had some wisdom in introducing and practising those systems best suited to their particular localities. It had been well observed in a work by Mrs. Ellis, that manufacturers—who had successfully prosecuted their business and amassed wealth by their industry—might ride in their carriage, have their town residence, and hold their heads as high as they pleased, without a word of remark. But if a farmer by sheer industry raised himself to affluence (which was not a very frequent occurrence in these times) and stepped in consequence out of his ordinary position, it led to remarks and observations from all classes. He believed, however, the time was fast passing away when men's station and influence were estimated by the length of their purse; people began to look more now to the mind and education and ability of a person than to his wealth. He remembered a simile which had been made by Mr. Cobbett, who likened the agricultural interest to a pillar, of which the peasantry were the base, the tenants the shaft, and the landlords the capital; and he observed very truly that no one would be able to estimate the strength, importance, and value of that pillar until it was thrown down. Several attempts had been made to prostrate it, but he hoped the day of its destruction was far distant, and that this great nation would never by the decay

and ruin of its native agriculture, be left in abject dependence on the uncertain supplies to be derived from foreign nations and colonies, with which communication was likely at any time to be cut off. If they directed their attention to those nations which had confined themselves exclusively to foreign commerce and traffic in merchandize, neglecting to cultivate their own independent resources of supply, they would find that one after another had fallen into ruin and decay. What, he would ask, would be the condition of England, if having placed her dependence for food on other nations, a scarcity of supply should arise from those extraneous sources, and their own land from want of due protection and encouragement having been thrown out of cultivation, they would be placed entirely at the mercy of those whom they had been benefiting to their own injury and ruin. He begged them to remember the old fable of the man with the bundle of sticks, who showed to his sons that singly they were weak, and might be destroyed, but united, firmly banded together, they were invincible, and could not be broken. He trusted that this would be the last season of agitation they would have to contend with, and after the mercilessattacks they had encountered from their bitter foes, they would be granted some little respite. That the agricultural body was a powerful and influential class, was plainly evinced by the returns given in from the property tax, from which he found that at least two-thirds of that tax had been produced from the land and the landed interests. They had to pay honestly and heavily to this burden, and had no means of evading the tax as the manufacturers could do, since the land and the produce of the land were everywhere visible; while the manufacturer might return his income at whatever he pleased to estimate it. In conclusion, he trusted that the farmers would not be discouraged by the heavy blows they had recently sustained; that they would never desert their post when danger menaced, but rally manfully round their standard in self defence.

The CHAIRMAN said there was one great advantage attending social meetings of agriculturists, that was, that it brought men of opposite opinions, and wedded to particular practices, into close collision, and like the scintillations of flint and steel, it was sure to produce some bright ideas to illumine and enlighten others. He had near him two of the most practical men of the present day, who had each done much for the improvement of agriculture; in bringing them together, he knew that the steel was good, and so was the flint, and if the discussion between them did not produce a spark, it was because he had not struck them aright. He would give them "The health of Mr. John Morton," the manager of Lord Ducie's well-known example farm at Whitfield. That nobleman had placed this farm at the disposal of Mr. Morton, to give him an opportunity of carrying out his views on agriculture, and those interested in the subject were not only freely invited to inspect the operations and system of culture pursued, but they were also permitted to examine minutely the results as exemplified in the accounts, so that they might ascertain the profit and loss, and whether the balance was on the right side.

Mr. MORTON, in returning thanks, spoke so low that he was very indistinctly heard at the lower end of the room. After entering into some descriptions of the composition and geological formation of soils, we understood him to say that he considered it to be the duty of the landlord to prepare the soil for the farmer to cultivate—it was like furnishing him with the material for manufacture which he was to shape and fashion into form. If the soil were duly prepared—if those which were too wet were drained, those which were too tenacious made friable, and sandy and loose soils more tenacious—one general and uniform system of culture might be adopted on all. Mr. Morton entered at length into some details and particulars of the great benefits and advantages to be derived from subsoiling and under-draining, by which the most worthless land had been brought into a superior condition. Unfortunately, he observed, landlords neither had the money nor the will to drain, and, consequently, many of their best soils were rendered valueless by being inundated with water. All that was required to extend more generally the improvement of the soil, was a power granted to tenants, enabling them to invest capital securely in improvements, so that they might be certain of reaping the advantage of those improvements.

Mr. SMITH said, that no man had done more than Mr. Morton to overcome the difficulties of stubborn and ungenial soils. His "Treatise on Soils" was one of the most valuable little works published, embracing as it did so much useful and practical information. He was convinced that there was no part of England that did not stand in need of what Mr. Morton had so justly eulogised — subsoil ploughing and thorough drainage. It would even benefit the luxuriant grazing pastures of Leicestershire, for looking at the herbage which grew in certain portions, he could tell in a moment that water lodged there. By the practice of these improvements the rot would be banished, the sleeping places of the sheep rendered drier, and the general value of the land increased. He quite agreed with Mr. Morton, that being a permanent improvement of the soil, it was more the duty of the landlord than of the tenant to carry it out. As the proprietors were the masters of the soil, they were bound to attend to its improvement, to follow out the system, to furnish the capital one way or the other. He considered a great advantage would arise from leases of moderate duration; 19 to 21 years was a most excellent period; a shorter period did not afford the tenant time to carry out improvements, while a longer period induced apathy and carelessness. Where life leases existed, there was seldom or ever any proper system of cultivation carried out. In Ireland, where they were general, the system of cultivation was the most wretched that could possibly be conceived. In the term of 19 or 21 years the enterprising tenant had time to work out the improvements which he might originate, but the real substantial benefit to the soil ought to be carried out by the landlord. No leases at all was one of the greatest evils. It was all very fine to have tenants at will, whom you might bid stay or go as you pleased, but they would have no interest in improving, and consequently the property would always be in a bad state of cultivation; landlords would therefore see the propriety of making their tenants independent men, by not preventing them from enjoying the benefit of those improvements which they might carry out.

Mr. BEADELL wished to enquire of Mr. Morton, whether in the general system of culture which he considered might be adopted on all soils, much would not depend on the nature of the subsoil. With regard to leases, whether they were long or short, there was always a disposition on the part of the tenant before the termination of his lease to whip the land, so as to get as much as he could out of it. He thought, therefore, they might do just as well without leases as with them, if the landlord would but bind himself to pay for all improvements made by the tenant.

MR. MORTON in reply said, that the sub-soil should certainly be taken into consideration, and generally it would be greatly improved by the addition of decaying vegetable matter; but this was quite a question of expense. In proof of the adaptation of all soils to grow any kind of crops, if properly prepared and managed, he might state that he had grown a most luxuriant crop of turnips (whose tap roots usually extended far into the sub-soil), on the blue lias clay, one of the most tenacious of all soils.

Mr. SMITH, in reply to some questions put to him by Mr. Ellis, on the subject of draining, stated that he should not recommend drains to be made at a less depth than 2½ feet, and 18 feet, apart; that the drains should be cut perpendicularly down the slope of a hill, and not in a winding or slanting direction. If stones could be procured, they should be broken and put in the drains, and wood placed upon them. The expense per acre would vary from 3*l.* to 10*l.*; it migh be done

very well for 6*l.* per acre, where stones could be easily and cheaply procured.

"The Ladies," having been given by Mr. Purser, the company broke up soon after 11 o'clock.

CULTIVATION OF TURNIPS.

REPORT BY THE COMMITTEE OF THE MORAYSHIRE FARMER'S CLUB, APPOINTED TO INSPECT AND TO REPORT ON THE EXPERIMENTS MADE IN RAISING TURNIPS BY MEANS OF SULPHURIC ACID AND BONE DUST. COMMUNICATED BY THE DUKE OF RICHMOND.

(From the Journal of the Royal Agricultural Society.)

The committee found that the only members of the club who had tried the experiment were Mr. M'William, Sheriffston, and Mr. Geddes, Orblistoun, the former of these gentlemen having also used guano.

The committee have much pleasure in reporting the success of the experiments, whereby a great discovery has certainly been made, which, if judiciously followed up, must tend to diminish very materially the heavy expense the farmer is now put to in raising a crop of turnips, from the very high price of bone manure.

Before proceeding to state the details of the experiment, as furnished by Mr. M'William and Mr. Geddes, the committee may remark that last season appeared to be very unfavourable to the experiment, from the long continuance of dry weather, and more particularly as it is pretty evident the turnips come away much earlier to which sulphuric acid has been applied, and consequently are sooner affected with drought.

The crops of both gentlemen raised by means of the application of the sulphuric acid were very fair indeed, though it was evident in the fields that the turnips raised from bones continued more vigorous in the tops than those from sulphuric acid and bones, the one having pushed sooner on to maturity than the other. In Mr. M'William's field this was particularly to be remarked, and the crop there raised by bones alone, appeared to have the advantage; but when the experiment came to be proved at the weighing machine, the difference of produce was very evident.

Mr. M'William, in his report to the committee, states that on a field of Swedish turnips, he manured very heavily with well-prepared farm-yard manure, and commenced sowing on the 13th of May; that to some parts of the field he applied, in addition, 12 bushels of bones per acre; to other parts a proportion of guano, and to 2½ acres a solution of sulphuric acid and bone-dust, at the rate of 2 bushels of bones and 46lbs. of sulphuric acid. These applications had an advantage in the crop over what was manured only; but from the great quantity of manure applied over the field, this was not considered to be a fair test of the different applications.

The applications were fairly tested on another field, which Mr. M'William states was "rather favourable for turnips, had carried a crop of wheat, which was well manured after a two years' ley. The wheat stubble was trench-ploughed with 3 horses, and in spring treated in the usual way.

"Drilling and sowing of turnips commenced on the 12th of June; the drills were deeply formed and slightly harrowed down, and bone-dust (no drill used) at the rate of 20 bushels per acre sown with the hand, previously watered to encourage fermentation. The sowing was continued on the 22nd. On the 21st, I had a bushel of the finest dust sifted out, which was mixed with 29lbs. of sulphuric acid, previously diluted with 56lbs. of water, and having stood for 24 hours, was further diluted with about 1,600lbs. of water, or 160 gallons, and applied with a watering-pan to the drills harrowed down as before mentioned, and sown on the 22nd. This quantity was applied to fifteen drills, containing 1 rood 6 falls, Scots. In this case 6lbs. more sulphuric acid were used to the bushel of dust than on former applications, and with advantage, reducing the bones more effectually. On the same day, to eighteen drills, containing 1 rood 15 falls, I applied 1¼ cwt. guano, mixed up the day previous with 3 bushels of bone-dust and 5 of sawdust, in all 10 bushels of mixture, intended for ½ an acre; but being smaller than bone-dust, it went through the hand faster, and only went over 1 rood and 15 falls. On the same day, and immediately adjoining, bone-dust was sown, at the former rate of 20 bushels per acre. On the 23rd, I sowed thirty drills, containing 2 roods 11 falls, with 10 bushels of bone-dust, applying in the morning to the bones 38lbs. of sulphuric acid diluted with 63lbs. of water; and on the same day bone-dust was sown in the usual way."

"The turnips sown with bones on the 12th of June came to the hoe on the 12th of July. The fifteen drills sown on the 22nd with the solution of sulphuric acid and bones were equal in every respect, and came to the hoe at the same time, though ten days later in sowing. The eighteen drills sown with guano and bones were four days later than the sulphuric, but six days before the bone-dust. The thirty drills sown with 10 bushels of bone-dust and sulphuric acid gained six days in hoeing on those sown the same day with bone-dust alone. At this period the difference betwixt the applications and the bone-dust sown in the usual way was most marked, and could be observed at a considerable distance, showing decidedly the great advantage in seasons when the turnip-fly prevails. The turnips were all hoed as equal as possible, and treated in every way the same. On the morning of the 12th of November, the day of inspection by the committee, part of two drills of each experiment, measuring 335 imperial links, or 72⅔ yards in length, was pulled, carefully topped and tailed, and carted home separately, and correctly weighed—the result of which was as follows:—

	tons.	cwt.	lbs.	t.	cwt.	lbs.
1st—The turnips raised with the solution of sulphuric acid and bone-dust weighed 6cwt. 19lbs, equal to....				17	4	15
Or per imperial acre	13	12	97			
2nd—That with guano and bones, 6cwt. 8lbs.				16	18	74
Or per imperial acre	13	8	59			
3rd—That with 20 bushels of bone dust, 4cwt. 42lbs.....				12	4	3
Or per imperial acre	9	13	55			
4th—The bone-dust watered with the solution of sulphuric acid, 4cwt. 75lbs.				13	0	52
Or per imperial acre	10	16	58			

"The turnips were all of the same description, green-topped yellow. The soil was equal. No

farm-yard manure was applied to any part of the field.

"The difference of expense thus, per Scots acre:—

	£	s.	d.	£	s.	d.
1st—Solution of bone-dust and acid, sifted out, at 3s. 6d., 14s.; 116lbs. of sulphuric acid at 1½d., 14s. 6d.				1	8	6
Or per imperial acre	1	2	7			
2nd—Guano and bone-dust, 1¼cwt. at 20s., 25s.; 3 bushels of bone-dust, at 3s. 3d., 9s.9d.—1*l.* 14s. 9d., applied to 1 rood 15 falls, in place of ½ an acre as intended, when the expense per acre would have been 3*l.* 9s. 6d.; but as applied				5	1	1
Or per imperial acre	4	0	1¾			
3rd—Twenty bushels of bones				3	3	0
Or per imperial acre	2	9	11¾			
4th—Ditto, with addition of 76lbs. of sulphuric acid				3	12	6
Or per imperial acre	2	17	5¾			

"The turnips raised with the solution of sulphuric acid and bone-dust kept in advance, and came earlier to maturity, as also those with the guano. The early season was against them in this respect, as they were checked in growth much sooner than in an ordinary season. Had this not been the case, they would have gained more advantage in point of weight over the others than they have done.

"To a different part of the same field, but a few days later of sowing, I sowed green-topped white turnips; to a part of these I applied 10 bushels of bone-dust per acre, dibbled in. These came up a very unequal braird, and were afterwards thin on the ground. To 8½ drills, I applied ¾ cwt. of guano, mixed with 1½ bushel of wood-ashes and 2½ bushels of saw-dust; in all, of mixture 5 bushels, intended for half an acre, but only went over 1 rood 23 falls. The turnips after this were a fair crop, and superior to that with the bones dibbled. The rate per acre of guano was 213lbs., value 38s., exclusive of wood-ashes and saw-dust, and value of bone-dust, 32s. 6d. per acre. No comparison was made as to weight.

"To part of another field of poor thin soil, half manure was applied, and watered in the drills with a solution of bone-dust and acid, prepared as before, at the rate of two bushels of dust and 46lbs. of sulphuric acid per acre, diluted with 112lbs. of water, and afterwards reduced to the proper quantity. The turnips were sown on the 2nd of June, white globe and green top, in two alternate drills intended for early eating off, one half to be pulled. The crop, considering the soil, was good; but the dry early season was much against it. The other part of this field was sown on the 28th of June in the same way, and the same description of turnips. These came most rapidly on for the hoe, and were a good crop for the quality of the ground. For poor thin land I would decidedly consider this mode of application the most advantageous. There were only three drills left without the solution being applied to, and these were very inferior."

Mr. Geddes, in his statement furnished the Committee, gives an "account and result of experiments made on the growing of turnips by three different modes, on the farm of Orbliston, season 1842:"—

"I may premise what I intend to be a concise and ample report of these experiments, by stating that they were made on light turnip soil, by no means in high condition, and that in naming the acre I mean the imperial or standard.

"On the 1st of June the third part of an acre was measured off, and next day thrown up into drills, formed deep, and made 28 inches wide. On the same day a bushel of bones was sifted fine from a large heap of mixed drill and dust; the bones were then weighed, and found to be 45lbs.; they were then placed in a large box, 22½lbs. of sulphuric acid, being one-half the weight of the bone-dust, were then weighed out and applied to the bone-dust, and immediately afterwards were added 67½lbs. of water, or three times the weight of the sulphuric acid. The whole was then stirred about, and allowed to remain 24 hours, by which time the mixture had obtained the consistency of fine gruel, and the particles of bones were completely dissolved, with few exceptions. At this time were added 2,000lbs. of water, or one hundred times the weight of the sulphuric acid; the whole mixture then appeared like dirty water, and was carried to the fields. The expence standing thus:—

	s.	d.
1 bushel of sifted bones, at 3s. 6d	3	6
22lbs. of sulphuric acid, at 1¼d. per lb.	2	4
	5	10

Or per acre, 17s. 6d.

The drills were then harrowed down by a single streak; the mixture drawn off the box, and applied by a watering-pan along the bottom of the drills, then covered in the usual manner, and immediately sown with Dale's Hybrid turnips.

"On the same day another third of an acre was measured off, and drilled up 28 inches wide; and to this were applied five cart-loads of farm yard manure, properly prepared, and 5 bushels of bones, half dust and half drill, again covered in, sown with the same kind of turnips in the usual mode. The expence standing as follows:—

	£	s.	d.
5 cart loads of manure, at 1s. 8d. per load.	0	8	4
5 bush. of dust and drill-bones, at 3s. 2d.	0	15	10
	1	4	2

Or 3*l.* 12s. 6d. per acre.

"Likewise, on the same day was measured off one-third of an acre, and drilled up 28 inches wide; to this were given four bushels of bones, half drill and half dust, dibbled in, and the seed dropped in immediately over the bones, being the same kind of turnips as the other—the expence being four bushels of bones, at 3s. 2d.—12s. 8d.; or 1*l.* 18s. per acre. These experiments were all made on the same field, and nearly adjoining each other.

"At the time these turnips were sown, the weather was extremely favourable for a rapid braird. The sulphuric acid turnips, however, made their appearance first, then came the dung and bones, and lastly the bones alone. The rapidity of growth of the sulphuric acid continued to be maintained over the others, and they came to the thinning seven days before the dung and bones, and ten before the bones singly. The braird of all was healthy and vigorous, but the superiority of the sulphuric acid was visible at a great distance. The season continued very dry and warm, and all the kinds pushed on too rapidly to maturity; they stopped growing for want of moisture, and came, as it were, to a premature ripeness, especially the sulphuric acid turnips, which were too far gone to be benefited when the rain did come, and which fact, I am inclined to think, tells against the weight of the sulphuric acid turnips in an unfavourable manner, as compared with the others.

"On the 10th of November, 200 yards of a drill of each kind was pulled, and, being carefully divested of leaves and roots, the bulbs were on the same day accurately weighed, and the result found to be as follows:—

1st. Two hundred yards of sulphuric acid and bone-dust turnips, at an expence of 17s. 6d. per acre, weighed 9721bs., or 13 tons 10 cwt. 21 6-70th lbs. per acre.

2nd. Dung and bone-dust, at an expence of 3*l.* 12s. 6d. per acre, weighed 1,0051bs., or 13 tons 19 cwt. 21 6-7th lbs. per acre.

3rd. Bones singly, at an expence of 38s. per acre, weighed 8251bs., or 11 tons 9 cwt. 21 5-7ths lbs. per acre.

"It occurs to me that in enumerating the advantages gained by the use of the sulphuric acid, independent of the difference of expense, that of pushing the braird so rapidly away, by which it completely distances the fly, and that of enabling the farmer to sow his turnips ten days later, may be considered as great over the old modes.

"I watered with the acid several drills through my other turnip-fields, and on all observed an advantage. I likewise tried drills here and there through those fields with the same proportion of bones and acid as mentioned, and the result in all the cases was similar to those detailed."

With these minute and successful results of the experiments tried, the committee cannot doubt but in another season the same experiments will be widely and extensively followed up.

(Signed) PETER BROWN.
A. LUMSDEN.
JOHN SMITH.
JOHN STEPHEN.
JOHN LAWSON.

AGRICULTURAL COLLEGE.

Little did we imagine that, almost whilst we were penning our remarks on the subject of an agricultural college last week, a meeting was being held at Devizes for the purpose of establishing an institution of that description for the counties of Wilts, Gloucester, Oxford and Berks. We regret that want of space will not enable us to give a full report of the proceedings, which appeared in the *Wilts Independent*. That journal says:—

"A provisional committee has been formed comprising the names of noblemen and gentlemen of the highest character, who, eschewing all political differences, have united together to carry out an object from which so much good may reasonably be expected. All these gentlemen have either taken shares—many of them five each—or have given donations. Among the latter we find the Earl of Radnor as a donor of 150*l.*, and Mr. Pusey, M.P. for Berks, 50*l.* Among the shareholders are the Marquis of Lansdowne, Earls Bathurst, Ducie, and Fitzhardinge, Lord Sudeley, the Hon. W. L. Bathurst, Sir J. Guise, Sir M. H. Beach, Mr. Scrope, M.P., Mr. Langston, M.P., the Revs. T. Maurice and J. M. Prower, Mr. Gordon, Mr. Ricardo, Mr. Holford, Mr. Kingscote, Mr. T. Arkell, and many of the most practical farmers of Wilts and Gloucester. Surely with such a beginning no great difficulty will be found in raising a sum sufficient to carry out the proposed plan."

This is certainly a good beginning, but if a building is to be erected, as seems to be a part of the plan, large funds will be required. As the plan of general operation and management proposed will be interesting to our readers we subjoin it:—

THE PLAN.—It is proposed to found an AGRICULTURAL COLLEGE on an EXAMPLE FARM in some approved spot convenient for the counties of Gloucester, Oxford, Wilts and Berks—probably near Cirencester, which was supposed to be a favourable situation. The capital required would be 12,000*l.*, which they proposed to raise by 400 proprietary shares of 30*l.* each, bearing interest, and each Shareholder having the privilege of recommending a Pupil. Holders of five shares to be Governors. The Capital to be applied to the erection of School Buildings, improvement of the Farm, purchase of Stock, Implements, &c.

The whole control to be in the Shareholders, and the management to devolve on a Board of Directors elected at an Annual Meeting.

THE FARM.—It is proposed to purchase or to rent a Farm of from 400 to 600 acres. The neighbourhood of Cirencester will be preferred on account of its central situation, its market, and the railway accommodation. This farm is intended to be laid out in the most convenient manner, and to be brought into the highest state of tillage.

PAID OFFICERS AND ASSISTANTS ON THE FARM.—A farmer, a married man, will be necessary; and high testimonials of character required. He will be expected to have skill and experience in the management of land, stock, labour, &c., to be adapted to have the sole management of the pupils whilst employed in the Farm labours; to possess such knowledge of the leading sciences applicable to agriculture, as shall enable him to carry into practice the lessons acquired in the College. Also, in addition, a few paid labourers will be selected, competent to set an example in farm work.

THE COLLEGE.—It is proposed, on or near the farm, to erect a building to accommodate the head master and his family, including the domestic servants, the tutors, and in the first instance 100 scholars. The greatest attention will be paid to order, economy, and health, in the planning of the building, and in all the arrangements for board and lodging.

PAID OFFICERS OF THE COLLEGE.—A head master, also a married man, will be selected, who has a sufficient knowledge of Chemistry and Geology, or of two of the more important sciences, as well as a general acquaintance with the other subjects taught in the College; in addition it is probable that two tutors or professors will be requisite; one mathematical, who will teach all that relates to calculation, such as mensuration, book-keeping, mechanics, machinery, &c. The other a naturalist, competent to teach what relates to the animal and vegetable kingdoms.

PUPILS.—It is expected that the bulk of the pupils will be the sons of the farmers of the district on whose account the institution is founded; and it is confidently believed that few, if any parents (or guardians) will neglect the high duty of providing the best education in their power for their sons; the only fortune that cannot be taken from them. As the college is not intended for teaching the rudiments of learning, no pupil will be admitted under 14 years of age, and who has not a knowledge of reading, writing, arithmetic, and grammar; and if above the age of 16 years he must produce testimonials that he is of moral habits. No pupil to remain longer than four years. The terms will not be above 30*l.* a year, half to be paid in advance.

INSTRUCTION AND EMPLOYMENT.—Half the day each scholar will be under instruction in the schools. The different sciences that relate to agriculture will be taught by the study of the best works on the subject, and by lectures; in the course of which experiments with the aid of good apparatus will be resorted to, and the pupils will participate in the manual part, so as to familiarise them to the analysis and study of soils, &c. The other half of the day will be employed on the farm in the works of husbandry, making and registering trials of implements, practical experiments, &c.; also in a common and botanic garden; so that half the pupils will be always in the school and half on the farm or garden; and the whole be accompanied by such

good precept, example and regulations as shall conduce, with God's blessing, to the formation of fixed religious and moral habits.

Religious Instruction.—The religious instruction of the pupils will be strictly scriptural, and be conducted by a member of the established church; and every possible arrangement will be made to meet the wishes of those parents who, not being members of that church, shall send their sons to this establishment.

As regards the erection of a building we are of opinion, as we stated last week, that suitable premises might be obtained so as to lessen the amount of capital required. It would be highly desirable to get a farm on which there is a variety of soils, so that the system of cultivation applicable to different soils might be learned by the pupils. We shall be glad to see the attempt to establish an agricultural college made, but we trust that the plan will be well considered before it is acted upon. Contiguity to a market-town or railway is a matter of secondary consideration; the suitableness of the soil for the purpose is the great point to be looked to.—*Mark Lane Express.*

THE DRAINAGE OF LANDS, COMBINED WITH THE SEWERAGE OF TOWNS.

[EXTRACTED FROM THE WESTMINSTER REVIEW.]

(Concluded.)

Now as some persons will be found to doubt the possibility of making a general use of any waters so uncertain as those dependent on rain, we will turn to the first authorities on the subjects of meteorology and irrigation, and extract a passage from each, in order to show a coincidence in their statements, which rather singularly favours our view on the subject.

Dr. Dalton states, as "The result of forty-seven years' observation, that the rain of the first six months is to the rain of the last six months as two to three;" and from various other records collected by Mr. P. L. Simonds, secretary to the Meteorological Society, and one of the editors of the "Farmers' Encyclopædia," we are enabled to offer further evidence in corroboration of Mr. Dalton's statement.

GENERAL AVERAGES OF DIFFERENT PLACES IN DISTANT PARTS OF THE COUNTRY.

For 40 years and less, ending 1840.			For year 1841.
2,530	....	January	2,364
2,295	....	February	1,249
1,748	....	March	2,407
1 950	....	April	2,429
2,407	....	May	2,172
2,315	....	June	3,243
3,115	....	July	3,166
3,103	....	August	6,210
3,135	....	September	3,863
3,537	....	October	5,360
3,120	....	November	3,231
3,058	....	December	3,388

And Professor Leslie has found evaporation to be daily in winter ·018, and in summer ·048.

Let it also be remembered, that in the winter vegetation is nearly dormant, and therefore that during that season scarcely any moisture is absorbed by plants.

In juxta-position with these observations we wish to adduce the single testimony of Mr. Stephens, that the winter time is the most proper for irrigation; although every practical farmer is cognizant of this fact. He states in his directions, "The water should be allowed to run through the whole of October, November, December, and January." The table shows that, with January excepted, the farmer's demand for water would be met with the greatest supply of rain.

If we require practical illustration of this use of drain and surface water, it is to be found in a few isolated cases, which, however, afford us tangible evidence of its value. Look to Lord Hatherton's irrigation at Teddesley, to the Duke of Portland's water meadows at Clipstone,* and several cases in Aberdeenshire and other parts of Scotland, where catch-work or hill-side irrigating is of more frequent occurrence than in England. In Mexico, and many hot countries within fifty degrees of each side of the equator, great attention is paid to the collecting of flood water for irrigation.

Closely analagous to the use of surface water for irrigation is its application as a compressing power. The waters which stagnate in bogs and mosses have been found injurious to land under vegetation. Still the waters of one bog may be advantageously applied to another, for the extra weight of water brought from a higher bog to a lower one, and run over its surface, would render it more solid. This was considered by the engineers who reported on the bogs of Ireland in 1814, as the first and most essential step towards making the moss earth capable of profitable cultivation, and such use of water we have no doubt we shall see made in Ireland under the act of last session; when we hope, in addition to the cultivation of the bogs, to witness the rapid progress of railways in that island on the American system of pile construction.†

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* The value, however, of these meadows cannot by any means be estimated by the worth of their own produce alone, however large that may be, their collateral benefits are so great. Requiring themselves no manure but the water, they afford, through the cattle fed in yards on their produce, such a weight of manure for other land, that large districts have by these means been brought into profitable cultivation; and though the water itself runs over only about three hundred acres, it may be said to enrich five times that extent; and, again, by the early food they supply in the spring, stock can be kept off the young seeds till they have gained a head, which is a most important advantage on a farm, and one that, if a dry summer should follow, can hardly be too highly appreciated.

† Some short time back, at the instance of Mr. Weale, the publisher, we were gratified by an inspection of the forthcoming drawings and description of the Utica and Syracuse railroad, and were struck with the extreme simplicity of the American moveable pile-driving machine, which moves along the line of way and drives down the piles in consecutive pairs, passing over those which are driven down, until the whole line is flush for the superstructure. The length of this railroad is 52 71/100 miles; it was graded in the summer of 1836; the superstructure was laid in the spring of 1837, and the

We now come to the application of surface-water as a motive power for mills and machinery —an employment to which it would be turned, after having been collected in sufficient quantity by the receivers, and prior to its distribution for irrigation. It behoves us, in the first place, to find the quantity to be obtained by drainage for this purpose, with rather greater precision and from different data than what sufficed for finding the number of acres which could be irrigated by the same means. In that case we required but the breadth of land and the fertilising power of the water; we now desire to know the cubic content of the water which finds its way to the sea, in order to be able to appreciate its power as a motive agent. As we have hitherto excluded Scotland and Ireland, we will still continue to restrict our considerations to England and Wales.

The average fall of rain annually in England is thirty-two inches; or, according to Dr. Dalton, thirty-one inches and three-tenths, but this is unequally distributed, for the further we go north the greater is the quantity which falls, while the eastern and south-eastern counties have usually the driest season. In Westmoreland and Lancashire the average annual fall ranges from above forty to seventy inches; in Essex and Suffolk from fourteen to thirty-two inches. We give three examples—

London, the average fall for forty years ..	20,686
Lyndon, Rutland, for sixteen years.....	25,272
Kendal, for twenty-five years	53,944

To be within the mark, we will take the average fall of rain for England at thirty inches; a depth which seems to accord generally with the opinions of writers upon meteorology, and deducting the average quantity returned to the atmosphere by evaporation, and that absorbed by vegetation, four-tenths of the thirty inches will be found to be discharged annually to the sea. A remarkable fact is deduced from this. Every inch in the depth of rain falling upon a single acre is equal to one hundred tons, so that there falls 3,000 tons weight of rain annually upon every acre, which it would require four horses for six months to remove one mile. Four-tenths of thirty inches is a foot, or twelve inches, and this is the depth of water which is disposable to the use of man, if, by collection, it can be concentrated so as to be within the means of distribution.

There is a better, and, with reference to the measure proposed, a more practical method of ascertaining the quantity of water that actually finds its way through a porous surface. The idea has been carried out by Mr. Dickenson, of Watford, who thus explains the process in a speech he made at Uxbridge, on January 28, 1841, when opposing Mr. Paten's scheme for supplying London with water from the river Colne.

"He (Mr. D.) found it necessary for his guidance in the management of his own business—that was, making engagements, contracts, and so on—to ascertain what supply of water he could calculate upon from the rivers Gade and Colne, upon which his mills were situated. For this purpose he had, besides common rain gauges, one upon a principle suggested by the celebrated Mr. Dalton, which informed him of the quantity of rain that descended so far into the earth as to be beyond the reach of evaporation, and of being taken up by vegetation, and which, therefore, must reach the internal reservoir of the country whence the springs were fed; and this had been of great assistance to him, by enabling him to anticipate the flow of water in the river, and the power of his mills; for he found the quantity of water issuing by springs always corresponding, in a certain ratio, to that portion of rain which he could trace down to that distance below the surface of the earth, which Mr. Dalton's gauge enabled him to ascertain its reaching. But the following results of this gauge completely disproved the statement of Mr. Stephenson, that 'the rapidity with which the water finds its way into the bowels of the earth also, in a great measure, prevents evaporation; and we are, therefore, justified in assuming that the quantity which descends upon the surface of the chalk finds its way, with very slight diminution, into the fissures below. It appeared, by the recorded observations which Mr. Dickenson quoted, that, in the eight months of the last year (1840), from March to October inclusive, though there fell on the surface of the earth 11·47 inches of rain, not a single drop percolated through to the lower receptacle of Mr. Dalton's gauge; that, in the nine months of the year 1838—viz., from January to October inclusive, though there fell upon the surface of the earth eighteen inches of rain, only 3·75 inches percolated through to the lower receptacle; and in nine months of 1837—viz., from March to November inclusive, though the rain that fell on the surface of the earth amounted to 14·15 inches, only ·31—only three-tenths of an inch — percolated through to the springs."

Mr. Dickenson does not give us the amount which found its way to the gauge during the winter months, wherein most rain falls and least evaporation goes on; but of course it is attainable from the same source as the results quoted.

The scheme which drew from Mr. D. an allusion to such an ingenious and clever contrivance induced Mr. Clutterbuck to carry out a course of experiments detailed in his letter to Sir John Seabright, establishing the theory of subterranean levels. So scientifically were his experiments conducted, that he was enabled to tell when any interruption to the level in the chalk of the London Basin, by extraordinary drought, took place; which interruption, he says, "will be indicated as on the unruffled surface of a lake, which, if disturbed, will undulate to the farthest margin."

We believe Mr. Clutterbuck was able to tell precisely, at some miles distant, the time when the steam engines were pumping at Reid's and other large breweries, by reference to the height of water in the wells to which he had access during his experiments.

Now, taking the quantity of land in England and Wales which might come within the scope of a measure such as we propose, as twenty millions of acres, the number of cubic feet given will be 871,200,000,000. To reduce this into horse-power, there is this datum, according to the ordinary estimates:—about thirty-seven and a half

road was finished in July, 1837, at a cost of 941,475,000 dollars (about 3,900*l.* a mile). The average cost of railways in England is 50,000*l.* per mile! Would not the saving of labourers wages in Ireland compensate for the expense of importing American timber? The price of the requisite land would be very inconsiderable. These remarks are made in expectation that by draining and compressing the bogs with surplus water, the soil will become sufficiently firm to receive and support the piles.

say thirty-eight cubic feet of water, falling every minute on an overshot wheel of ten feet diameter, is reckoned the power of one horse. Divide the above numbers by 525,960, the minutes in a year, and by thirty-eight, the number of cubic feet, and the result is the constant horse-power of 43,590. This, however, supposes the water power to be only on a ten-feet wheel, and that wheel to be in motion every minute of the year.

But by judicious conservation and division of the water obtained, instead of using the power constantly, it may be applied for a certain number of hours per day, and at certain seasons of the year; and taking the average of falls at fifty feet, the gross amount of power to be derived from the drainage of twenty millions of acres may be safely calculated at a gross amount superior to a million horses.

This we grant is but a vague approximation to the truth, but it serves to put the matter before the reader. We know that the number of gallons equivalent to a horse-power is indeterminate, because their effective force is the result of their gravity minus friction; and of course is modified by the shape of the buckets, and the position at which the water takes effect. No direct calculation can be made, and therefore, in saying all we can say, we must be content to assume a point which will enable us to form any judgment of the value of what we have lost. Yet we still do not arrive at this end until we have collated the comparative values of animal, water, and steam power. Mr. Boulton, at a meeting convened to take measures for erecting a monument to the memory of the late James Watt, is related to have said, that the establishment to which Mr. Watt belonged had produced steam engines equal to the power of 100,000 horses, and that this was a national saving to the extent of 2,500,000*l.* annually. It appears from this that Mr. Boulton estimates the advantage of steam power over that of animal power at 25*l.* each horse.

Now, in estimating the value of water power, its inexhaustible nature has to be considered as its first recommendation; for while steam is performing its wonders by the aid of science, and is by those wonders distracting our attention from water, we should remember that coal is exhaustible, and that in calculating the cost of the power of steam we do not consider that every year is diminishing the quantity, increasing the demand, and heightening the value of this material.*

That we may exhaust our coal fields is the opinion of many of the first geologists of the day, and that, too, rather more speedily than those persons may be inclined to believe who are so desirous of promoting its lavish exportation to foreign countries, or those who disregard its wanton destruction at home. Dr. Buckland, both in his last address from the chair of the Geological Society and in his Bridgewater Treatise, has taken pains to impress upon the minds of reflective men the policy of carefully storing our coal—the means by which this country has so recently and so materially augmented its former supremacy as a nation.

Water is a natural power, constant and inexpensive, because it may be applied where it is procured, and if not used would be lost. Therefore we do not hesitate to say that it is two-thirds cheaper than steam, and four-fifths cheaper than animal horse-power. This would give an annual value of power of vast amount, from which would be paid the compensating power for those mills which it is advisable to discontinue.

We have been led into the calculation by some observations in Mr. Thorn's report on the Greenock water-works, which, in the application of the surplus water, illustrate clearly our idea of the value of drainage and surface water to the nation. The Greenock works stand alone in the ingenuity displayed—in the first instance, in getting water to supply the inhabitants of the town, who were before the construction destitute of it in dry summers; and, in the next, in making the best use of the surplus quantity.

The land from Ducal Moss to Shaw's Hills, to the extent of very nearly 5,000 acres, has been drained and the water collected in reservoirs, covering a space of nearly four hundred acres, and the available quantity derived from this source is 700,000,000 of cubic feet annually. The town takes 18,250,000 cubic feet annually for domestic purposes, and the remainder is at the disposal of two lines of mills, one stretching to the east and the other to the west. The company contracted to supply the two lines with 1,200 cubic feet each per minute for three hundred and ten days, twelve hours each day, and this amounts to 535,680,000 cubic feet annually. The two applications amount to 553,930,000, leaving a very considerable surplus to provide against drought.

The case is a most interesting one, and it cannot fail to strike every observer that much might be done in the same way in other localities.

Many instances similar to that at Greenock exist in the mining countries, where, by multiplying the original power by its repeated application down a considerable fall, a remarkably large and economic power is obtained in the end.

Take, for example, the Fowey Consols mine, in Cornwall. There a small stream derived from springs in one hill is brought home by an aqueduct to another, and delivered in volume sufficient to work a thirty-four feet diameter wheel, four feet six inches broad, with fifty-two horse power. The water is successively applied to twelve other wheels, of an aggregate power equal to three hundred and sixty-five horses, with thirty-two feet to spare, equal to sixty horse power, which makes in the whole four hundred and seventy-seven horse power.

Some very interesting papers elucidating the economy of water power, among which were the "Description of the Bann Reservoirs, County Down, Ireland," and an "Account of the overshot Water-wheels at Wheal Friendship Mines, near Tavistock," were read during the last session at the Institution of Civil Engineers. There are also some able papers on the construction of reservoirs for agricultural purposes among the essays and transactions of the Highland Society of Scotland.

But what forms in a special manner a practical illustration of the combination of the three objects —drainage, the collection of the drain water with irrigation, and the use of that water as a motive

* Not content with the present applications of steam-power, some writers are to be found advocating its adoption for farming purposes. It is to take the plough from the ploughman, and raking, rolling, and hacking are to be done without the aid of horses! And this is proposed while the power of water, the peculiar property of agriculturists, is disregarded. See June No. of the "British Farmers' Magazine."

power—is the improvement effected at Teddesley Hay by Lord Hatherton, and which will ever remain a record of his lordship's enterprising liberality.

We extract the account of it from the treatise by Mr. Burke, which is one of the books at the head of this paper.

"The extra-parochial place of Teddesley Hay, in Staffordshire, is the residence of Lord Hatherton, and contains 2,586 acres. It was originally part of the forest of Cannock, and, with the exception of two anciently enclosed parks—one of them containing 589, the other 198 acres—continued unenclosed till the year 1820, when the whole became, either by allotment or purchase, the property of his lordship.

"As soon as the enclosure was completed, other deep drains were made on several parts of the allotted waste, and for the most part with excellent effect.

"Things were in this state when Mr. Bright became agent to Lord Hatherton, about eleven years ago. He immediately conceived the notion of putting the waste allotments, containing a surface of nearly six hundred acres, through a regular course of thorough drainage, and afterwards collecting the whole of the drain water into two main channels; with the double intention of conducting one of them through the farm-yard, for the purpose of obtaining by it a water power for various objects connected with the estate, and then employing it, in conjunction with the other stream, in making an extensive tract of upland water meadows.

"The plan occurred to him in consequence of there being no natural stream on any part of this land. It must, however, be acknowledged to have been a bold attempt, which could only have been conceived by a comprehensive mind and a man of great practical knowledge; but it was liberally seconded by his noble employer, and has been accomplished with admirable success, as the following statements will sufficiently explain.

"First, as to Draining.

"The following is a statement of the improvement by drainage, and the expenditure, during the ten years preceding 1841, upon such parts of the estate as have been drained:—

Quantities.			Value of the Lands in their original state.				Amount of Expenditure in Under-draining.			Value of the Lands in their present state.			
			Per Acre.	Annual Value.						Per Acre.	Annual Value.		
a.	*r.*	*p.*	*s.*	£	*s.*	*d.*	£	*s.*	*d.*	*s.*	£	*s.*	*d.*
78	1	36	10	39	4	9	262	15	0	27	105	18	9
19	1	32	10	9	14	6	74	9	8	35	34	0	9
38	0	3	16	30	8	3	52	14	2	40	76	0	9
82	2	2	15	61	17	8	346	16	4	30	123	15	4
30	3	24	10	15	9	0	121	5	8	35	54	1	6
81	1	34	8	32	11	8	153	16	4	22	89	12	2
36	3	16	10	18	8	6	142	8	0	30	55	5	6
33	0	0	8	13	4	0	80	5	2	26	42	18	0
10	2	33	..		..		90	8	0	50	26	15	3
10	0	8	..		..					21	10	11	0
9	0	0	12	5	8	0	76	9	8	30	13	10	0
15	0	11	16	12	1	0	41	9	4	33	24	17	3
21	2	10	15	16	3	5	66	0	0	30	32	6	10
467	0	9	..	254	10	9	1508	17	4	..	689	13	1

"The main drains have been laid about three feet deep, with tiles about five inches wide by twelve inches long. The branch drains are about two feet six inches deep, and are laid with tiles about four inches wide by twelve inches long. The cost of the former was about 45s., and the latter about 35s. per thousand, when purchased at the kiln. The cost of cutting and laying the main drains was about 1s. per rood of eight yards, and the small drains about 9d. per rood; but it should be observed that in this part of Staffordshire the labourers' wages are from 2s. to 3s. per week higher than they are in many other counties, on account of its being near the important iron and coal mines, as well as the Staffordshire potteries. In some of the valleys the substratum is of a loose mixture of sand and gravel, and in those places it was found necessary to adopt drains varying from five to eight feet deep, which pour forth large bodies of water both in summer and winter.

"These lands having been effectually drained, Mr. Bright's next object was to collect so much of the drain water as the levels permitted into two main carriers, for the purpose of employing them as a power to turn a mill-wheel, and afterwards to be applied in irrigation. For the former object a small reservoir has been constructed at a favourable level, about half a mile distant from the farm, the buildings of which are in a central situation. Here at the farm-yard a mill has been built; and it is a work which, both in its conception and execution, does infinite credit to Mr. Bright; for not only is there much merit in various contrivances by which the water is conducted to it—almost everywhere in covered drains and carriers—but it was necessary to seek a level to carry off the water at a considerable depth by driving a headway through a bed of hard sandstone from a distance of about five hundred yards. The stream of water was of course not sufficiently powerful to turn an under-shot wheel; and, to enable it to act with force, it was necessary to bring it out to the upper part of a wheel of thirty feet diameter. This wheel has been placed in the rock thirty-five

feet deep, and the head-way has been carried from the bottom through the rock, which comes out in a valley below, at the distance, above-mentioned, of five hundred yards.

"The mill and this channel for the water cost very little more than 1,000*l.*; it works a thrashing machine; cuts hay and straw, and kibbles oats and barley for a stock consisting of about two hundred and fifty horses and cattle; grinds malt, and also turns a circular saw, which does great part of the sawing for a large estate. The annual saving by this machinery has been carefully estimated at about 400*l.*, and it is still intended to apply the power to other purposes.

"From this wheel, and from another small carrier, which is made to pass immediately under the farm-yard (where all the urine and moisture that runs from the manure is carefully collected in a reservoir, which overflows into the carrier), the water has been conducted over lands, principally uplands, containing altogether eighty-nine acres, at an expenditure of only 224*l.* 4s. 10d.; by which an improvement of 2*l.* per acre has been effected, or 178*l.* per annum. This is Mr. Bright's calculation; but it is difficult to estimate the importance of such an acquisition as eighty-nine acres of productive water meadow to a large farm like this, on which there is (especially on the upper part of it) a great quantity of very dry and thin soil. I know no other place in which drain water has been turned to such good account; luckily, the water is all soft, and good for irrigation.

SUMMARY.

TOTAL EXPENDITURE.

	£	s.	d.
Under-draining, as per statement ..	1,508	17	4
For erecting water-wheel and machinery	1,000	0	0
Irrigation	224	4	10
	£2,733	2	2

TOTAL INCREASE IN VALUE COLLECTED.

	£	s.	d.	£	s.	d.
Lands under-drained, present value.....	689	13	1			
Original value	254	10	9			
				435	2	4
Estimated saving by the mill				400	0	0
Increase in value of water meadows				178	0	0
Being an increased annual value of				£1,013	2	4

resulting only from draining four hundred and sixty-seven acres, and employment of the drain water over eighty-nine acres of land; affording a clear annual interest on the outlay of full thirty-seven per cent.!"

We add to these examples an illustration of what profitable use may be made of water from hill-side springs on very many estates, independently of draining. The Valley of the Welland exhibited is typical of various valleys through which rivers pass, both in its undulatory formation and the nature of the strata outcropping on its sides. The limestone of the hills is a fine prolific porous soil, of very considerable depth, yielding, besides plentiful crops from its surface, most excellent lime, slates, and stone for building, from below. Bursting from the hill-side at the junction of the limestone with the clay are numerous springs, of more or less magnitude, the waters from which (as in the case of Colleyweston until the inclosure last year) used to find their level at the river by a passage over the meadows in various small streams, which would occasionally swell and overflow them. The result was a stagnation of water on their surface, and an immense depreciation in their value. During the progress of the inclosure ditches were cut, and the water is now taken to the river by the most direct course. The meadows are improved, but the value of the water is lost. There is an average fall from the springs to the river of one hundred feet, and from one spring there is a flow of water all the year round, sufficient to turn a wheel of thirty-horse power; and this might be twice re-applied, so as to produce a power equal to ninety horses. After doing this duty, the water might be applied in irrigating the meadows during the proper season, when the various other springs would add their quota to the amount of surface water brought down by floods.

After all that has been said and written on the value of town refuse as manure for land, and on the necessity of providing a sufficiency of water for cleansing towns in order to insure health to the inhabitants, it is quite unnecessary to enlarge on those points. We will only endeavour to show how, by combining the clearing of outfalls for the draining of land, with the sewerage of towns, the refuse may be applied and the water obtained.

Taking a general view of the towns in England, it will be found that they each possess some outfall, although those outfalls are very frequently abused by mills and weirs, in the manner we have before described, as injuring landed property.

We believe, without exception, all the more important towns in England will be found situated beside rivers, or with rivers running through them. Some few of inferior magnitude may be found on the summits of hills, while others will stand on hill-sides.

This simple fact is alluded to only to enable us to speak of each position, and show their respective advantages in reference to the consolidation we so urgently press upon the consideration of the legislature, which must, during the ensuing session, propound some measure for the improvement of towns, if not for the drainage of lands.

As already said, our object is to show that, by uniformity of arrangement, the drainage of land will give us a quantity of water to place at the disposal of towns, and by the sewerage of towns we shall have power to preserve their refuse and convey it to the land. In fact, the whole virtue of the project consists in making the main drains the arteries by which the "give-and-take" principle may be carried out. Experience has already proved that there are two insuperable objections to any extensive use of the filth of towns as manure, if we are to depend on land carriage as the means of its transmission into the country. In the first place, the expense of cartage for any distance is so great, that farmers, in ignorance of its effect upon land, are unwilling to speculate in its purchase, although Liebig has proclaimed his opinion, that the excrementitious matter derivable annually from each unit of the population is sufficient to procure from an acre of land the best possible crop. And the next objection is, the just opposition of the inmates of towns and their suburbs to having this noxious though valuable matter hawked about in open day, to the annoyance of all who come in contact with it, while labouring men are scarcely to be found to carry

on the traffic at a price which will make it answer to their employers.

To meet these objections, water carriage, which our undulatory country and moist atmosphere afford us the power of supplying economically, immediately suggests itself.*

"Effective drainage must make way for the conveyance of diluted manures, and consequently for effective irrigation;" so says Mr. Chadwick: and we ask upon this, can any drainage be perfect which shall relate to a single town without effecting all the benefit it is capable of securing to the country? Ought we to be satisfied with the simple eradication of an evil, when we may convert that evil into a benefit? Any survey for the drainage of a town, to be perfect, must extend to the meadows, which might be irrigated by its refuse; and if we go further, and supply towns with water from the higher land, as in the cases of Bath and Greenock, we necessarily enlarge the survey still more, until it must be evident that, by taking a comprehensive view in the first instance, and by making a network of drains over the face of the country, so as to expose its hydraulic capabilities, and render the whole waters available, we shall treat the matter more economically for the present and future ages.

Of the towns which are so placed with regard to surrounding contour of country that they are susceptible of receiving water from the higher, and giving their refuse to lower lands, we may mention those on rivers and on hill-sides. The fact of rivers existing bespeaks also the fact that there are higher lands on each side; though practical inquiry alone can decide whether the waters to be derived from those hills can be conducted to the towns situate on their banks, and be there used for domestic purposes (as at Greenock) and for cleansing such towns.

Towns which we term "hill-side" towns, not immediately abutting on rivers, have, as the term implies, land below them as well as above, thereby assuring us of their capability of forming part of the general measure. In addition to cleansing, &c., such towns, we should have at our disposal the manure in a diluted state; for the water which had done service in cleansing the town would run over the lower lands at the proper season, and in its progress towards the lowest level deposit the matter with which it would be loaded.

This is done at Edinburgh; and of such value has the application of the refuse made the meadows irrigated by it, that 150,000*l.* is demanded as compensation to induce the owners to forego a practice which, by yielding some four or five crops a year, supports more than three thousand cows. But the case of Edinburgh is one which may justly be quoted against such an appropriation of the filth of towns. The lands irrigated are in the immediate vicinity of the city, and the refuse is applied in a solid form, though mixed with water. Thus, while the liquid is absorbed, the more solid matter is left on the surface to decompose, to generate miasma, and cause disease. There could be no objection if the irrigation was at a great distance from the town, or if the manure was used in a more diluted state.

We are not adventuring much when we state that there are many towns in Britain to which Edinburgh may be assimilated as far as regards position; and all such towns might make just as profitable an use of their refuse, while they might provide against the evil consequences under which Edinburgh now suffers. That there are many towns also situated like Greenock, which with equal capabilities of doing as she has done, yet still suffer from a want of water in dry seasons (as Greenock did prior to the construction of Shaw's water-works), we are equally justified in asserting; and we quote, from Mr. Chadwick, an instance to strengthen the assertion:—

"Bath, however, is supplied with water under the authority of the local act of 6 Geo. III., c. 70, for paving, &c., which, after reciting that there was a scarcity of water within the city and precincts, and that there were in the neighbourhood of the said city several springs of water belonging to the corporation, enacts that the corporation shall have full power to cause the water to be conveyed to the said city from such springs, and gives them authority to enter upon and break up the soil of any public highway, or common, or waste ground, and the soil of any private grounds within two miles of the city, and the soil or pavement of any street within the city, in order to drain and collect the water of the springs, and to make reservoirs sufficient for keeping such water, and to erect conduits, water-houses, and engines necessary for distributing it, and to lay under ground aqueducts, and pipes most convenient for the same purpose. The act vests the right and property of all water-courses leading from the said springs to the city, and also of all reservoirs, conduits, water-houses, and engines, erected or used for the purpose, in the mayor, aldermen, and citizens of Bath. The corporation supplies more than three parts of the town. There are at present 2,184 persons paying water rates, but the number of houses furnished with water is considerably greater, because courts and rows of cottages have frequently a common cistern. Where this is the case each cottage making use of the cistern pays a rent of 10s. a year, and where the house has a cistern of its own 20s. a year. The charge for the water is in proportion to the rent of the house. The quantity of water supplied is about a hogshead a day. In summer, when the springs are low, the quantity is not so great. The laying down and repair of the feather—that is, the pipe which branches from the main pipe—is at the cost of the tenant."

The only way by which the refuse of the large towns on rivers can be secured for the increase of fertility, will be by the construction of sewers along the banks of the rivers so as to intercept it, and thence conduct it to reservoirs at some distance from the town for distribution. This step would also preserve the water of the river unpolluted for domestic uses. But the objection to it is, that any conduit along the sides of rivers would disturb the wharfs and jetties on their banks, and thus interfere with private rights, although we think that the interference would be found to be but a temporary one, were the matter considered deliberately and without prejudice.

Taking London, for instance, where it is estimated that manure to the value of nearly double what is now paid for the water of the metropolis, is thrown away into the Thames and elsewhere; if a pipe of the largest size were carried from

* In the Netherlands rivulets only two or three inches deep are made subservient to the purposes of carriage. Flat-bottomed vessels are used, and the water of the streams is raised by means of a temporary wooden weir.

Teddington to Westminster (between which places there is a fall of two feet at high water), close under each of the river banks, so that the water in the conduit flowed on a level with high water in the river, the water companies at Vauxhall might receive pure water from the river above the confluence of current and tide. And by continuing the course of the duct, which, after delivering the water, might be converted into a main sewer, past the city it might intercept the filth which now pollutes the Thames water, and convey it to reservoirs by the river side some distance down, ready for removal by water carriages into the country. We hazard this idea not from any notion of originality, but to show that something of the kind is feasible, if not for London, for several towns of minor importance.

Speaking of reservoirs, it may be necessary to make a few observations before the proposition is dismissed, under the plea that they will be in themselves as great a nuisance as the want of drainage, or the stagnation of filth in our public thoroughfares.

As already intimated, we consider that if the refuse can be conducted, by the medium of water, to meadows at some considerable distance from the town, it is of little consequence whether the matter be in perfect dilution or not; and therefore, by means of covered drains, it may be got rid of at once, without any reservoir at all; but should the meadows be situate in a near vicinity to the town, then it is essential to apply it in a perfectly diluted state. By the rapid absorption of this liquid matter by well drained or porous land, the noxious gas is very much diminished, if not totally destroyed. To obtain the means of applying it in this state it will be indispensable to construct reservoirs in which the solid portion may be deposited by subsidence, while the liquid, enriched by the mixture, will flow on, where the levels will permit, to the meadows to be irrigated —or, it may be, conveyed into a fresh reservoir, to be raised by pumps to a higher level. The sedimentary matter will still retain much of its fertilizing qualities, and be susceptible of being manufactured into a valuable manure.

The desideratum, then, is to annul the objection to proximity of reservoirs to towns. This may be done either by constructing them, when the levels will permit, beyond the reach of the olfactory sense of the townspeople; or, where they must be in the immediate vicinity of the town, by adopting artificial means for destroying the evils of exhalation. Planting would do much to stay the gas, but by the time the trees got any size the outcry against the nuisance would lead to the annihilation of design. A covered reservoir, communicating with the town by covered drains, with a vent in the shape of a column or shaft, taller than the houses in the town, appears a feasible though expensive means of meeting the objection. A less expensive, though equally feasible means of giving vent to the gases from the reservoir, is suggested by the subterranean flues adopted in several of the lead and silver mines of Cornwall, which are made in the ground (similar to a covered drain), finding vent on some eminence, after running sometimes a distance of two or three miles. This sort of chimney, of course, could only be adopted where higher ground was available for the purpose. In the column or chimney, at its base, might be arranged some apparatus to purify the evolving gases. This recommendation, we admit, is indefinite, and we should not have ventured on an allusion to it were we not borne out by the opinion of an eminent chemist of the day, Mr. W. H. Potter, who thus expresses himself:—

"I approve of your plan of connecting the main reservoir with a tall chimney shaft, and I would have a horizontal flue between them, filled with moveable trays containing recently burnt ferruginous clay in small lumps, and so arranged that the gas from the reservoir shall slowly pass over each in succession; last of all, I would lead it over dry slaked lime. As these become saturated with gas they should be replaced by fresh portions. The clay and lime are now become valuable fertilizers themselves, but their value may be much enhanced by mixing them with the solid portion, which will accumulate at the bottom of the reservoir, so as to form a powdery mixture to drill in with seed. I have no doubt but that the act of mixture will destroy the bad smell without further addition; at any rate, chloride of lime would do so effectually. The reservoir should be furnished with pumps—one with a large bore, to go nearly to the bottom, for the semi-solid matter; the other, half way or more, for the liquid portion."

We will, in conclusion, advert to that very important item—the management under which the measure would be carried out.

With no less an authority than Mr. George Rennie, we cannot but feel that, as a branch of engineering, the science of hydraulics is too much in the background; and for this backwardness we are under obligation to the monopolizing and astonishing progress of steam power, which, as we have before remarked, has withdrawn from the more natural source of power, water, the consideration of engineers; but still there is sufficient talent in their profession to work with efficiency a measure like this. With Smith of Deanston, Palmer and Cubitt, with Walker, Rennie, Stephenson, Lindley, and so many able men in the corps of Royal Engineers, we need not look in vain for a board of directors who shall organize the system, and under whom inferior officers would carry it into execution.

All parties must agree with Mr. Chadwick when he says—

"It has been shown, in respect to drainage as well as road construction, that the economy and efficiency of the works will be according to the qualifications, the powers, and responsibilities of the officers appointed to execute them, secured by legislative means, and that new labour on the old condition, without skill, will be executed in the old manner, extravagantly and inefficiently."

But the importance of a measure such as is now proposed would demand the first talent in the kingdom, and secure it.

J. Bailey Denton,
Assoc. Inst. C. E. Land Agent.
Southampton.

CHEESE.—(*From the Preston Chronicle.*)—Sir,—Now that the weather is becoming hot, allow me to remind the farmers in this district of the importance of allowing their cheese a plentiful supply of fresh air. Full one-half of the cheese, last summer, was very much faded and strong flavoured, and had to be sold at a reduced price; in many instances so much as 10 per cent. below the price of a good article. Although there are other causes which produce these effects, I have no

doubt the chief cause was keeping them in close, small, confined rooms. I scarcely ever go into a cheese room, but I find both the door and window closed; and when these rooms are filled with cheese, the air is so bad and polluted, as almost to be suffocating. My first effort is, generally, to get the window open; but in this I am often frustrated, for I find it either without any opening, or nailed up; and in many cases the cheese are crammed into a small room without window or any means of ventilation whatever. Cheese being animal matter, cannot have too much air. I have noticed for some time, that those dairies that have been kept in a large well aired room have been quite sound; and those kept in a close sickly room were either faded or very bad in the flavour. Though cheese should not be kept in too high a temperature, yet they will bear the summer heat tolerably well, provided they have a constant supply of good air. There is no objection to a little artificial heat, in winter, from a stove or a fire, but this should always be accompanied with a supply of pure air. The difficulty to contend with is twofold: first, the want, in many farm-houses, of a suitable cheese-room; and, secondly, the prejudices of the dairymaids. They have a long cherished idea in favour of closed doors and closed windows, and dark rooms. To prevent flies, they sometimes say, is the reason for keeping the room dark and close; but this is the best plan for increasing them, by producing putrid matter in the cheese. And as for flies, a pennyworth of quassie chips, boiled in a pint of water, well sweetened, and put on plates, will kill thousands directly. As I have this week seen several lots of new cheese, in close confined rooms, which if they are kept for any length of time, are sure to rot, I am the more anxious to warn the cheesemakers in time, now that hot weather is approaching, to open the doors and windows of their cheese-rooms; and, in cases where there are no openings, either to set their husbands or the joiners at work, immediately, to make them. I am, yours, &c., J. LIVESEY.

Preston, June 15.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

MEETING AT DERBY.

The Annual Country Meeting of this society, which has gone on progressing most rapidly in public estimation, having been fixed this year for Derby, thitherward during the past week have large masses of the agricultural community wended their way—some on business—others on pleasure bent. The excellent arrangements carried out at the last two meetings, and the large attendance of visitors, led those well informed in these matters to augur favourably for a meeting, even surpassing, in numbers, character, and importance, the previous shows; and they were not disappointed.

Although many farmers were engaged in haymaking still all who could by any means make arrangements to get away, did so. As was well observed on Tuesday by one of our daily contemporaries, the farmers of England were prepared on this occasion to show, that in every department of agriculture, they have devoted during the past year, and are willing to devote, all their energies towards the increase of production, the improvement of their stock, and the more scientific culture of the soil, requiring only at the hands of the legislature and the country that protection which is necessary for the prosecution and consummation of their praiseworthy efforts.

MONDAY, JULY 10.

When we arrived on Monday evening, in what Washington Irving some time ago described as "the small town of Derby"—an undeserved epithet, and which by the way gave much offence to the worthy townsfolk—we found the inhabitants all on the *qui vive* of expectation, fully looking forward to reap an abundant harvest. The number of visitors already in the town was but small, and consisted for the most part of the agricultural implement makers, the official members of the society, and some of the reporters for the daily and other metropolitan papers. Notwithstanding the facilities offered by the excellent arrangement of the committee for lodgings, and the register kept by Mr. Moody at the appointed office (14, Market Place), the charges were considered to be exceedingly high—from 5s. to 7s. being the commencing price for beds, in the very humblest houses, and one guinea for the superior ones; and on these charges a progressive daily advance took place. The business of Monday was principally confined to the inspection and selection by the judges of the various implements for trial, these having been all arranged by the stewards for the judges' inspection on the Saturday previous. The spot selected for the show yard was at Litchurch, about a mile from the town. The ground was strongly enclosed, and several rows of tents or booths erected for the reception of agricultural implements, machines, and other articles for farm purposes, manures, seeds, roots, &c.

The day was exceedingly fine.

TUESDAY.

This morning set in lowering and cloudy, but the rain, which threatened to fall at intervals, held off, and the afternoon and evening were fair and clear.

At eight in the morning the implement yard was thrown open to public inspection on payment of an entrance fee of 5s.; exhibiters had free passes, but there was a troublesome regulation, which rendered it necessary for them to register their names in a book every time they entered the show yard. So strict were the rules enforced, that even the President of the society, Lord Hardwicke, was refused admission on Wednesday morning from not having his pass ticket with him.

It transpired during the morning that owing to some bad management on the part of those who had the ordering and arrangement of this portion of the business, the piece of ground originally selected for the trial of implements could not be had. According to some statements, the council had neglected to give the owner of the land a decisive answer as to whether it would be required or not, and was therefore not ready; while it was reported in other quarters, that the holder of the land wished to make a market of the society by demanding a very high price for the use of it. Which of the two reasons was the true one we did not hear; but whatever was the cause, it led to much dissatisfaction amongst the implement manufacturers, who considered they had not been fairly treated.

Upon their being officially made acquainted with the fact, by the stewards of the show yard, and their opinion solicited as to whether a trial of implements should under the circumstances take place or not, a short consultation was held among the manufacturers present; when, after some strong terms of reproba-

tion had been applied to the carelessness of the local committee in making such imperfect and faulty arrangements, it was unanimously agreed, that if the judges selected an improper place for the trial, and the implements therefore were subjected to a faulty and imperfect test, the blame and responsibility should rest entirely on the council; the manufacturers were determined to offer no advice, nor take any part in the matter, as they considered that the society, after inviting them there, and putting them to considerable expense, under the offer of a fair trial on suitable ground, had broken faith with them, and ill treated them. Mr. J. A. Ransome was deputed to inform the judges of the decision they had come to. The subject was ultimately laid before the council, who divided upon the question as to whether there should be a trial or not; and the decision being in favour of a trial, a piece of ground was engaged on Mr. White's farm at Rough Heanor, about two miles on the Uttoxeter-road, and bills were forthwith circulated announcing the trial for the morrow.

Notwithstanding the very excellent display of implements, which was one of the most important and extensive ever collected, the number of visitors throughout this day was very small, the high price of admission, with the additional cost of one shilling for a catalogue, deterring many from attending, except such parties as were specially interested. The exhibition extended over so large a space of ground, and comprised such a number of implements of husbandry of all kinds and descriptions, that it was impossible from the cursory examination of a few hours to estimate the comparative advantages of each, or to attempt to do justice to one tithe of the ingenuity and merit displayed on the occasion. We may however be permitted to state, that the immense collections of various implements shown by the following wholesale manufacturing firms, attracted very general attention.

Messrs. J. R. and A. Ransome, of Ipswich, had one of the most extensive shows on the field, as will be seen by reference to the list of implements exhibited. Their stand contained articles of all kinds required in farming operations, especially those implements in request for tilling and cultivating the soil; and the greater proportion shown were new inventions or manifest improvements. Messrs. Garrett, of Leiston Works, Saxmundham, produced some excellent drills, particularly one adapted for general purposes, some thrashing machines, horse-hoes, and cutting engines for chaff and turnips. Some ploughs and drills, &c., from the Earl of Ducie's iron works; Mr. Morton's cultivators, a sub-pulverizer, and an expanding horse-hoe, also a portable fan blower for smith's forges. Messrs. Barrett, Exall, and Co., of Katesgrove iron works, Reading, had a very large collection of their patent ploughs on the ground. Mr. E. Hill, of Brierley Hill iron works, near Dudley, exhibited a great many newly patented implements; among which were a rick stool, with roof and six columns, all of iron, an iron barley roll, a set of iron harrows in four parts, a subsoil iron plough with skim coulter and pulverizing knives, which would either work without the knives or the subsoil. Mr. Crosskill, of Beverley, had a collection of very useful articles, amongst which those most examined and approved of were his well known clod-crusher roller, a patent grass-land cultivator, a liquid manure cart, and a portable saw mill. Mr. R. Hornsby, of Spittlegate, Grantham, exhibited some very useful drills, and a new implement, a cart with patent axle and drill attached, for sowing turnip seed and bones, or any pulverized manure. Mr. Stratton, of Bristol, had some models of very excellent carts and waggons, some cheese presses, churns, and chaff engines. Mr. J. Smyth, of Peasenhall, Suffolk, whose drills are so well known, produced several with some new and important improvements. Mr. T. Wedlake's haymaking machine attracted the observation of visitors. And among the large collection of ironwork produced by Mr. A. Dean, of Birmingham, our attention was principally drawn to some portable steam engines, to a portable hand mill for grinding and dressing wheat, &c. at one operation, and a portable steaming apparatus. Messrs. Cottam and Hallen, of Winsley Street, London, besides dynamometers, odometers, weighing machines, &c., exhibited some new implements in chain harrows, dibbles, sub-turf ploughs, &c. Their cycloidal tooth grubber also attracted attention. Among the other objects of interest were a stack-cover to supersede thatch, invented by Mr. Parsons. An ingenious model map in relief of a district, showing its use as a guide to draining, irrigation, and the application of the surplus water to useful purposes, by Mr. Bailey, Denton, of Southampton. The following, however, is a more complete list of the machines, &c., exhibited.

LIST OF IMPLEMENTS, &c.

Stewards of the Implement Department.—Mr. W. Miles, M.P., Mr. Shelley, Mr. Pusey, M.P.—Judges of Implements—Mr. Parkes, Mr. Graburn, Mr. Legard. Director of the Show—Mr. Humphrey Gibbs.

Stand No. 1.—Mr. C. R. Colvile, M.P., of Lullington, near Burton-upon-Trent.

Articles—No. 1, a subsoil horse-hoe, invented by himself, manufactured by Mr. Alkins, of Coton-in-the-Elms. No. 2, a machine for heating a preparation of gas tar, invented by himself, manufactured by Mr. John Harrison, of Derby. No. 3, a machine for weighing horse corn, invented by himself, manufactured by Mr. John Harrison, of Derby. No. 4, a new description of door, for farm building, invented by himself, manufactured by John Lee, of Lullington. No. 5, an iron pen, for stall-feeding pigs, invented by himself, manufactured by Mr. John Harrison, of Derby.

Stand No. 2.—Mr. John Gillett, of Brailes, near Shipston-on-Stour.

Articles—No. 1, (new implement,) a patent rick ventilator, invented by John Gillett, of Brailes, manufactured by Lovett, of Shipston-on-Stour. This implement consists of an iron frame (about two feet in length) and cylinder attached, with a small knife on each side at the lower end, and an iron bar through the centre of the frame and cylinder, with a screw at the bottom, making an aperture of about seven inches diameter (for ventilation) through hay or corn ricks, when too much heated.

Stand No. 3.—Mr. John Farr, of Doncaster.

Articles—No. 1, a mill for bruising oats, beans, &c., invented by Thomas Pasmore, of Everton, manufactured by John Farr, of Doncaster. No. 2, a machine that can be regulated to break oil or linseed cake for tillage or feeding cattle, invented and manufactured by himself. No. 3, a very simple and cheap chaff-cutter, with two knives, and rising rollers, invented and manufactured by himself.

Stand No. 4.—Mr. George Webb Hall, of Sneed Park, Bristol.

Articles—No. 1, a subsoil plough and horse-hoe, invented by him and manufactured by Wm. Savery,

of Earthcott, Alveston, near Bristol. No. 2, (new implement,) a clay grass sward, or stubble-cutter, invented by him, and manufactured by William Savery.

STAND No. 5.—The Earl Ducie, of Tortworth, near Wotton-under-edge.

ARTICLES—No. 1, a cultivator or scarifier with five tines, invented by John Morton, Chester Hill, manufactured by Richard Clyburn, of Uley, near Dursley. Nos. 2, 3, and 4, iron swing ploughs, improved and manufactured by Richard Clyburn, of Uley, near Dursley. No. 5, a subsoil plough, invented by Mr. Smith, of Deanston, manufactured by Richard Clyburn, of Uley, near Dursley. No. 6, a set of bodkins or whipple-tines, and chain for No. 6, manufactured by Richard Clyburn, of Uley, near Dursley. No. 7, a sub-pulverizor, invented by the Hon. M. W. B. Nugent, of Higham Grange, Hinckley, manufactured by Richard Clyburn, of Uley, near Dursley. No. 8, an improvement upon the above, with additions by John Morton, of Chester Hill. No. 9, a parallel expanding horse hoe, with five tines and five hoes, invented by John Morton, of Chester Hill, manufactured by Richard Clyburn, of Uley, near Dursley. No. 10, a parallel expanding horse hoe, with three tines and three hoes, invented by John Morton, of Chester Hill, manufactured by Richard Clyburn, of Uley, near Dursley. No. 11, a single row turnip and manure drill, manufactured by Richard Clyburn, of Uley, near Dursley. No. 12, a double row turnip and manure drill, manufactured by Richard Clyburn, of Uley, near Dursley. Nos. 13 and 14, a patent chaff-cutter, with two spiral knives, invented by the Earl of Ducie, R. Clyburn, and E. Budding, of Tortworth, Uley. No. 15, a corn crusher, invented and manufactured by Richard Clyburn, of Uley, near Dursley. No. 16, a corn meter, invented by John Morton, of Chester Hill, manufactured by Richard Clyburn, of Uley, near Dursley. No. 17, two recording dynamometers, invented and manufactured by Richard Clyburn, of Uley, near Dursley. No. 19, a four horse portabble thrashing machine, manufactured by Rich. Clyburn, of Uley, near Dursley; with an improved cast iron horse wheel, and gearing, by Richard Clyburn, of Uley. No. 20 (see Stand No. 111, art. 1), by Richard Clyburn, of Uley, near Dursley. No. 21, a dibbling machine, invented by James Wilmot, Newberry, of Hook Norton, near Chipping Norton, manufactured by Richard Clyburn, of Uley, near Dursley. No. 22, a portable fan-blower for smiths' forges, invented by Richard Clyburn, of Uley, manufactured by himself.

STAND No. 6.—Mr. John Newham, of Kegworth, near Loughborough, Leicestershire.

ARTICLES—No. 1, a winnowing machine, invented and manufactured by himself, double-blasted, with rollers, and stamped riddles. No. 2, a plough with presser and drill attached, invented and manufactured by himself. No. 3, a straw or chaff-cutter, invented and manufactured by himself.

STAND No. 7.—Messrs. Barrett, Exall, and Andrews, of Reading.

ARTICLES—No. 1, (new implement) a gorse grinding machine, invented by Luke Herbert, of Dover, manufactured by themselves. No. 2, a strong two-wheel plough (marked No. 5), invented and manufactured by themselves. No. 3, strong two-wheel plough (marked No. 8), invented and manufactured by themselves. No. 4, a lighter two-wheeled plough (marked L. 5), invented and manufactured by themselves. No. 5, a light two-wheel plough (marked D. P.), invented and manufactured by themselves. No. 6, a one-wheel plough (marked L. 5), invented and manufactured by themselves. No. 7, a one wheel plough (marked D. P. 3), invented and manufactured by themselves. No. 8, a one-wheel plough (marked D. P. 2), invented and manufactured by themselves. No. 9, a one-wheel plough (marked D. P.), invented and manufactured by themselves. No. 10, a one-wheel plough (marked D. P.), invented and manufactured by themselves. No. 11, a one-wheel plough (marked L. 5), invented and manufactured by themselves. No. 12, a double furrow plough, invented and manufactured by themselves. No. 13, a swing-plough (marked D. P. 3), invented and manufactured by themselves: similar to article No. 7, but as a swing-plough. No. 14, a strong swing-plough (No. 7), invented and manufactured by themselves. No. 15, a swing plough (marked D. P. 3), invented and manufactured by themselves. No. 16, a swing-plough (marked D. P.), invented and manufactured by themselves. No. 17, a moulding-up plough, invented and manufactured by themselves. No. 18, A. D. P. universal plough, invented and manufactured by themselves. No. 19, a two-wheel and swing plough (marked D. P. 3), invented and manufactured by themselves. No. 20, a horse-hoe, manufactured by themselves. No. 21 (new implement), a light turnip-drill, invented by Mr. Willock, of Basingstoke, manufactured by themselves. No. 22, a hand thrashing-machine, invented and manufactured by themselves. No. 23 (new implement), a combined hand-thrashing and winnowing machine, invented and manufactured by themselves. No. 24, an improved subsoil plough, invented and manufactured by themselves. No. 25, double-hand chaff-cutter, invented and manufactured by themselves. No. 26, common single-hand chaff-cutter, manufactured by themselves. No. 27, a fly wheel chaff-cutter, manufactured by themselves. No. 28, a large fly wheel chaff-cutter, manufactured by themselves. No. 29, a single horse power, invented and manufactured by themselves. No. 30, a single action oil-cake mill, manufactured by themselves. No. 31, a double action oil-cake mill, manufactured by themselves. No. 32, a wrought iron sheep trough, invented and manufactured by themselves. No. 33, corn-cleaner or blower, manufactured by themselves. No. 34, a cat's-claw drag, manufactured by themselves. No. 35, a grass and other seed-sowing machine, invented by Mr. Bennett, of Farnham, manufactured by themselves. No. 36, a 12-inch iron field-roller, invented and manufactured by themselves. No. 37, an 18-inch iron field roller, invented and manufactured by themselves: similar to No. 36, but larger. No. 38, two-wheel land-presser, manufactured by themselves. No. 39, a light lifting engine, or crab, invented and manufactured by themselves. No. 40, a general agricultural carriage, invented by Mr. Wm. Exall, and manufactured by themselves. No. 41, a patent duplex mill, invented by Luke Herbert of Dover, and manufactured by themselves. No. 42, a patent duplex mill, invented by Luke Herbert, of Dover, and manufactured by themselves: another modification of No. 41. No. 43, a patent duplex mill, invented by Luke Herbert, of Dover, and manufactured by themselves: another modification of Nos. 41 and 42. No. 44, A variety of small work. No. 45, a barley-roller, manufactured by themselves. No. 46, a barley hummelling machine, manufactured by themselves. No. 47, a dibbling machine, invented by Rev. W. L. Rham, of Winkfield, Berkshire, manufactured by Barrett and Co.

Stand No. 8.—Mr. Thomas Bigg, of No. 15, Crawford-street, Portman-square, London.

Sheep-dipping apparatus, invented by him, manufactured by Robert Wade, of Crawford-street, Portman-square, London.

Stand No. 9.—Mr. Samuel Sims, of Stone, Staffordshire.

Article—No. 1, A waggon, with six-inch wheels, invented by Samuel Sims, of Stone, manufactured by himself.

Stand No. 10.—Mr. William Blunstone, of Ladywood Farm, Kirk Hallam, near Ilkeston, Derbyshire.

Article—No. 1, a new draining plough, invented by William Blunstone, of Lady Wood Farm, manufactured by William England, Ilkeston.

Stand No. 11.—The Hon. Mr. W. B. Nugent, of Higham Grange, Hinckley.

Article—No. 1, a subsoil pulverizer, invented by him, and manufactured by David Wilkie, of Uddingston, near Glasgow.

Stand No. 12.—Mr. Thomas Toms, of Astone, near Stone, Staffordshire.

Articles—No. 1, a plough with two wheels, manufactured by himself. No. 2, a breast plough, manufactured by himself.

Stand No. 13.—Mr. S. F. Every, of Elm Bank, Quarndon, near Derby.

Articles—No. 1, a watering barrow, invented and manufactured by himself. No. 2, hand sawing machine, invented and manufactured by himself. No. 3, a substitute for thatch, invented and manufactured by himself.

Stand No. 14.—Mr. David Harkes, of Mere, near Knutsford, Cheshire.

Articles—No. 1 (new implement), an implement for draining, invented and manufactured by himself. No. 2 (new implement), a sowing machine, and pair of revolving harrows, invented and manufactured by himself. No. 3 (new implement), a turnip cutter, invented and manufactured by himself. No. 4, a drill plough and scarifier, invented and manufactured by himself. No. 5, a plough for heavy land, manufactured by himself. No. 6, a plough for heavy land, manufactured by David Harkes, of Mere. No. 7, a plough for heavy land, with wheels, manufactured by David Harkes, of Mere. No. 8, a plough for light land, manufactured by David Harkes, of Mere.

Stand No. 15.—The Tweeddale Patent Drain Tile and Brick Company, of No. 10, Whitehall, London.

Articles—No. 1, a hand-making drain tile machine, invented by the Marquis of Tweeddale, of East Lothian, manufactured by Robert Bridges, of North Berwick. No. 2, several lots of drain tiles, made by the above mentioned machine, manufactured by the Tweeddale Company, at their several establishments.

Stand No. 16.—Mr. E. Hill, of Brierley Hill Iron Works, near Dudley.

Articles—No. 1 (new implement), an iron rick stool, with iron roof, on six iron columns, invented by him. No. 2 (new implement), a wrought iron barley roll, invented and manufactured by himself. No. 3 (new implement), a wrought iron roll, in two parts, with sliding weights, to run from 15 cwt. to 40 cwt., invented and manufactured by himself. No. 4 (new implement), a set of wrought iron harrows, in four parts, invented and manufactured by himself. No. 5 (new implement), an iron plough, with subsoil attached, with skim coulter and pulverizing knives, invented and manufactured by himself. No. 6, an iron plough, with skim coulter and pulverizing knives for strong soil, will either go or horses in a line, invented by Wm. Mason, of Brierley Hill Iron Works, late of Warwickshire, and manufactured by Edward Hill. No. 7, a wrought iron plough, with skim coulter and pulverizing knives for light soils, will either go or horses in a line, invented by Wm. Mason, and manufactured by Edward Hill. No. 8, an iron double plough, with skims and coulters, invented and manufactured by himself. No. 9, an iron skim, for paring stubbles, invented by J. Allen Stokes, Esq., of Havington, near Evesham, manufactured by Edward Hill. No. 10 (new implement), an iron scarifier, invented by J. Allen Stokes, Esq., of Havington, near Evesham, manufactured by Edward Hill. No. 11, an iron cow crib, with roof, invented and manufactured by himself. No. 12, an iron sheep rack upon wheels, with roof and trough, invented and manufactured by himself. No. 13 (new implement), a wrought iron farmer's field gates and iron posts, upon a new construction, invented and manufactured by himself. No. 14, a set of wrought iron bedsteads, to supersede wood, invented and manufactured by himself. This bedstead is of the usual construction, and with hoop bottoms, and does away with sacking. No. 15, three patterns of iron coping, invented and manufactured by himself. No. 16, a new rain water spouting heads and shoes for farm and other building, invented and manufactured by himself. No. 17, iron mangers and racks, invented and manufactured by himself. No. 18, a small iron roller, invented and manufactured by himself. No. 19, six tree guards, invented and manufactured by himself. No. 20, six descriptions of farmers' hurdles, invented and manufactured by himself. Nos. 21 & 22, twelve descriptions of cattle hurdles, invented and manufactured by himself. These hurdles have the same advantages as No. 20, No. 23, three descriptions of deer fencing, on a new principle, invented and manufactured by himself. No. 24, six descriptions of cattle and ox fencing, on a new principle, for waste lands, invented and manufactured by himself. No. 25, six descriptions of sheep game proof hurdles, invented and manufactured by himself. Nos. 26 & 27, strong iron field gates, invented and manufactured by himself. No. 28, an iron gate with iron posts, invented and manufactured by himself. No. 29, an iron wheelbarrow, invented and manufactured by himself. No. 30, three descriptions of strained wire for sheep and ox fencing, invented and manufactured by himself. No. 31, two descriptions of iron cottage fencing, invented and manufactured by himself. No. 32, five descriptions of iron chairs, invented and manufactured by himself. No. 33, a tree stand, invented and manufactured by himself.

Stand No. 17.—Mr. Robert Hobkin, of Hartington, near Ashbourn, Derbyshire.

Articles—No. 1, a harrow, invented and manufactured by himself. No. 2, a churn, invented and manufactured by himself.

Stand No. 18.—Mr. George Jackson, of Shottle Lodge, near Belper, Derbyshire.

Articles—No. 1, a curd mill, invented by George Jackson and Joseph Holbrook, deceased, of Shottle, manufactured by George Jackson. No. 2, a chaff-cutter, manufactured and improved by him.

STAND No. 19.—Mr. B. Millington, of Asgarby, near Sleaford.

ARTICLES—No. 1, a machine for dressing corn, invented and manufactured by himself. No. 2, an iron plough, improved and manufactured by himself.

STAND No. 20.—Mr. John Caborn, of Denton, near Grantham.

ARTICLES—No. 1, a land presser, invented, improved, and manufactured by himself. No. 2, a corn and turnip-drill, invented, improved, and manufactured by himself. No. 3, (new implement) a boat-plough, manufactured by himself. No. 4, an improved large-sized corn-blower, invented and manufactured by himself. No. 5, a barley hummeller, invented and manufactured by himself. No. 6, a chaff-cutting machine, with three knives, invented and manufactured by himself. No. 7, a double blast winnowing machine, invented and manufactured by himself. No. 8, a mill for breaking or crushing oil cake for beast or sheep, with screen for the dust, manufactured by himself.

STAND No. 21.—Mr. Crosskill, of the iron works, Beverley, Yorkshire.

ARTICLES—No. 1, Crosskill's patent clod crusher roller, invented and manufactured by himself. No. 2, a patent grass land cultivator and grass drill, invented and manufactured by himself. No. 3, a liquid manure cart, invented and manufactured by himself. No. 4, a portable manure drill, invented and manufactured by himself. No. 5, a portable saw mill, invented and manufactured by himself. No. 6, potato steamer and apparatus, invented and manufactured by himself. No. 7, a thrashing machine, improved and manufactured by himself. No. 8, a turnip and manure drill, improved and manufactured by himself. No. 9, a two row presser and drill, improved and manufactured by himself. No. 10, a dressing machine, improved and manufactured by himself. No. 11, a potato washer, improved and manufactured by himself. No. 12, a two horse power straw cutter, improved and manufactured by himself. No. 13, a harvest cart, improved and manufactured by himself. No. 14, one pair of new invented cart wheels, made by machinery, with cast iron naves, turned-up axles and hook, manufactured by himself. No. 15, an improved single horse cart, manufactured by himself. No. 16, a single horse cart, improved as above, and manufactured by himself. No. 17, a single horse cart, improved and manufactured by himself. No. 18, a Yorkshire farm road waggon, manufactured by himself. No. 19, a light Yorkshire farm waggon, for general purposes, manufactued by himself. No. 20, a patent pump for liquid manure tanks, invented by Beare or Shalders, of London or Norwich, manufactured by himself.

STAND No. 22.—Mr. Joseph Chadborne, of Linby, near Nottingham.

ARTICLE — No. 1, corn and seed drill, (Shear) invented by White and Leith, of Worksop, manufactured by themselves.

STAND No. 23.—Mr. Henry Corbet, of Shushions Manor, near Newport, Salop.

ARTICLES—No. 1, an iron plough, invented by John Barrowman, of Saline, near Dumfermline, manufactured by himself. No. 2, an iron plough, invented and manufactured by Barrowman. No. 3, a cart for road or field, invented and manufactured by himself.

STAND No. 24.—Mr. B. Edgington, of 2, Duke-st., Southwark, London.

ARTICLES—No. 1, a rick cloth, invented and manufactured by himself. No. 2, a marquee, invented and manufactured by himself. No. 3, a shooting tent, invented and manufactured by himself. No. 4, a round wall tent, invented and manufactured by himself. No. 5, a Flanders tent, invented and manufactured by himself. No. 6, a parcel of flags, invented and manufactured by himself. No. 7, a parcel of sundries, invented and manufactured by himself.

STAND No. 25.—Mr. John Green, jun., of Newtown, North Worcester.

ARTICLE—No. 1 (new implement), a machine for reducing turnips, mangel-wurzel, carrots, potatoes, and other roots, to a pulp or very small pieces, in order that they may be mixed with chaff, invented and manufactured by himself.

STAND No. 26.—Mr. Richard Hornsby, of Spittlegate, Grantham.

ARTICLES—No. 1, a six-horse power portable thrashing machine, invented and manufactured by himself. No. 2, a twelve-coulter drill machine for general purposes, invented and manufactured by himself. No. 3, a twelve-coulter corn and seed drill, invented and manufactured by himself. No. 4, a thirty-coulter small seed drill, invented and manufactured by himself. No. 5, a two-row patent drop ridge-drill upon rollers, invented and manufactured by himself. No. 6, a two-row patent drop ridge-drill upon wheels, invented and manufactured by himself. No. 7, a two-row ridge-drill upon rollers, invented and manufactured by himself. No. 8, a one-row ridge-drill for turnip seed and bones, or any other pulverized manure, invented and manufactured by himself. No. 9, new implement, invented and manufactured by himself. No. 10, a spike-roller or clod-crusher, in two parts, invented and manufactured by himself. No. 11, a rough roll for wheat or clod crushing, invented and manufactured by himself. No. 12, a land roll, in three parts, invented and manufactured by himself. No. 13, a cake-crusher, invented and manufactured by himself. No. 14, a cake-crusher, invented and manufactured by himself. No. 15, a two-row drill-presser, invented and manufactured by himself. No. 16, a two-row drill-presser, invented and manufactured by himself. No. 17, a two-row land-presser, invented and manufactured by himself. No. 18, a ten-coulter corn, seed, and manure drill, invented and manufactured by himself. No. 19, a seven-coulter corn, seed, and manure drill, with rotary stirrer and swing slide, invented and manufactured by himself. Model of a thrashing machine. Model of a manure drill. Model of a corn drill. Working model of a ridge drop drill.

STAND No. 27.—Mr. Richard Parkinson, of Muskham Villa, near Newark, Nottinghamshire.

ARTICLES—No. 1, (new implement), a ridging plough, invented by Richard Parkinson, of Knapthorpe, manufactured by Thomas Pearson, of Ossington, near Newark, Nottinghamshire. No. 2, a horse hoe, invented and manufactured by John Taylor, of North Muskham, near Newark.

STAND No. 28.—Mr. George Coates, of Richmond, Yorkshire.

ARTICLES—No. 1, a single horse cart, invented and manufactured by himself. No. 2, a harvest cart, invented and manufactured by himself. No. 3, an

improved single horse cart, with 4½-inch wheel, well adapted for road or field, to lead coals, lime, marketing, and with shelvings attached to lead hay, or corn in the straw, invented and manufactured by himself. No. 4, a light swing plough, adapted to light land, invented and manufactured by himself. No. 5, a strong swing plough, adapted to strong land, invented and manufactured by himself.

STAND No. 29.—Mr. George Abbey, of Silsworth Lodge, Daventry.

ARTICLE — No. 1 (new implement), a single-horse lever harrow, invented and manufactured by himself.

STAND No. 30.—Mr. William Abraham, of Barnetby le Wold, near Brigg, Lincolnshire.

ARTICLE — No. 1, combined drag harrow and scarifier, invented and manufactured by Joseph Miller, of Barnetby le Wold.

STAND No. 31.—Mr. John Bruce, of Teddington, near Stratford-on-Avon.

ARTICLES—No. 1, (new implement), a plough with subsoil apparatus attached, invented and manufactured by himself. No. 2, (new implement), a scarifier, invented by Mr. Webb, of Teddington, manufactured and improved by Mr. John Bruce, of Teddington.

STAND No. 32.—Mr. John Harford, of Hathern, near Loughborough.

ARTICLES—No. 1, a single plough, with one wheel, invented and manufactured by himself. No. 2, set of harrows with iron slatts screwed, invented and manufactured by himself.

STAND No. 33.—Mr. William Hardy, of Kingston, near Kegworth.

ARTICLE—No. 1, (new implement), an improved cultivator, invented and manufactured by himself.

STAND No. 34.—Mr. Thomas Hunter, of Ulceby, near Barrow-on-Humber.

ARTICLES—No. 1, a drill for corn and turnips either with compost, or manure, or without, invented and manufactured by himself. No. 2, a drill for drilling turnips on ridges, with compost or manure, invented and manufactured by himself. No. 3, a drill for drilling grass seeds, clover, &c., with or without rye-grass, invented and manufactured by himself.

STAND No. 35.—Mr. Thomas Johnson, of Leicester.

ARTICLES—No. 1, (new implement), a draining plough, invented and manufactured by himself. No. 2, a turf and stubble paring plough, invented by Thomas Glover, of Thrussington, manufactured by Thomas Johnson, of Leicester. No. 3, a chaff machine, invented and manufactured by himself.

STAND No. 36.—Mr. John Meakin, of Spondon, near Derby.

ARTICLE No. 1, (new implement), a plough and drill combined, invented and manufactured by himself.

STAND No. 37.—Mr. Edward Moody, of Maiden Bradley, near Mere, Wiltshire.

ARTICLE—No. 1, root grater, invented and manufactured by himself.

STAND No. 38.—Mr. John Osbiston, of Turnditch, near Belper, Derbyshire.

ARTICLE—No. 1, Double spike roller or clod crusher, invented and manufactured by himself.

STAND No. 39.—Messrs. Richard Garrett, of Leiston Works, Saxmundham, Suffolk.

ARTICLES—No. 1, drill for general purposes, invented by Richard Garrett, of Leiston Works, manufactured by them. No. 2, drill for turnip, mangel wurzel, and other seeds with manure, invented and manufactured by them. No. 3, drill for turnip, mangel wurzel, and other seeds with manure, for ridge work only, invented and manufactured by them. No. 4, ten coulter lever corn and seed drill, invented and manufactured by them. No. 5, drill for sowing clover and other seeds, and drilling turnips and mangel wurzel, invented and manufactured by them. No. 6, four horse power thrashing machine, invented and manufactured by them. No. 7, a thrashing power for wheat, without injuring the straw, invented and manufactured by them. No. 8, patent horse hoe, invented, manufactured, and patented by them. No. 9, patent horse hoe, invented and manufactured by them. Same principle as No. 8, but different size, and set for another purpose. No. 10, bean, pea, malt, and barley crusher, for horse work, invented and manufactured by them. No. 11, bean, pea, malt, and barley crushers, for hand work, manufactured by them. Same in principle as No. 10. No. 12, chaff cutting engine, for horse power, invented and manufactured by them. No. 13, chaff cutter for hand or horse work, invented and manufactured by them. No. 14, chaff cutter, hand work, manufactured by them. No. 15, rape and linseed cake breaker, invented and manufactured by them. No. 16, linseed cake breaker, invented and manufactured by them. No. 17, lever drag rake, with patented improvements, invented and manufactured by them. No. 18, patent lever drag rake for hay and couch grass, invented and manufactured by them. Same principle as No. 17. No. 19, hay making machine, manufactured by them. For strewing grass by a moveable and revolving barrel, with shafts and wheels for horse work. No. 20, clod crusher, with patented improvements, invented and manufactured by them. No. 21, turnip cutter, invented and manufactured by them. No. 22, barley aveler, or hummelling machine, invented and manufactured by them. No. 23, one or two horse power machinery, invented and manufactured by them. No. 24, horse power chaff cutter, invented and manufactured by them.

STAND No. 40.—Mr. James Smith, of No. 27, Southgate-street, Gloucester.

ARTICLES—No. 1, chaff machine, fitted in an iron frame, invented and manufactured by himself. No. 2, chaff machine and corn crusher combined, invented by J. Smith and Charles Montague, of Gloucester, manufactured by J. Smith. No. 3, small chaff machine and corn crusher, in iron frame, invented by J. Smith and Charles Montague, of Gloucester, manufactured by J. Smith. No. 4, corn crusher, invented and manufactured by James Smith. No. 5, another corn crusher, invented and manufactured by J. Smith. No. 6, self-acting cheese press, invented and manufactured by J. Smith. No. 7, a stand of models (various), belonging to J. Smith.

STAND No. 41.—Mr. George Parsons, of West Lambrook, near South Petherton, Somerset.

ARTICLE—No. 1, (new implement,) a stack covering to supersede thatching, invented by George Parsons, of West Lambrook, manufactured by his own carpenter and smith.

STAND No. 42.—Mr. George Smith, of Blythbury, near Shiffnall.

ARTICLE—No. 1, bone-dust (or compost) turnip-

drill, invented by him, and manufactured by Rowley and Page, (carpenter and blacksmith,) of Madeley and Shiffnall.

Stand No. 43.—Mr. James Spencer, of Hopton, near Wirksworth, Derbyshire.

Articles—No. 1, chaff-cutter, (large size) improved and manufactured by himself. No. 2, chaff-cutter, (smaller size,) improved and manufactured by himself. No. 3, oat and bean mill, improved and manufactured by himself.

Stand No. 44.—Mr. Richard Stratton, of Clarke-street, Bristol.

Articles—No. 1, Scotch farm cart, with the paten breaks—the breaks invented by Mr. Charles Thatcher, of Midsummer Norton, manufactured by Richard Stratton, of Bristol. No. 2, Scotch farm spring cart, with the patent breaks—the breaks invented by Mr. Charles Thatcher, of Midsummer Norton, manufactured by Richard Stratton, Bristol. No. 3, spring waggon, with the patent breaks—the breaks invented by Mr. Charles Thatcher, of Midsummer Norton, manufactured by Richard Stratton, of Bristol. No. 4, light spring waggon for general purposes, with double shafts, to go single if required—improved and manufactured by Richard Stratton, of Bristol. No. 5, a light open rail harvesting and road waggon, on the equirotal cross-lock principle, lately improved, with new oil-box iron stocks, invented and manufactured by himself. No. 6, Gloucester spring farm waggon, improved and manufactured by himself. No. 7, a Gloucestershire farm waggon with narrow wheels, improved and manufactured by himself. No. 8, a strong one-horse tipping waggon, with 2¼ inch wheels and spring regulating sword, invented and manufactured by himself. No. 9, a two-horse tipping waggon with double shafts, to go single if required, with 3½ inch wheels, and spring-regulating sword, invented and manufactured by himself. These tipping waggons have been very much improved since the Bristol meeting. No. 10, a light single-horse manure cart, with bent shafts, spring ketch, iron axle and 3½ inch wheels, invented and manufactured by himself. No. 11, open-railed spring cart, invented and manufactured by himself. No. 12, light single-horse agricultural cart, with bent shafts, tipping sword, hay ladders for harvesting, and 3 inch wheels, invented and manufactured by himself. No. 13, agricultural cart, of a similar construction to No. 12, but stronger, and with 4½ inch wheels, invented and manufactured by himself. No. 14, strong agriculiural cart, invented and manufactured by himself. No. 15, Hannam's skeleton harvest cart, invented by J. Hannam, Esq., of Burcot, Oxfordshire, manufactured by Richard Stratton of Bristol. This is constructed according to the description given by the inventor in the Journal of the Royal Agricultural Society of England, vol. 2, part 1, page 73. No. 16, low manure cart, with cranked axle, invented and manufactured by himself. No. 17, a liquid manure cart, on the Flemish principle, with a lever valve, delivery pipe, and 4 inch wheels, improved and manufactured by himself. No. 18, a light Cobourg market-cart with springs and mail axle, with cushions, lamps, &c., improved and manufactured by himself. No. 19, an improved hay-making machine with double or reverse action, by which the grass may be violently shaken in the process of tedding, or merely scuffled and lightly turned in the after processes, invented and manufactured by himself. No. 20, new implement, viz., a revolving hay-collecting machine and horse-rake, which instantly rids itself of its charge or load without any exertion on the part of the driver. It is made of wrought iron and is well adapted for collecting cane trash in the sugar colonies, invented and manufactured by himself. No. 21, iron Scotch plough for two horses abreast, manufactured by himself. No. 22, a wrought-iron sub-soil plough, suitable for two or three horses, invented by J. Smith, Esq., of Deanston, manufactured by Richard Stratton of Bristol. No. 23, ridging plough, improved and manufactured by himself. No. 24, ridging plough, similar to No. 23, but stronger and with five tines of each description, improved and manufactured by himself. No. 25, ridging plough, manufactured by himself. No. 26, a light spring open market cart with mail axle, improved and manufactured by himself. No. 27, Hall's new patent scarifier, invented and manufactured by Mr. Joseph Hall, of Cambridge. No. 28, new implement, viz. a revolving cooch-rake, invented and manufactured by himself. No. 29, a light parallel expanding iron horse-hoe, invented and manufactured by himself. No. 30, pair of Iron Rhomboidal harrows, manufactured by himself. No. 31, premier lever cheese-press, invented by Mr. Gingell of Bristol, manufactured by appointment by R. Stratton. No. 32, a double cheese-press, on the same principle as No. 31, fitted with a portable curd mill, invented by Mr. Gingell of Bristol, manufactured by R. Stratton. No. 33, improved box butter-churn, improved and manufactured by himself. Nos. 34, 35, 36, improved box butter-churns, same description as No. 33, but larger, to make from ten to twenty pounds of butter, improved and manufactured by himself. No. 37, winnowing machine, a strong useful machine, simple in its parts and in its mode of operation, manufactured by himself. No. 38, Boston corn-blower, manufactured by himself. No. 39, wrought-iron wheelbarrow, navy pattern, invented and manufactured by himself. No. 40, wrought-iron wheelbarrow, garden pattern, invented and manufactured by himself. No. 41, sheet-iron bucket, manufactured by himself. No. 42, sheet-iron bucket, similar to No. 41, but ornamentally painted and varnished, manufactured by himself. No. 43, double-barrel iron field-roller, manufactured by himself. No. 44, chaff engine, improved and manufactured by himself. No. 45, chaff engine, improved and manufactured by himself. No. 46, a light spring cart, manufactured by himself, calculated to carry from six to eight sacks of corn or flour. Its construction renders it well adapted for conveying live sheep, calves, pigs, &c. Nos. 47 and 48, two pair of 2¼ inch faggoted and case-hardened iron axle arms fitted to hard metal iron naithers or stocks, improved and manufactured by himself. No. 49, pair of oil box iron stocks, with axle arms, invented and manufactured by himself. No. 50, dibbling machine, invented by William Miles, Esq. M.P., of Kingsweston, Gloucestershire, manufactured by R. Stratton. No. 51, a nineteen gallon cask, mounted on a truck, for conveying milk, &c., invented and manufactured by himself. No. 52, stand of models. No. 53 (new implement), a portable double screen, for cleaning and sorting small stones used in draining, invented by Mr. Evan W. David, of Radyr Court, manufactured by Reuben Lewis, of Whitchurch. No. 54, iron harrow, invented by Mr. Evan W. David, of Radyr Court, manufactured by R. Lewis, of Whitchurch. No. 55, iron gate, invented by Mr. Evan W. David, of Radyr Court, manufactured by Edward Coslett, of Radyr.

Part of Stand 44.—Mr. Charles Thatcher, of Midsomer Norton, near Bath, Somersetshire.

Added to Article No. 1, on Mr. Stratton's Stand.

Article—No. 1, patent self-acting and self-regulating drag or break, for the wheels of carts particularly, and of carriages generally, invented by him, and manufactured by R. Stratton, of Bristol, and others of the patentee's licensees.

Stand No. 45.—Mr. Wm. Wayte, of Basford, near Nottingham.

Articles — No. 1 (new implement), an improved presser drill, for sowing corn, turnips, manure, &c., invented and manufactured by himself. No. 2 (new implement), a crop renovator and drill for sowing seeds, manure, &c., invented and manufactured by himself. No. 3 (new implement), a clod and soil crusher, or land cultivator, invented and manufactured by himself. No. 4 (new implement), a broad-share plough, for paring turf, stubbles, &c., invented and manufactured by himself.

Stand No. 46.—Mr. Joseph Thackrey, of Doncaster.

Article—No. 1 (new implement), a manual power peg thrashing machine, invented by Joseph Atkinson, of Braham Hall, manufactured by J. Thackrey.

Stand No. 47.—George Winfield, of Stanton-by-Dale, Ilkeston, Derbyshire.

Article—No. 1, a wheel chaff-cutter by toothand pinion, invented and manufactured by himself.

Stand No. 48.—Mr. Charles Wright, of Idridgehay, near Wirksworth, Derbyshire.

Articles—No. 1, set of iron harrows, invented and manufactured by himself. No. 2, chaff cutter, invented and manufactured by himself. No. 3, (new implement), a cultivator with hedgehog rollers, invented and manufactured by himself.

Stand No. 49.—Mr. Hugh Carson, of Warminster, Wiltshire.

Articles—No. 1 (new implement), a sub-soil plough, invented and manufactured by himself. No. 2 (new implement), a lever plough, invented and manufactured by himself.

Stand No. 50.—Mrs. Cartmell, of Liverpool.

Articles—No. 1, four-knife hay and straw cutter, invented by Cartmell and Co., of Liverpool, manufactured by Mary Cartmell, of Liverpool, late of Doncaster. No. 2, three-knife hay and straw cutter, invented and manufactured by herself. No. 3, oil-cake crusher, invented and manufactured by herself. No. 4, grain bruiser, invented by Cartmell and Co., of Liverpool, manufactured by her. No. 5, grain bruiser, invented by Cartmell and Co., of Liverpool, manufactured by her. No. 6, single swing plough, invented and manufactured by herself.

Stand No. 51.—Mr. Moses Cartwright, of Stanton House, near Burton-on-Trent.

Articles—No. 1 (new implement), turn-up waggon, invented by him, manufactured by his own workmen, Benjamin Atkins and Thomas Stretton. No. 2, single plough, invented by him, manufactured by Benjamin Atkins and servants of Stanton.

Stand No. 52.—Mr. James Coultas, of Grantham, Lincolnshire.

Articles—No. 1, double box 12-coultered drill, invented and manufactured by himself. No. 2, two rowed ridge drill, invented and manufactured by himself. No. 3, winnowing machine, invented and manufactured by himself.

Stand No. 53.—Mr. Edward D. Falkner, of Fairfield, near Liverpool.

Articles—No. 1, two horse three wheeled plough, invented by Edward Brayton, of Dykesfield, near Carlisle, Cumberland, and manufactured by himself. No. 2, two horse swing plough, invented by Edward Brayton, and manufactured by himself. No. 3, two horse swing plough, of the Lothian construction, manufactured by Edward Brayton. No. 4, two horse two wheeled plough, similar to Wilkie's, manufactured by Edward Brayton. No. 5, double mould-board plough, invented by Edward Brayton, and manufactured by himself. No. 6, one horse horse-hoe, invented by Edward Brayton, and manufactured by himself. No. 7, pair of arched or bow harrows, for drill husbandry, manufactured by Edward Brayton.

Stand No. 54.—Mr. James Gardner, of Banbury, near Oxford.

Articles—Nos. 1, 2 and 3, chaff-cutters, invented and manufactured by himself. No. 4, (new implement), turnip cutter, invented and manufactured by himself.

Stand, No. 55.—Mr. Joseph C. Grant, of Stamford, Lincolnshire.

Articles—No. 1, patent lever horse-rake, invented and manufactured by himself. No. 2, patent lever horse-rake, invented and manufactured by himself. No. 3, patent steerage lever horse-hoe, invented and manufactured by himself. No. 4, horse-hoe and moulding-plough, invented and manufactured by himself. No. 5, improved hay-spreading or tedding machine, improved and manufactured by himself. No. 6, set of harrows, invented and manufactured by himself. No. 7, turnip and manure drill, improved and manufactured by himself. No. 8, small drill for gardening purposes, invented and manufactured by himself.

Stand No. 56.—Mr. Thomas Hatfield, of Rugeley, Staffordshire.

Articles—No. 1, improved revolving harrow, invented by Mr. John Bright, of Teddesley, manufactured by T. Hatfield. No. 2, iron plough, adapted to heavy land, invented and manufactured by himself.

Stand No. 57.—Mr. John Howard, of Bedford.

Articles—No. 1, patent iron plough, with two wheels, invented by William Armstrong, of Hawnes, Bedfordshire, and James Howard, of Bedford, manufactured by John Howard. No. 2, patent iron plough, with two wheels, invented by Wm. Armstrong, of Hawnes, and James Howard, of Bedford, manufactured by John Howard. No. 3, patent iron plough, with three wheels, invented by Wm. Armstrong of Hawnes, and James Howard of Bedford, manufactured by John Howard. No. 4, patent iron swing plough, invented by Wm. Armstrong of Hawnes, and James Howard of Bedford, manufactured by John Howard. No. 5, patent plough with two wheels, invented by Wm. Armstrong of Hawnes, manufactured by John Howard. No. 6, patent plough with two wheels, invented by Wm. Armstrong, and manufactured by John Howard. No. 7, patent swing plough, invented by Wm. Armstrong, manufactured by John Howard. No. 8, set of patent four-beam iron harrows, invented by Wm. Armstrong, manufactured by John Howard. No. 9,

set of patent four-beam iron harrows, invented by Wm. Armstrong, manufactured by John Howard. No. 10, set of patent iron harrows, invented by Wm. Armstrong, manufactured by John Howard. No. 11, set of patent five-beam iron harrows, invented by Wm. Armstrong, manufactured by John Howard. No. 12, pair of patent drag-harrows, invented by Wm. Armstrong, manufactured by John Howard. No. 13, improved wrought-iron scuffler or scarifier, invented by Wm. Armstrong, manufactured by John Howard. No. 14, improved wrought-iron turnip and corn hoe, invented by Mr. Wm. Manning, of Elstow, near Bedford, and manufactured by John Howard. No. 15, improved chaff-machine, invented by James Howard, manufactured by John Howard. No. 16, improved turnip-cutter, invented principally by Wm. Armstrong, manufactured by John Howard. No. 17, a few pairs of patent hames, invented by W. Armstrong, manufactured by John Howard.

STAND No. 58.—Messrs. Samuel and Richard Jackson, of Moorgreen, near Nottingham.

ARTICLE—No. 1, (new implement), a winnowing machine, invented and manufactured by themselves.

STAND No. 59.—Mr. George Kilby, of Queniborough, near Leicester.

ARTICLES—No. 1, subsoil plough, invented by G. Kilby, manufactured by Samuel Needham of Queniborough. No. 2, plough, improved by G. Kilby, manufactured by — Golding of Leicester. No. 3, winnowing machine, invented and manufactured by Abraham Pridmore of Thorpe Satchville, near Melton-Mowbray, Leicestershire.

STAND No. 60.—Mr. James Mooreroft, of Bratby, near Burton-on-Trent.

ARTICLE—No. 1, (new implement), fodder preserver, invented and manufactured by himself.

STAND No. 61. — Mr. William Oliver, of Long Buckley, near Daventry.

ARTICLE—No. 1, winnowing machine for loose grain and seeds, invented by the late John Cooch of Harleston, manufactured by Wm. Oliver.

STAND No. 62.—Messrs. Charles and W. Philips, of Chipping Norton.

ARTICLES — No. 1, turnip-cutter, invented by Charles Philips, manufactured by Charles and William Philips, and Co. No. 2 (new implement), for cutting turnips, invented by Charles Philips, manufactured by Charles and William Philips and Co.

STAND No. 63.—Mr. James Richmond, of Salford, near Manchester.

ARTICLES—No. 1, patent chaff-machine, invented by J. L. Worth, of America, manufactured by James Richmond. No. 2, Chaff-machine, invented and manufactured by himself. No. 3, small mill for kibbling beans, oats, &c., invented by himself. No. 4, large kibbling-mill, invented and manufactured by himself. No. 5, large oat and malt-mill, invented and manufactured by himself. No. 6, an improved steam apparatus for roots, &c., invented and manufactured by himself.

STAND No. 64.—Mr. Joseph Scurrah, of Crakehall, near Bertale, Yorkshire.

ARTICLES — No. 1, Scurrah's deep following-plough, invented and manufactured by himself. No. 2, Scotch swing-plough (iron), for heavy land, improved and manufactured by himself. No. 3, double-wheeled iron plough, for ploughing clover ley, invented and manufactured by himself. No. 4, iron plough, double mould-board with one wheel, for opening and closing furrows for potatoes and turnips, invented and manufactured by himself. No. 5, iron plough, with one wheel for light land, invented and manufactured by himself. No. 6, iron scarifier for breaking up fallows and paring stubbles, invented and manufactured by himself. No. 7, iron horse-hoe with lever rake attached, for cleaning turnips and potatoes, invented and manufactured by himself. No. 8, iron horse-hoe, with double mould-board attached, for potatoes, turnips, and beans, invented and manufactured by himself. No. 9, iron horse-hoe with circular harrow attached, for hoeing beans, turnips, and potatoes, invented and manufactured by himself. No. 10, pair of iron harrows, adapted for harrowing potato ridges, invented and manufactured by himself.

STAND No. 65.—Mr. James Smyth, of Peasenhall, near Yoxford.

ARTICLES—No. 1, (new implement) drill to deposit manure, and turnip or mangel-wurzel seed on ridges or broad work, invented by James Smyth, jun., and manufactured by him. No. 2, Drill for general purposes, invented by Messrs. Smyth and son, and manufactured by James Smyth, jun. No. 3, nine coulter corn drill, invented by James Smyth, and manufactured by himself. No. 4, corn and seed drill, invented by Messrs. Smyth and son, manufactured by James Smyth, jun. No. 5, (new implement) seed barrow for sowing small seeds accurately by cups and cog wheels, invented and manufactured by James Smyth, jun. No. 6, three models of corn seed and manure drills.

STAND No. 66.—Messrs. J. R. and A. Ransome, of Ipswich.

ARTICLES—No. 1, Biddell's scarifier, invented by Arthur Biddell, of Playford, manufactured by J. R. and A. Ransome. No. 2, Biddell's extirpating harrow, invented Arthur Biddell, manufactured by J. R. and A. Ransome. No. 3, (new implement) Biddell's patent scarifier constructed of wrought iron, invented by Arthur Biddell, manufactured by J. R. and A. Ransome. No. 4, (new implement) patent portable thrashing machine for four horses, invented and manufactured by themselves. No. 5, Ransome's portable machine for four horses, invented by a Scottish workman in the employ of R. Ransome, in 1806. Improved and manufactured by themselves. No. 6, (new implement) a band thrashing machine, accompanied by a horse power for driving either a similar implement, or a chaff engine, invented and manufactured by themselves. No. 7, Ransome's patent chaff engine, marked A, invented and manufactured by themselves. No. 8, (new implement) Ransome's patent chaff engine, marked B, invented by Charles May, of the firm of J. R. and A. Ransome, and manufactured by themselves. No. 9, (new implement) Ransome's patent chaff engine, marked C, invented by Charles May, of the firm of J. R. and A. Ransome, and manufactured by themselves. No. 10, (new implement) Ransome's patent chaff engine, marked D, invented by Charles May, of their firm, manufactured by themselves. No. 11, chaff cutting engine, marked No. 6, invented by Lester, of Paddington, manufactured by themselves. No. 12, chaff cutting engine, marked No. 8, believed to be invented by the late ——— Lester, engineer, of Paddington, manufactured by themselves. No. 13, chaff cutting engine marked No. 13, invented by the late — Heppenstall'

of Doncaster, manufactured by J. R. and A. Ransome. No. 14, chaff cutting engine marked No. 14, invented by — Heppenstall, of Doncaster, manufactured by J. R. and A. Ransome. No. 15, (new implement) set of horse work, for applying the power of one or two horses, invented and manufactured by themselves. No. 16, (new implement) set of small horse work, invented and manufactured by themselves. No. 17, (new implement) a patent chaff engine, marked D, invented by Charles May, of their firm, manufactured by themselves. No. 18, (new implement in the mode of adjustment) spiral mill for bruising grain, for horse power, improved and manufactured by themselves. No. 19, (new implement) a spiral mill for beans only, improved and manufactured by themselves. Similar to No. 18, but rollers adapted for beans only. No. 20, (new implement) a spiral mill for bruising grain, for hand power, improved and manufactured by themselves. Similar to No. 18, but smaller. No. 21, (new implement) a spiral mill for grinding beans only, improved and manufactured by themselves. Similar to No. 19, for beans only, but smaller. No. 22, (new implement) a patent mill for grinding and dressing wheat to be made into flour, invented by Luke Herbert, of Dover, manufactured by themselves. No. 23, (new implement) a machine for grinding oil cake, either for cattle or manure, invented and manufactured by themselves. No. 24, (new implement) a gathering rake for corn crops, [patent] invented by Arthur Biddell, of Playford, manufactured by themselves. No. 25, patent machine for making tiles, invented by Robert Beart, of Godmanchester, manufactured by themselves. No. 26, (new implement) a patent machine for making tiles and bricks, invented by R. Beart, of Godmanchester, with additions by A. Hickney, of Redgmont, manufactured by themselves. No. 27, (new implement) Ransome's patent plough, marked Y.D., with one wheel, invented and manufactured by themselves. No. 28, (new implement) Ransome's patent plough marked Y.D., fitted as a swing plough adapted for two or four horses, invented and manufactured by themselves. No. 29, (new implement) Ransome's patent plough marked Y.D., invented and manufactured by themselves. Similar to No. 28, but with one wheel at head. No. 30, Ransome's patent plough marked Y.D., invented and manufactured by themselves. Similar to No. 28, with two wheels at head. No. 31, Ransome's patent plough, marked Y.D., invented and manufactured by themselves. Similar to No. 28, with two wheels at head, but with mould board adapted for heavy land. No. 32, Ransome's patent plough, marked Y D, invented and manufactured by themselves—similar to No. 28, with two wheels at head, but fitted up with Pycroft's adjusting mould-board. No. 33, (new implement), Ransomes' patent plough, marked Y D, invented and manufactured by themselves — the same plough as No. 32, exhibiting the position of the mould-board, when adapted for deep ploughing. No. 34, (new implement), Ransomes' patent plough, marked Y E, fitted as a swing plough, invented and manufactured by themselves. No. 35, (new implement), Ransomes' patent plough, marked Y E, invented and manufactured by themselves, similar to No. 34, but with one wheel at head. No. 36, (new implement), Ransomes' patent plough, marked Y E, invented and manufactured by themselves, similar to No. 34, but with two wheels at head. No. 37, (new implement), Ransomes' patent plough, marked Y F, swing similar to Y E, but with single handle, invented and manufactured by themselves. No. 38, (new implement), Ransomes' patent plough, marked Y H, similar to Y E, but with moveable nose piece, invented and manufactured by themselves. No. 39, (new implement), Ransomes' patent plough, marked Y H, invented and manufactured by themselves, similar to No. 38, but fitted with one wheel at head. No. 40, (new implement), Ransomes' patent plough, marked Y H, invented and manufactured by themselves, similar to No. 38, but fitted with two wheels at head. No. 41, (new implement), Ransomes' patent plough, marked Y G, invented and manufactured by themselves. This plough is formed to answer the purposes of the Kent turn-rest plough. No. 42, (new implement), Ransomes' patent plough, marked Y, Rackheath No. 1, invented by Sir Edward Stracey, Rackheath, manufactured by J. R. and A. Ransome. No. 43, (new implement), Ransomes' patent plough, marked Y, Rackheath, invented by Sir Edward Stracey, manufactured by J. R. and A. Ransome. Plough similar to the last, but adapted to be used with Kent gallows. No. 44, Ransomes' patent plough, marked Y U L, fitted as a double tom, invented by John Clarke, Long Sutton, manufactured by J. R. and A. Ransome. No. 45, the same, fitted as a moulding-plough. No. 46, the same, fitted as a horse-hoe. No. 47, the same, fitted as a skeleton plough. No. 48, (new implement), Ransomes' patent plough, marked J A, fitted with two wheels, invented and manufactured by themselves. No. 49, Ransomes' iron plough, marked S C, invented by Wilkie and others, of Playford, near Ipswich, manufactured by J. R. and A. Ransome. Scotch plough fitted with Ransomes' irons. No. 50, Ransome's Rutland plough, marked N L, with two wheels at head, invented by R. W. Baker, of Cottesmore, manufactured by J. R. and A. Ransome. No. 51, Ransomes' plough for one horse with one wheel at head, marked F F, invented and manufactured by themselves. No. 52, Ransomes' plough, marked F F, invented and manufactured by themselves, similar to No. 51, with two wheels at head. No. 53, Ransomes' plough, marked F S, invented and manufactured by themselves—similar to No. 52, but higher in the beam. No. 54, Ransomes' plough, marked F F, invented and manufactured by themselves—with one wheel and lever, to enable the ploughman to regulate the depth at which the plough may be required to work without leaving the handles. No. 55, Ransomes' double-furrow plough, invented by Lord Somerville, manufactured by J. R. and A. Ransome. No. 56, Ransomes' improved Kent plough, marked W S R, invented by W. Smart, of Rainham, manufactured by J. R. and A. Ransome. No. 57, new implement, set of Ransomes' patent iron-trussed whippletrees and pomeltrees, invented and manufactured by themselves. No. 58, basket of specimens of case hardened metal, invented and manufactured by themselves.

STAND No. 67.—The Rev. Thomas Sewill, of Nether Broughton, near Melton Mowbray.

ARTICLE—No. 1, gig-cart for general purposes, under duty, invented and manufactured by Thomas Dutt, coach-maker, of Bungay, Suffolk.

STAND No. 68.—Mr. Samuel Taylor, of Whittington, near Stoke Ferry, Norfolk.

ARTICLES—No. 1 to 10, various descriptions of rabbit, sheep, and garden fences.

STAND No. 69.—Mr. Thomas Teago, of Peasenhall, near Yoxford, Suffolk.

ARTICLE—No. 1, (new implement), a drill for depositing pulverized manure with common seeds, invented and manufactured by himself.

STAND No. 70.—Mr. Thomas Taylor, of Banbury, Oxon.

ARTICLES—No. 1, patent inflated saddle, with moveable pannels, invented and manufactured by himself. No. 2, registered renovating and safety bit, for riding and driving bridles, invented by himself. No. 3, improved hame for agricultural purposes, invented by himself.

STAND No. 71.—Mr. Joshua Cooch, of Harleston, near Northampton.

ARTICLES—No. 1, patent corn cleaning or winnowing machine, invented by John Cooch, manufactured by Joshua Cooch. No. 2, new implement for hummelling barley, invented and manufactured by himself. No. 3, improved iron plough, invented and manufactured by himself.

STAND No. 72.—Mr. Abraham Vickers, of Manchester.

ARTICLES—No. 1 (new implement) a machine for cutting hay or straw, and crushing oats or beans at the same time, invented and manufactured by himself. No. 2, improved chaff-cutter, invented and manufactured by himself. No. 3, improved cheese press, invented and manufactured by himself. No. 4, churn and churning apparatus, invented and manufactured by himself. No. 5, portable corn mill, invented and manufactured by himself.

STAND No. 73.—Mr. Thomas Wedlake, of Hornchurch, near Romford, Essex.

ARTICLES—No. 1, patent lever adjusting plough, invented and manufactured by himself. No. 2, patent lever adjusting plough, invented and manufactured by himself. No. 3, newly improved haymaking machine, invented and manufactured by himself. No. 4, newly invented turnip-cutter, invented and manufactured by himself. No. 5, chaff-cutter, invented and manufactured by himself. No. 6, oil-cake breaker, invented and manufactured by himself. No. 7, subsoil plough, manufactured by himself. No. 8, improved turnip drill, to sow on bouts, manufactured by himself. No. 9, broad-cast seed machine, 8ft. 6in., manufactured by himself. No. 10, three-hoed scarifier or horse-hoe, manufactured by himself. No. 11, small chaff-cutter, manufactured by himself. No. 12, barley-hailer, manufactured by himself.

STAND No. 74.—Mr. A. White, of Old Sleaford, near New Sleaford, Lincolnshire.

ARTICLES—No. 1, corn delivering carriage on springs, for general purposes of road and field, invented and manufactured by himself. No. 2, land roller, invented and manufactured by himself.

STAND No. 75.—Mr. Wm. Cambridge, of Market-Lavington, near Devizes.

ARTICLES—No. 1, portable steam engine, improved and manufactured by himself. No. 2, horse portable thrashing machine, invented and manufactured by himself. No. 3, new implement, wheel roller, invented and manufactured by himself. No. 4, new implement, set of harrows and drags, invented and manufactured by himself. No. 5, horse rake, improved and manufactured by himself. No. 6, chaff cutter, improved and manufactured by himself. No. 7, winnowing machine, improved and manufactured by himself.

STAND No. 76.—Mr. H. Chamberlain, of Desford, near Leicester.

ARTICLE—No. 1, scarifier or scuffler, invented by H. Chamberlain, of Desford, manufactured by Charles Wykes and Michael Frith, of Ratby and Desford.

STAND No. 77.—Mr. Daniel Coombes, of Shipton, near Burford, Oxon.

ARTICLE—No. 1, agricultural carriage, invented and manufactured by himself.

STAND No. 78.—Mr. Alexander Dean, of Birmingham.

ARTICLES—No. 1, four horse steam engine on wheels, with shafts complete for travelling, invented and manufactured by himself. No. 2, four horse horizontal steam engine, complete for fixing, invented and manufactured by himself. No. 3, two horse steam engine on wheels, with shafts complete for travelling, invented and manufactured by himself. No, 4, two horse perpendicular steam engine, complete for fixing, invented and manufactured by himself. No. 5, new implement, patent portable steam flour mill and agricultural steam engine (private mark, No. 315), invented and manufactured by himself. No. 6, patent portable cottager's hand mill (private mark No. 21), invented and manufactured by himself. No. 7, patent portable hand mill (No. 2), for grinding and dressing wheat, rye, &c., at one operation, and grinding barley, rice, &c., invented and manufactured by himself. No. 8, patent portable hand corn mill, with iron dressing machine, for one or two persons (private mark No. 14), invented and manufactured by himself. No. 9, patent portable corn mill, one horse power (No. 81, private mark), invented and manufactured by himself. No. 10, (new implement), newly invented rough meal mill, hand power (No. 125, private mark), invented and manufactured by himself. No. 11, (new implement), newly invented rough meal mill, for horse or engine power (No. 126, private mark), invented and manufactured by himself. No. 12, portable corn mill, with French burr stones and dressing machine attached, one horse power (No. 351 private mark), invented and manufactured by himself. No. 13, portable hand corn mill, with French burr stones and hand-gear, to be worked by two or four men (No. 118, private mark), invented and manufactured by himself. No. 14, portable hand corn mill, with French burr stones (No. 115, private mark), invented and manufactured by himself. Nos. 15 and 16, portable corn mills, with French burr stones, for horse or engine power (Nos. 119 and 353 private marks), invented and manufactured by himself. No. 17, portable mill, with grey stones, for grinding barley, oats, beans, peas, &c., suitable for two men, and for horse or engine power (No. 104, private marks), invented and manufactured by himself. No. 18, portable double corn mill, with one pair of French burr stones and one pair of grey stones, for grinding wheat, barley, beans, oats, peas, &c. (No. 140, private mark), invented and manufactured by himself. No. 19, improved hand corn crusher, for crushing oats, malt, beans, Indian corn, and breaking or crushing barley, &c. (No. 44, private mark), invented and manufactured by himself. No. 20, corn crusher, similar to the above, with extra speeds (private mark No. 45), invented and manufactured by himself. No. 21, corn crusher similar to the above, for two men (No. 48, private mark) invented and manufactured by himself. No. 22, corn crusher,

similar to the above, for two men, large size (No. 53, private mark), invented and manufactured by himself. No. 23, corn crusher, for horse or engine power (No. 49, private mark), invented and manufactured by himself. No. 24, corn crusher, similar to the above, large size (private mark No. 54). No. 25, post bean splitting mill, of superior make and workmanship (private mark No. 37), invented and manufactured by himself. Nos. 26, 27, 28, 29 and 30, bean splitting mills, suitable for one or two men, or for horse or engine power, invented and manufactured by himself. They are manufactured in a substantial manner, with turned spindles, and brass journals, and will be found extremely useful mills. Nos. 31, 32, 33 and 34, (new implements), bean splitters and corn crushers combined, different sizes, invented and manufactured by himself. Nos. 35 and 36, linseed crushers, for one and two men (Nos. 65 and 66, private marks), invented and manufactured by himself. Nos. 37 and 43, malt mills for rolling or bruising malt, for one or two men (Nos. 27 and 29 private marks), invented and manufactured by himself. Nos. 39 and 40 (new implements), strong iron chaff-cutters, for one or two men, and for horse or engine power. No. 41 (new implement), patent "Velocipede" fire engine, invented and manufactured by himself. No. 42, portable iron horse power for one or two horses, invented and manufactured by himself. No. 43, thrashing machine, four horse power, invented and manufactured by himself. No. 44, portable thrashing machine, two horse power, with shaft and wheels complete, invented and manufactured by himself. No. 45, patent liquid manure cart, to contain 250 gals., invented and manufactured by himself. No. 46, portable steaming apparatus, for steaming potatoes, turnips, hay, chaff, and other food for cattle, horses, &c., invented and manufactured by himself. No. 47, potato washer, invented and manufactured by himself. No. 48, patent hand dressing machine, for dressing flour and other pulverized substances (No. 20), invented and manufactured by himself. No. 49, the Bretforton cider mill, suitable for one or two horses, hand power, &c. (No. 91, private mark), invented by James Ashwid, Esq., of Bretforton, Worcestershire, manufactured exclusively by A. Dean. No. 50, 1 pair cart arms, with patent linch-pins, invented and manufactured by Mr. Joseph Warden, jun., of Birmingham. No. 51, 1 pair improved patent van arms, $2\frac{1}{4}$ inch, invented and manufactured by Mr. Joseph Warden, jun.

Stand No. 79.—Mr. Richard Edmunds, of Banbury.

Articles—No. 1, Turnip-cutting machine, invented and manufactured by himself. No. 2, (new implement), portable hand thrashing-machine, invented and manufactured by himself. No. 3, patent improved land-presser and drill, invented and manufactured by Richard Edmunds and T. Huckvale, of Banbury and Chipping Norton.

Stand No. 80.—Mr. Hyett, of Painswick House, Painswick, Gloucestershire.

Articles—No. 1, plough, invented by W. H. Hyett, manufactured by Richard Pegler Chew, of Painswick. No. 2, model of a windmill, invented by W. H. Hyett.

Stand No. 81.—Mr. Wm. Groundsell, of Louth, Lincolnshire.

Articles—No. 1, drill to deliver compost, wet or dry, invented and manufactured by himself. No. 2, (new implement), new thrashing-machine, invented and manufactured by himself. No. 3, ridge drill, invented and manufactured by himself.

Stand No. 82.—Mr. Joseph Hall, of Cambridge.

Articles—No. 1 (new implement), convertible cultivator, invented by Joseph Hall, manufactured by Hall and Co. No. 2 (new implement), scarifier, part of the combination invented by Joseph Hall, manufactured by Hall and Co. No. 3, (new implement), subsoiler, part of the combination invented by Joseph Hall, manufactured by Hall and Co. No. 4 (new implement), scarifier, part of the combination invented by Joseph Hall, manufactured by Hall and Co. No. 5 (new implement), crusher, part of the combination invented by Joseph Hall, manufactured by Hall and Co. No. 6 (new implement), weed and bush extractor, invented by Joseph Hall, manufactured by Hall and Co.

Stand No. 83.—Mr. John Handford, of Sheepshead, near Loughborough.

Articles—No. 1, iron plough with two wheels, invented and manufactured by himself. No. 2, wood plough with one or two wheels, manufactured by himself. No. 3, set of harrows, manufactured by himself.

Stand No. 84.—Mr. Thomas Huckvale, of Over-Norton, near Chipping-Norton.

Articles—No. 1, turnip, corn, and manure drill, invented and manufactured by himself. No. 2, (new implement), liquid manure drill, invented and manufactured by himself. No. 3, horse hoe for hoeing and thinning turnips, invented and manufactured by himself. No. 4, horse hoe and turnip thinner, invented and manufactured by himself.

Stand No. 85.—Mr. H. G. James, of 3, Great Tower Street, London.

Articles—No. 1 (new implement), patent weighing machine for cattle, invented by Monsieur George, of Paris, manufactured by himself. No. 2 (new implement), weighing machine for sheep, sacks, &c., invented by Monsieur George, of Paris, manufactured by himself.

Stand No. 86.—Mr. Henry Jeffs, of 12, East Bond-street, Leicester.

Articles—No. 1, garden seat five feet long with chest, invented and manufactured by himself. No. 2, circular oak chair, invented and manufactured by himself. No. 3, a plain and neat single arm chair, invented and manufactured by himself. No. 4, pair of flower vases, invented and manufactured by himself. No. 5, a rustic table, invented and manufactured by himself.

Stand No. 87.—Mr. James Kirkwood, of Tranent Foundry, Tranent, near Haddington, N. B.

Articles—No. 1, swing plough, invented and manufactured by himself. Made of iron. No. 2, swing plough, invented and manufactured by himself. Made of iron. No. 3, Grubber or scarifier, invented and manufactured by himself, No. 4, grubber or scarifier, invented and manufactured by himself. No. 5, weeding ploughs, invented and manufactured by himself. No. 6, set of harrows, invented and manufactured by himself. No. 7, turnip-cutter, invented and manufactured by himself. No. 8, rake, invented and manufactured by himself.

Stand No. 88.—Mr. Frederick Phillips, of Downham, near Brandon, Suffolk.

Articles—No. 1 (new implement), invented and

manufactured by himself. No. 2, drill muck cart, invented and manufactured by himself.

Stand No. 89.—Messrs. Sanders and Williams, of Bedford.

Articles—No. 1, iron plough, invented and manufactured by themselves. No. 2, plough, invented and manufactured by themselves. With wood beam, iron body, patent coulter, slide, and draught-chain. mark S. W. No. 3, light swing plough, invented and manufactured by themselves. With patent coulter and sliding draught chain. No. 4, plough, invented and manufactured by themselves. With wheels, patent coulter, and sliding draught chain. No. 5, iron plough, invented and manufactured by themselves. With wheels, patent coulter, and draught chain. No. 6, patent chaff engine, invented and manufactured themselves; 8½ inches wide (quite new). No. 7, the same with 10½ inches in the box. No. 8, patent chaff engine, invented and manufactured by themselves. Has one concave knife 14 inches in the box. No. 9, Royal Albert turnip cutter, invented and manufactured by themselves. Gained the first prize at the R.A.S.E. Show at Bristol 1842, and at the Royal Agricultural Improvement Society of Ireland 1842. No. 10, patent angle trough turnip cutter, invented and manufactured by themselves. No. 11, patent angle trough turnip cutter, invented and manufactured by themselves. No. 12, patent horse drag, invented and manufactured by themselves. No. 13, wrought iron scuffler or scarifier, invented and manufactured by themselves. No. 14, set of light patent iron harrows, invented and manufactured by themselves. The peculiarities of these harrows consist of diagonal bars, and a kind of rhomboid figure. No. 15, set of strong patent iron harrows, invented and manufactured by themselves. Precisely the same principle as the above. No. 16, patent cultivator, invented and manufactured by themselves. Has a screw-lever to regulate the depth and position of the tines (quite new).

Stand No 90—Mr. Henry Smith, of Stamford, Lincolnshire.

Articles—No. 1, balance horse-drag rake for collecting couch, invented and manufactured by himself. No. 2, a set of newly invented lever seed harrows with drill attached, invented and manufactured by himself.

Stand No. 91.—Mr. Thomas West, of Higham, near Hinckley, Leicestershire.

Article—No. 1, a one row ridge turnip and manure drill, invented and manufactured by himself.

Stand No. 92.—Mr. William West, of the Church Gate, Leicester.

Articles—No. 1, (new implement,) machine for cutting hay or straw, invented and manufactured by himself. No. 2, corn and turnip drill, improved and manufactured by himself.

Stand No. 93.—Mr. William Wood, of Knutsford, Cheshire.

Articles—No. 1, a plough adapted for heavy land, invented by Wilkie, of Scotland, manufactured by William Wood, of Knutsford. No. 2, a plough adapted for light land, manufactured by himself. No. 3, a drill-presser or double plough, invented and manufactured by himself. No. 4, a scuffle, or rack scarifier, invented and manufactured by himself. No. 5, a scuffle, or scarifier, invented and manufactured by himself. No. 6, a scuffle, or scarifier, invented by Thomas Wood, manufactured by W. Wood. No. 7, a pair of harrows, invented by Thomas Wood, manufactured by W. Wood. No. 8, a churn, invented by Thos. Wood, manufactured by W. Wood.

Stand No. 94.—Mr. Wm. Witney, of Hillingdon, near Uxbridge, Middlesex.

Article—No. 1, a mangel wurzel and turnip cutter, invented and manufactured by himself.

Stand No. 95.—Mr. Harrison Wright, of Belper, Derbyshire.

Articles—No. 1, newly improved chaff-cutter, with bean and oat-crusher, invented and manufactured by himself. No. 2, newly improved oat and bean-crusher, (Wright's) invented by Mr. Passmore, of Doncaster, manufactured by Harrison Wright. No. 3, an improved powerful chaff-cutter, invented by Heptonstall, of Doncaster, manufactured by Harrison Wright. No. 4, patent cheese-press, invented by Burrow, of Cheadle, Staffordshire, manufactured by Harrison Wright. No. 5, turnip and chaff-cutter, improved by H. Wright, invented by Gardener and Heptonstall, of Banbury and Doncaster, manufactured by Harrison Wright.

Stand No. 96.—Mr. Edward Cockey, of Frome Selwood, Somersetshire.

Article—No. 1, machine for cutting hay and straw, invented and manufactured by himself.

Stand No. 97.—Messrs. Cottam and Hallen, of Winsley-street, London.

Articles—No. 1, cycloidal tooth-grubber, 5 tines, invented by G. Cottam, and manufactured by themselves. No. 2, cycloidal tooth-grubber, 7 tines, invented by G. Cottam, and manufactured by themselves. No. 3, (new implement,) universal plough and cultivator, invented by G. Cottam, and manufactured by themselves. No. 4, dynamometer or draught-gauge, invented by G. Cottam, and manufactured by themselves. No. 5, Odometer or land-measurer, invented by G. Cottam, and manufactured by themselves. No. 6, bruising-machine, manufactured by themselves. Nos. 7 and 8, weighing-machines, for sheep, pigs, calves, &c., invented by G. Cottam, and manufactured by themselves. No. 9, (new implement,) dibbler, invented by G. Cottam, and manufactured by themselves. No. 10, (new implement,) set of tools for forming concrete drains, invented by Lord James Hay, and manufactured by themselves. No. 11, wrought-iron plough, suitable for light lands, invented by G. Cottam, and manufactured by themselves. No. 12, a strong plough, with wrought iron share, for heavy lands, invented by G. Cottam, and manufactured by themselves. No. 13, a light two-wheel wrought iron plough, for light soils, invented by G. Cottam, and manufactured by themselves. No. 14, conical wheel-plough, invented by A. F. Campbell, Esq., and manufactured by themselves. No. 15, double mould-board plough, and horse-hoe, manufactured by themselves. No. 16, seed and manure drill, for one row, manufactured by themselves. No. 17, field-roller, manufactured by themselves. The cylinders of this roller are in two parts, to give it greater facility in turning. No. 18, (new implement,) chain-harrow, invented by ——— Smith, Esq., and manufactured by themselves. No. 19, chain-harrow, with serrated rings, invented by G. Cottam, and manufactured by themselves. No. 20, chain-harrow, of the same description as Nos. 18

and 19, but with smaller discs or rings, suitable for harrowing after seed. No. 21, set of iron whipple trees, manufactured by themselves. No. 22, iron sack-truck, invented by G. Cottam, and manufactured by themselves No. 23, (new implement,) sub-turf plough, intended for opening old pasture lands, invented by G. Cottam, and manufactured by themselves. No. 24, iron rickstand, invented by G. Cottam, and manufactured by themselves. No. 25, set of wrought-iron hurdles, manufactured by themselves. No. 26, egg-hatching machine, invented by Charles Appleyard, Esq., and manufactured by themselves. No. 27, (new implement,) machine for salting meat instantaneously, invented by Carson, of York-street, Covent Garden, manufactured by Cottam and Hallen. No. 28, subsoil plough, manufactured by themselves. No. 29, improved screw-jack, manufactured by themselves. No. 30, complete set of garden tools, manufactured by themselves. No. 31, boring-rod for hay stacks, manufactured by themselves.

Stand No. 98.—Mr. Thomas Crump, of Derby.

Articles—No. 1, new garden engine with spreader, invented and manufactured by himself. No. 2, new small garden engine with spreader, invented and manufactured by himself. No. 3, large travelling fire-engine with hose pipes, leather buckets, &c., complete. Middle size fire-engine with ditto ditto, adapted for farmhouses, gentlemen's residences in parishes.

Stand No. 99.—Mr. Richard Stanesby, of Derby.

Article—No. 1, an oval churn, improved and manufactured by himself.

Stand No. 100.—Mr. John While, of Barton on the Wolds, near Loughborough.

Article—No. 1, (new implement,) a scarifier or horse hoe, invented by himself, and manufactured by Warner and Suesbury, of Loughborough.

Stand No. 101.—Mr. Charles Henry Capper, of Birmingham.

Articles—No. 1, a machine for macadamizing stones, invented and manufactured by himself. No. 2, a steam apparatus, invented and manufactured by himself.

Stand No. 102.—Mr. Robert Law, of Shettleston, near Glasgow.

Articles—No. 1, a Scotch plough, adapted for heavy land, with an improved mould-board, invented and manufactured by himself. No. 2, a light lea plough, invented and manufactured by himself. No. 3, an iron scarifier, invented and manufactured by himself. No. 4, (new implement,) a scarifier, invented and manufactured by himself. No. 5, a drill plough and scarifier, improved and manufactured by himself. No. 6, a set of angled iron harrows, invented and manufactured by himself. No. 7, a set of trees to yoke three horses abreast, manufactured by himself. No. 8, a subsoil and trenching plough improved, invented and manufactured by himself. No. 9, a Scotch coup-tipping cart, axle and wheels complete, invented and manufactured by himself. No. 10, a cheese-presser, improved and manufactured by himself.

Stand No. 103.—Mr. H. Pares, of Loughborough, Leicestershire.

Article—No. 1, a steam apparatus for cooking food for cattle, invented and manufactured by himself.

Stand No. 104.—Mr. James Turton, of Ripley, near Alfreton, Derbyshire.

Article—No. 1, a chaff-cutter, invented and manufactured by himself.

Stand No. 105.—Mr. F. W. Etheredge, of the Woodlands, near Southampton.

Article—No. 1, some draining-tiles, pipes, sewer-pipes, and wall-coping, invented and manufactured by himself.

Stand No. 106.—Mr. J. B. Denton, of Southampton.

Article—No. 1, (new implement), a map in relief, of a district, with instruments, invented and manufactured by himself.

Stand No. 107.—Mr. Edward J. Lance, of Frimley, near Bagshot.

Articles—No. 1, (new implement), a seed-drilling and manure depositing machine, invented and manufactured by himself. No. 2, (new implement), a seed-drilling and broad-casting and manure depositing machine, invented by himself, and manufactured by John Woodbourne, of Kingsley, Alton, Hants. No. 3, (new implement) a hand wheat and turnip-drilling machine, invented by himself, and manufactured by a farm-labourer, of Cobham, Surrey. No. 4, a collection of extraneous manures, arranged and invented by himself, under the direction of Mr. William Redgrave. No. 5, a variety of produce, being luxuriant growths on a poor sand-soil, the effects of culture and appropriate manurings; wheat and rye roots, with the soil in which they were grown; samples of diseased corn: ergot in rye; worm in wheat, *Vibrio Tritici;* male and female blossom of the hop. Agricultural essays, written by himself, in explanation of the above subjects.

Stand No. 108.—Mr. Sober Watkins, of Plumpton, near Penrith, Cumberland.

Article—No. 1, a model of the Plumpton folding-harrow.

Stand No. 109.—Mr. William Hutchinson, of Derby.

Article—No. 1, a cast-iron thrawl or stillion, invented by himself, and manufactured by James Haywood and Co., of Derby.

Stand No. 110.—Mr. Thomas J. Marshall, of Spondon, near Derby.

Article—No. 1, a model for covering a stack, to supersede thatch, invented by himself, and manufactured by a joiner under his immediate direction.

Stand No. 111.—Mr. Andrew Notman, of Painswick, Gloucestershire.

Article—No. 1, a drainer's level, invented and manufactured by himself.

Stand No. 112.—Mr. Wm. West, of Derby.

Article—No. 1, chemical manure, invented and manufactured by himself.

Stand No. 113.—Mr. J. Read, of 35, Regent Circus, London.

Articles—No. 1, a new drain and subsoil plough, invented and manufactured by himself. No. 2, a new drain turnwrist-plough, invented and manufactured by himself. No. 3, a local portable agricultural fire-engine, invented and manufactured by himself. No. 4, circular draining-tiles, for agricultural purposes, invented by himself, and manufac-

tured under his directions. No. 5, garden-engines and machines of various descriptions and dimensions, invented and manufactured by himself. No. 6, patent safety reins for riding or driving, invented by himself and manufactured by Woods, of 18, Lewin Street, London. No. 7, veterinary instruments, with tubes, probangs for hoven bullocks, &c., &c.

MISCELLANEOUS ARTICLES.

Thomas Gibbs and Co., of the corner of Half-Moon Street, Picadilly, London, Seedsmen to the Honourable Board of England and Sweden—a collection of roots and seeds.

George Gibbs and Co., Seedsmen, &c., to the Agricultural Society of Belgium, &c., &c., 26, Down Street, Piccadilly, London—a collection of roots and seeds.

SEED WHEAT, (White).

Mr. P. Sheriff, of Buckover Farm, near Thornbury, Gloucestershire—specimen of white-blossomed tare. No. 1, Mr. George S. Ogilvie, of Calm, Wiltshire—fourteen bushels of April or Lady-day wheat. No. 2, Mr. Samuel Jonas, of Ickleton, near Saffron Walden—fourteen bushels of Jones's prolific white wheat. No. 3, Mr. Thomas Raymond Barker, of Hambledon, near Henley-on-Thames—fourteen bushels of Hopetoun or Sheriff's white wheat.

SEED WHEAT, (Red).

No. 4, Mr. John Clover, of Kirtling, near Newmarket—fourteen bushels of Clover's red wheat. No. 5, Mr. John Claydon, of Littlebury, near Saffron Walden — fourteen bushels of Clover's red wheat. No. 6, The Rev. John Higginson, of Thormanby, near Thirsk—fourteen bushels of creeping red wheat. No. 7, Mr. W. F. Hobbs, of Marks-Hall, in Coggeshall, Essex—fourteen bushels of Marygold red wheat.

CHEESE.

No. 1, Mr. James Hill, of Broughton, Astley, near Leicester—one cwt. of Leicester cheese. No. 2, Mr. George Tiney, of Odstone, near Market-Bosworth—one cwt. of coloured cheese. No. 3, Mr. Robert Arkwright, of Sutton-Scarsdale, near Chesterfield—one cwt. of North Derbyshire cheese. No. 4, Mr. Thomas Eyre, of Etwall, near Derby—one cwt. of plain cheese. No. 5, Mr. John Goodall, of Yeldersley, near Ashbourne—one cwt. of coloured cheese. No. 6, Mr. W. Goodall, of Shirley, near Ashbourne—one cwt. of coloured cheese. No. 7, Mr. Thomas C. Augrave, of Eastleake, near Loughborough—one cwt. of Stilton cheese.

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This being a leisure day after the inspection of the implement yard, the visitors on pleasure bent, amused themselves as fancy or inclination disposed them. Among the attractions which received the largest share of patronage, were the following:—The magnificent painting of the country meeting at Bristol of the Royal Agricultural Society of England, containing 130 portraits of the principal agriculturists in the kingdom, painted by Mr. Ansdell; on view in the tent, near the pavilion—admission 1s. The beautiful arboretum, given to the town by Joseph Strutt, Esq., and which forms a most beautiful promenade; admission, 6d. A magnificent exhibition of articles of *vertu*, paintings, sculpture, specimens in natural history, curiosities, &c., at the athenæum for the benefit of the town and coutry museum—admission, 1s.—A most splendid exhibition, and reflecting honour on the town, and a noble instance of public spirit. The theatre, where Mrs. Nisbet and Miss Mordaunt performed in the *Honeymoon* and *Dream at Sea*, also came in for their share of patronage. The public buildings and environs of this ancient town were inspected by those who took an interest in antiquarian researches; and fireworks wound up the business and amusements of the day.

The cattle for exhibition began to arrive early this day from all parts, and astonished the good folks of Derby, who had never before seen such stock, and hence crowded to their doors to get a peep at the huge cattle as they progressed towards the show-yard.

In the evening the Worshipful the Mayor (J. Bell Crompton, Esq.), invited the Council to dinner, and a select party of about 70 sat down to a sumptuous repast, at the Royal Hotel.

THE MAYOR'S BANQUET.

This Banquet was held in the large dining room at the Royal Hotel, on Tuesday evening, the following noblemen and gentlemen being the invited guests of his worship:—Earl of Hardwicke, Duke of Richmond, Earl Spencer, Marquis of Downshire, Hon. R. Clive, M.P., Sir C. Morgan, Mr. Baker, Mr. T. R. Barker, Mr. Buller, M.P., Hon. G. H. Cavendish, M.P., Col. Challoner, Mr. Childers, M.P., Mr. Ellman, Mr. Grantham, Mr. Hayter, M.P., Mr. C. Hillyard, Sir H. Hoskyns, Sir John Johnstone, M.P., Duke of Devonshire, Earl Howe, Earl of Ilchester, Earl of Burlington, Earl of Scarborough, Lord Morpeth, Lord Stavordale, Lord Waterpark, Hon. J. Ponsonby, M.P., Hon. Rev. A. Curzon, Sir H. Wilmot, Sir S. Crompton, The Hon. W. Bagot, The High Sheriff, The Recorder, Professor Buckland, Mr. J. Kinder, Sir C. Lemon, M.P., Mr. W. Miles, M.P., Mr. Pendarves, M.P., Sir R. Rice, Mr. P. Pusey, M.P., Rev. W. L. Rham, Professor Sewell, Mr. W. Shaw, Mr. J. V. Shelley, Rev. J. Smythies, Mr. W. R. Crompton Stansfield, M.P., Mr. Weald, Mr. Wilbraham, Mr. Hy. Wilson, Mr. Chas. Stokes, Mr. Chaplin, Mr. Hy. Colman, Mr. E. Strutt, M.P., Mr. E. M. Mundy, M.P., Mr. C. R. Colvile, M.P., Mr. Davenport, Mr. Gamble (late Mayor), Mr. Legard, Mr. Barber, Mr. Jas. Hudson (Secretary), Sir Robert Heron, M.P., Mr. Godfrey Wentworth, Mr. W. Coke, Mr. E. W. Wilmot, Captain Story, and Mr. J. Crompton.

The dinner, dessert, and wines were first-rate, and were served up in a style of excellence never, we will venture to say, surpassed. The dinner was highly commended by the noblemen and gentlemen present. After the cloths were removed, the following toasts were given:—"The Queen," "The Queen Dowager," "Prince Albert," "The other branches of the Royal Family."

The Mayor said he had great pleasure in proposing the health of Lord Hardwicke, President of the Royal Agricultural Society of England, and thanked his Lordship for the exertions he had made, at some sacrifice to himself, to be present at the meeting.

Lord Hardwicke returned thanks, and said he regretted being too late for the dinner, but that was occasioned by the accident of the train by which he travelled being divided into two parts, and he unluckily remained in that part which went to Nottingham instead of Derby. He said that it was a great satisfaction to him that the Royal Agricultural Society had their meeting of this year in the ancient borough of Derby—a borough distinguished by many advantages in its means of education, and the

advancement of mechanical arts; that the interests of agriculture, commerce, and manufactures were in truth not undivided, and should not be opposed to each other; that the main object of this Society was to cultivate and encourage a good understanding between all parties, and by exhibiting to farmers in each district the results of the observations and experience of the whole country, to bring home to their doors the information necessary to enable them to cultivate their land to the best advantage, and to open a wider field for the increase of their ingenuity and skill.

"The Duke of Wellington and the Army."

The DUKE of RICHMOND returned thanks, and said that no part of his life had been more happily spent than that which had been devoted to the services of his country as a soldier, and though he was a soldier no longer, he was sure that whenever the services of the army were again required they would maintain the honour of the British flag, which had ever been supported unstained and victorious by their great commander the Duke of Wellington.

"The Navy."

Lord HARDWICKE returned thanks, and said he had never ceased to feel, as all others would feel, the great advantages of the first lesson he learnt in the Navy—to obey. That although they might not expect to find in a captain in the navy a practical agriculturist, yet seamen were not unmindful of the comforts they owed to those advances in agricultural science, which secured to them a better and more abundant supply of food, and they looked upon agriculture and agriculturists with interest and thankfulness.

The MAYOR said he was happy to have the honour of proposing the health of a nobleman whom he was proud to call his friend, the Lord High Steward of the Corporation, the Duke of Devonshire.

The Duke of DEVONSHIRE, in returning thanks, said that with the town of Derby were associated many of the earliest and dearest recollections of his life, and he was always delighted to know of its rising in station, prosperity, and power—the power of extending happiness and knowledge; and that it was so rising the meeting of that day was the proudest testimony. He said he hardly dared to approach the subject of the meeting; had it been to forward the science of a twin sister—Horticulture—he might have told the history of plants both foreign and domestic, but he could not compete with his noble friend, the Duke of Richmond, in distinguishing the fineness and value of a fleece; or with his relative Lord Spencer (whose absence he regretted) as to the beauty and qualities of an animal; nor even with his friend the Mayor, who he knew was become a great practical farmer, as to the ploughing and draining of a field, but he would not yield to any of his friends in praise and admiration of the Society that had then honoured Derby by its presence. It had been the lot of many then present to witness the rapid strides that manufactures and machinery had made in Derbyshire, and it was hoped might still continue to advance and flourish. He trusted that the encouragement and stimulus caused by the present meeting would lead to a similar advance in the knowledge of agriculture. He had observed by the last very interesting volume of the Society's Journal, that in Surrey Lord Lovelace grew fifty tons an acre of mangold wurtzel. That would, he was afraid, carry the prize against his friend the Mayor, but he referred particularly to that Journal for its excellent articles on stock and draining, to which in this country the first and greatest attention should be directed. Now, however, he found himself getting out of his depth, and he would not occupy more of their time while surrounded by others so much more fit to speak on the subject than to return thanks for the attention with which he had been heard.

The Duke of RICHMOND, in highly complimentary terms, proposed the health of the Mayor, who had received and treated them with so much hospitality, and so readily complied with every request made to him on subjects connected with the meeting. Ingratitude could never be charged against the farmers of England. He was persuaded that agriculture and manufactures were connected by common interest, and that they could not be severed without detriment to both. His Grace concluded by proposing the "Health of the Mayor, and prosperity to the town and trade of Derby," and that the toast should be drunk standing, with three times three.

The MAYOR acknowledged the compliment.

"Colonel Challoner, and the Derby Committee of the Royal Agricultural Association of England," was next given.

Colonel CHALLONER, in returning thanks, said that he was equally taken by surprise with the Mayor. There was much to be done and many to please, but they tried to please as many as possible.

"The High Sheriff."

The HIGH SHERIFF, in returning thanks, said he was glad that upon such an occasion they had so admirably selected a gentleman to fill the office of Mayor, who was an excellent magistrate, had entertained them with so much hospitality, and was himself an eminent agriculturist.

"Prosperity to Agriculture, &c."

Mr. HILLYARD, President of the Northamptonshire Farmers' Society, rose to return thanks. He said it was a formidable thing for most men in the prime of life to address a meeting like the present, in the presence, too, of some of the most distinguished speakers of the present day; but it was much more formidable to one who had entered into his seventy-seventh year—(*Loud cheers*)—and who had neither the power of voice, the strength of nerve, nor power of arrangement of thought, which he might have possessed when twenty years younger. He, therefore, had to request those who were then sitting in judgment that they would not only make due allowance for the want of ability in the speaker, but would bear in mind that which was never lost sight of in the judgment of cattle—"age to be taken into consideration." (*Loud cheers and laughter.*) For more than thirty years the chief part of his time had been devoted to the study and practice of agriculture. He would not then enter on farming subjects; for those he would, Abernethy-like, refer them to his book on "Practical Farming and Grazing," which was not a collection of the sayings and doings of other men, but the detail of his own proved farming practices. (*Hear, hear, hear.*) He had been brought forward to respond to the toast of "Success to the Royal Agricultural Society of England, and the practical farmers of the country;" probably, from having been President of the Northamptonshire Farming and Grazing Society ever since its establishment, now four-and-twenty years since. That society had gone on prosperously from fortunately having had the liberal patronage of the noble lord, your president elect (Earl Spencer), who might now be duly styled the great patron of English agriculture. (*Cheers.*) Local societies, like that, had been one

great means of the founding this great national society; and they might now be considered as tributary streams flowing into the great national reservoir of agricultural information. (*Hear, hear.*) The Royal Agricultural Society of England had fully answered general expectations; for, although its establishment could only be called of recent date, there were seen, in many different parts of the country, improvement in the cultivation of the land. It had created a desire of improvement in the generality of practical farmers; it had been the means of dissipating many long standing farming prejudices, and it had opened the eyes of the slovenly and parsimonious, and convinced them that they had lost money, by loss of produce, from their niggardly expenditure in manual labour. (*Hear, hear.*) From improvement of education had arisen expansion of liberal ideas in the rising generation of farmers, and there would, he trusted, be annually a less number of those most unserviceable members of the community. (*Hear, hear, hear.*) The society had been the means of producing much further good. It had added to the number of landed proprietors who took an interest in agricultural pursuits. This he conceived likely to be beneficial to many tenant farmers, from believing that those who really knew what farming was were generally the most considerate and best landlords. (*Hear, hear.*) The society had infused into many landlords, who previously, from want of due consideration, or proper representation from their agents, had not been famed for it, a spirit of liberality in assisting their tenants in requisite expences for improvement of their land, and erecting all necessary farm buildings, with convenient yards, to enable their arable tenants to winter the required number of cattle to turn their straw into good manure (*hear*). It was to be hoped that such liberal spirit would prevail in all the landlords of the country (*cheers*). He was rejoiced to have this opportunity of dispelling the idea that in his agricultural writings he had held science in too slight estimation. It probably might have appeared so from his having felt somewhat piqued on being told, on the establishment of this society, not by the scientific themselves, but by some would-be farmers, who had formed such most extravagantly high notions of what was to be effected by science, that he and others, who had devoted a great part of their lives to the study and practice of agriculture, knew but little, but that we should be taught by the scientific (*cheers and laughter*). He did not mean to say that the present best farming in the country had arrived at such a state of perfection that it could not be improved. On the contrary, he believed that, from mechanical science, which had brought about such great improvement in agricultural implements, and, combined with chemical and geological aid, some of the mysteries of nature might possibly be so developed as to enable the cultivators of the soil to obtain a larger produce from it than they hitherto had; expressing, at the same time, his firm conviction, drawn from his own practical experience, that, although by potent manure an almost unbounded quantity of stems may be obtained, yet there was a boundary beyond which nature and the soil could not be forced to produce corn (*hear, hear*). There were many new, and some he believed to be valuable, manures; but it was much to be doubted whether any of them would, by application, be the means of causing such an increase of produce as would repay their great cost with the henceforth expected low price of grain (*hear, hear*). The national agricultural machine was propelled by the practical farmers. Science was the lamp, useful in the dark; but although there were still clouds hanging over the agricultural atmosphere, it was not in that complete state of darkness which the theoretical farmers imagined. The opinions he had formed as to the useful connection of science with practical agriculture were those. Science without practice could do but little, but science joined with practice could do a vast deal (*hear, hear*). Science and practice now went hand in hand (*hear, hear*). Science now took its proper and useful position. It did not stand forward as instructor to the experienced practical farmer, but as his able assistant (*hear, hear*). With this union of science and practice, joined by the best exertions of tenant farmers, effectively supported by liberal landlords, and all engaged in agriculture—with all this in prospective, such general improvement in British agriculture might reasonably be expected as to place this country in that most desired situation for every country—that of not being dependent on foreign nations for any part of its supply of food (*hear, hear*). To no one would this be more gratifying to live to see than to the humble individual who had the honour to address them, and who now begged to return them his best acknowledgments for the manner in which his address had been received. (Mr. Hillyard sat down amidst loud cheering.)

"Prosperity to the Royal Agricultural Society of England."

Lord HARDWICKE, in returning thanks, took occasion to declare that a main feature of the Society's method of proceeding was carefully to abstain from saying or doing anything offensive to any of their fellow men; to elicit and concentrate the best results of the experience of particular individuals for the purpose of diffusing it more extensively, and thus affording a channel for bringing the results of experiments under the observation and within the reach of every farmer.

The company then separated.

The urbanity and attention of his honour the Mayor were much spoken of, and fully appreciated by all who partook of his hospitality.

WEDNESDAY.

The day opened with favourable weather, which continued until the afternoon, when some heavy showers fell. The business part of the proceedings commenced with the inspection of stock by the judges, and the award of the prizes. The implement yard was again opened to the public, from 8 o'clock to 6, at 5*s.* admission. There was also the public trial of implements at Mr. White's farm, Rough Heanor, about two miles from the town, on the Uttoxeter-road, but owing to the unfavourable nature of the soil, the difficulty of obtaining horses, the great crowd who interrupted the work, and other causes, no award was made. If there was little to condemn in the trial of implements, there was certainly little to praise, and this part of the day's proceedings may be almost pronounced a failure, particularly in connection with the observations upon this subject made by Mr. Ransome and Lord Spencer in the afternoon at the Council dinner, and the President, on the Thursday.

Before proceeding to notice the dinner of the Council, we may briefly remark upon the accommodations and amusements which had been provided for the "entertainment of man and beast."

The whole neighbourhood of the large pavilion which had been erected, in close contiguity to the Railway Station, and consequently to the town, was crowded with suttling booths, bazaars, cigar divans, shows, moveable theatres, stalls for games of chance, swings, and all the paraphernalia of a country wake or fair. There were likewise book stalls, and temporary newspaper offices, at which the daily London and provincial weekly newspapers might be procured in abundance. There were exhibitions of curiosities and wonders more than the most insatiable appetite for monstrosities and sights could have desired. There were wild beasts and tame beasts, jugglers, pyrotechnists, and other animals, human, inhuman, and superhuman, "new as imported," to say nothing of the arboretum, the museum, the theatre, and other places of spectacle and amusement native to the town.

Of those exhibitions brought for the occasion, the picture of the Country Meeting last year of the Royal Agricultural Society, containing upwards of 130 portraits was chief: many of the portraits were good, alike in point of execution and similitude. Among the more marvellous sights, was that of a tree, exhibited as "The largest tree in the world—the Mammoth Sycamore of Indiana!" It was asserted to be 75 feet in circumference, to have stabled 17 horses at one time, to have been the famed Gretna Green of Indiana; and for some years to have been used by a giant as an hotel for travellers. This vegetable phenomenon is said to have been known for about 50 years as the Great Salt River Sycamore, and is supposed to have existed before the deluge. The history of its arrival in this country is that Mr. F. Coombe, the phrenologist, while on a tour from New York through the Western States of North America, made arrangements for its removal, and at considerable cost it was conveyed by the various rivers and the Mississipi to New Orleans, from thence to New York, and London.

We give this, however, merely as a sample of the miracles of nature which Derby was made the theatre for the display of, not as a question pertaining to agriculture. We plead guilty to not having had our curiosity sufficiently raised to throw away a shilling for an inspection. Besides these exhibitions, there was one of a grand double centrifugal railway, and, as the auctioneer's catalogues say, "other things too numerous to mention."

A bazaar, in aid of St. Alkmund's Church, was also opened at the Mechanics' Lecture-hall, under the especial patronage of the Duke of Devonshire, the Queen Dowager, &c. It was attended this day by the Marquis of Northampton, Mr. Everett, the Duke of Devonshire, Lord Morpeth, and other distinguished visitors of the nobility and gentry then in the town and neighbourhood. His Grace the Duke of Devonshire gave the handsome donation of £100 towards the object; and upwards of £500 were taken in the course of this day's sale alone.

THE COUNCIL DINNER.

This grand and select dinner was fixed for five o'clock, and it was announced that the doors would be opened at four, but the whole of the arrangements appear to have been wretchedly managed; for when we arrived at the County Hall at five, we found a large number of persons waiting at the iron gates in the pouring rain, among whom were most of the noble guests who were to be present, and who were uttering complaints both loud and deep of the treatment they experienced. Surely some waiting room could have been provided for the guests, as a shelter from the inclemency of the weather. When the gates were at length opened, so eager were the parties to get under cover that there was a complete rush, and the gates were borne forcibly open, every one making pell-mell for the small entrance gateway into the hall, which was insufficient to admit more than one or two persons at a time. The squeeze here was terrific, and there was no possibility of collecting the tickets; some were, however, delivered here, and the others collected afterwards, but this afforded no check against the intrusion of uninvited guests. There were five lines of tables, which completely filled the body of the hall. There were upwards of 400 persons present. The noble President of the Society, the Earl of Hardwicke, presided, supported on his right by the Duke of Devonshire, and on his left by J. B. Crompton, Esq., Mayor of Derby. At the President's table we also noticed the Hon. Mr. Everett, the American Minister, the Marquis of Northampton, the Earl of Harrington, Professor Playfair, Mr. H. Colman, Sir Robert Price, Sir C. Lemon, the Recorder of Derby, the Marquis of Downshire, Earl Yarborough, Lords Scarborough and Morpeth, Professor Buckland, Lord Scarsdale and Bridport. His Grace the Duke of Richmond occupied the vice-chair, supported on his right by Earl Spencer, and on his left by P. Pusey, Esq. Among the general company present we noticed Mr. Cavendish, M.P., Mr. Pusey, M.P., Mr. E. Buller, M.P., the Hon. R. Clive, Mr. Chandos Pole, Mr. W. Miles, M.P., Mr. W. Evans, M.P., Mr. Colville, M.P., Sir Robert Heron, Mr. C. H. Bracebridge, Messrs. Edward and Jedediah Strutt, Col. Challoner, Mr. D. Barclay, M.P., Viscount Torrington, Hon. and Rev. E. Moore, Rev. W. L. Rham, Mr. Barker, Mr. Stansfield, Mr. J. W. Childers, M.P., Hon. W. W. Wilson, Mr. W. Shaw, W. F. Hobbs, S. Jonas, R. Barker, C. Hillyard, J. Hudson (Castleacre), J. Hudson (Secretary), T. Ellman, J. Kinder, &c., &c.

The dinner, which was neither cold nor hot, was a very wretched affair, there being a paucity of everything—provisions, waiters, plates, &c., &c. The only thing on which we can at all pass a commendation was the wine, which was cool and pleasant.

Upon the removal of the cloth, the noble CHAIRMAN rose and said, that having enjoyed the good (?) meal which had been placed before them, it now became his duty to introduce to their notice the first toast—a toast which was always drunk by loyal Englishmen at all times and under all circumstances with enthusiasm. It was the health of their gracious sovereign—a toast which needed no eulogy from him, but it was no more than respectful to give it with three times three upstanding. Drank accordingly.

The Chairman said the next toast he had to propose was the healths of the Queen Dowager, Prince Albert, Albert Prince of Wales, and the rest of the Royal Family. *(Applause.)* The name of the first distinguished and illustrious personage, the Queen Dowager of England, would be drunk with enthusiasm by this company. Every one knew her great kindness to all classes of the community; every one was aware of her charity and benignity of heart, and how many had received marks of kindness, attention, and benevolence at her hands, which could only be obliterated in the

grave; and when that illustrious lady departed this life, which heaven long avert, many would be the tears of sincere grief and regret shed for her loss. Of the young Prince, they could only hope for the fulfilment of the bright promise given by the example of his parents, and that he would act in conformity to the constitution of the country over which he would one day reign. Of the rest of the Royal Family included in the toast, he would only observe that they were the children of George the third, the friend of the farmer; the king most beloved of his people; a monarch whose reign was most illustrious, and added to the glory and greatness of Britain. The last, but not the least in public estimation, to whom he would allude, was his Royal Highness Prince Albert. Although a comparative foreigner, yet as the husband of their Queen he was no longer a stranger. He had been long enough among them to feel and to know that the people with whom he had consorted were prone to esteem and treat with kindness those whose characters and conduct they appreciated. And he had, by his general conduct and affability, gained moral power and moral influence. He would not eulogize his Royal Highness, for it might appear like flattery; but since he had been in this kingdom he had daily gained on the affections of the people, and his conduct towards our illustrious sovereign must ever endear him more and more in their affections.

The CHAIRMAN next stated, that in consequence of the award of premiums for implements not having yet arrived, he could not give it, and would therefore call on Mr. Edward Strutt to give them a toast.

Mr. E. STRUTT, M.P., in rising, said he could not but feel the greatest regret that the toast which he was about to give had not been entrusted to some abler and more worthy member of that great and important society. His only apology for intruding on them, therefore, was that he was obeying the orders and directions of those gentlemen who had taken upon them the arduous duty of managing and contributing towards the success of this meeting. However unworthy he felt of performing the task assigned to him, he was most anxious to express the high gratification he felt in seeing this great and important meeting held in the town of which he was a native, and which he had for many years represented in Parliament. Such a vast assemblage was a medium through which great benefits were likely to arise to the cause of agriculture in general, as well as to those localities which they visited. This county and the adjacent counties would be advantaged by the stimulus and incitement to improvement thus afforded them, by comparison with what was going on in other districts. It was no small source of gratification to him that their meeting was this year held in a part of the country connected as well with manufactures as with agriculture, as it afforded an opportunity of attending and supporting the society and meeting, to those who, like himself, were not immediately connected with manufactures, but were nevertheless deeply sensible of the importance of agriculture to this great country. *(Applause.)* The interests of the one and the other of these great interests were identified; for no improvement could take place in one great branch which was not felt by the other, and therefore he was glad to see a stimulus given to those who were improving and aiding the productive powers of the country. It was impossible for persons of any class or calling to attend meetings of this kind without deriving great advantage. The information which they would receive, and the stimulus given to their zeal and exertions, would induce them to return to their ordinary occupation with renewed alacrity and increased vigour. There was another advantage of great importance which necessarily arose out of these meetings, and that was that they tended to bring together men of science and practical farmers —and the labours of the agriculturist were aided and assisted by the discoveries and researches of scientific men. Until of late years science was considered to be totally unconnected with and unimportant to agriculture; but he was happy to say a change had taken place in the opinions of practical men on this subject. Chemistry, the use of which in bleaching and manufactures generally was fully estimated, was now found to be not so valueless as had been originally supposed when applied to agriculture. No better proof of the connection between agriculture and manufactures could be afforded than by the immense and magnificent collection of implements which they had seen exhibited that day; a display of which any nation, and especially an agricultural country, had just reason to be proud. They all knew how necessary were analyses of the soil, of manures, and of vegetables, in order to know what were their constituent parts, what were the best fertilizers for certain soils, and what was the food best adapted to certain plants. The services of the geologist and of the chemist were pre-eminently useful and important to agriculture. Therefore it was that he thought they owed a debt of gratitude to those distinguished professors of science who had honoured them with their countenance and presence that day, and by whose labours they had so materially benefited. The every-day farmer, and him whose time was fully occupied, could not be expected to attain to the knowledge of the scientific man. Others, again, who had devoted their time and labour to scientific observations and improvements had not the opportunity of carrying out practically those hints, ideas, and experiments, which they could, however, suggest and recommend. Through the medium of meetings of this kind and the pages of the Society's Transactions and journals, both were benefited. Those able, enlightened, and wealthy agriculturists who had the opportunity, means, and leisure to carry into practical operation the experiments recommended, might confer the greatest benefits on their country by announcing the results of those experiments. He trusted he had said enough to convince them of the advantages they had derived from the labours and studies of the men of science — the botanist, the physiologist, the chemist, and the geologist — and he felt sure the whole of the present company would drink with satisfaction the health of the professors of science.

The Duke of RICHMOND begged to propose that it be drunk with three times three.

Dr. BUCKLAND rose to respond to the toast, and said he was sure that both the professors of science who were present, and those who were absent, would ever be ready to promote the interests of this great and useful society, and lend a helping hand to carry out the objects it had in view. They had lived in the present day to see a new epoch tried in the annals of agriculture and of science in general. The agriculturists did not now, as of yore, turn a deaf ear to the suggestions of the

man of science: they had been convinced by the beneficial results of a little capital and a moderate share of good sense, that the produce of the land by judicious management might be increased two-fold. They were not now content to tread in the steps of their fathers and grandfathers, fearful of diverging beyond the line of path which had been followed for so many years. Improvements had taken place, by the union of science, in the arts, in manufactures, in navigation, in the appliances of war. And why should not the same results follow from its application to agriculture? They had seen the success which had resulted from the union of science with practice in Scotland, and the establishment of the Royal Agricultural Society (whose motto this was) proved that they were determined to originate and carry out improvements also in England. The example of Lord Ducie should be followed by other eminent agriculturists—should be followed generally by those who had the means and the leisure to originate experiments for the benefit of their country. We are highly honoured by your favourable notice, and we have at least reputation for our reward; and it is not only the scientific man who suggests, but those who carry into effect his suggestions, who benefit themselves, and in a greater degree benefit their fellow countrymen. They were not yet in a condition to lay down the law, and set forth an exemplar of general cultivation, but he hoped in a few years, by the labours of the geologist and the chemist, they would be enabled to do so. It was not for him to recite the benefits which the labours of the professor of science had conferred on them. Most of them had doubtless read the admirable letters of Professor Henslow to the farmers of Suffolk; and many of them were doubtless carrying out those experiments which he had recommended. They had also heard the admirable lectures of Professor Daubeny, and they were probably still more familiar with Professor Johnston, of the sister university of Durham, whose excellent and practical lectures on agricultural chemistry and geology had been, for the last twelve months past, published periodically, and circulated extensively, throughout the land. These were a few instances of the desire of scientific men to co-operate with the agriculturists for the common weal. But there was another important branch of science—that of the physiology of animals—and on this subject they had been enlightened by the important discoveries of Dr. Playfair, whose able lecture, delivered in London before their society in December last, and published in the last number of their journal, had doubtless been read by most of them. The chemistry of agriculture was intimately interwoven with, and subsidiary to, the breeding of animals, and that important lecture on physiology was before them. In Dr. Playfair's presence he should better consult his feelings by not dwelling on his abilities than by any eulogy which, however merited, might offend. There was another eminent professor present—he alluded to Professor Owen, professor of comparative anatomy in the Royal College of Surgeons—an individual whose zeal and ability had been rewarded by the government with a pension. He also, as a physiologist, was desirous to co-operate with the agriculturist, by recommending the scientific application of the most approved methods of rearing and fattening cattle. This was especially a time when they hungered and thirsted, as it were, for experiment, that farmers might know something of the nature of the component parts of some of their most common crops. He was informed, by those well acquainted with the subject, that the present generally-received analyses of wheat, peas, &c., were excessively incorrect and imperfect. The attention of this society, therefore, could not be too speedily turned to this important subject. By a due attention to the admixture and transposition of soils, we shall find that we want not the aid of artificial and foreign manures, if the produce of the farm-yard is properly applied and husbanded; and if the constituents of our soils and their products are properly examined and understood by the labours of the chemist for the next five years, and of the geologist for the five years succeeding that, they will be enabled to point out with accuracy the constituent ingredients of which they are made up. He hoped yet to live to see the day when manure and good management would almost double or treble the produce of our soils: and by draining and a proper course of crops, we should produce grain enough for the entire wants of the country.

The CHAIRMAN then proceeded to read

THE AWARD OF PREMIUMS FOR STOCK.

SHORT-HORNS.

JUDGES—Mr. Jesse Kemp, of Utterby Grove; Mr. John Godfrey, of Cottesmore; Mr. W. Jones, of Sheep House, Gloucestershire.

CLASS I.—The first prize of thirty sovereigns for the best bull calved previously to the 1st of January, 1841, is adjudged to No. 2, viz., to W. Barnard, M.P., of Gosfield Hall, Halstead, Essex, for his 3 years 3 months old short-horned bull, bred by the Earl Spencer, at Wiseton, near Bawtry, Nottinghamshire.

The second prize of 15 sovereigns in class 1 is adjudged to No. 8, viz., to Mr. John Forrest, of Stretton, near Warrington, for his 4 years and 4 months old short-horned bull, bred by himself.

CLASS II.—The prize of 20 sovereigns for the best bull calved since the 1st of January, 1841, and more than 1 year old, is adjudged to No. 27, viz., to Mr. John Cooper, of Monkwood, Thurgaston, Nottinghamshire, for his 2 years 1 month and 1 day old short-horned bull, bred by himself.

CLASS III.—The prize of 15 sovereigns for the best cow in milk, is adjudged to No. 48, viz., to Mr. Thomas Crofton, of Holywell, near Durham, for his 4 years and 2 months old short-horned cow, bred by Mr. John Colling, of Whitehouse.

CLASS IV.—The prize of 15 sovereigns for the best in-calf heifer not exceeding 3 years old, is adjudged to No. 71, viz., Mr. Thomas Crofton, of Holywell, near Durham, for his 2 years and 11 months old short-horned in-calf heifer, bred by himself.

CLASS V.—The prize of 10 sovereigns for the best yearling heifer, is adjudged to No. 97, viz., to Mr. Henry Watson, of Walkeringham, near Bawtry, for his 1 year and 10 months old short-horned yearling heifer, bred by himself.

COMMENDATIONS.

The judges commend No. 1, viz., W. Ackers, M.P., 5 years and 9 months old short-horned bull, in class 1.

The judges commend No. 5, in class 1, viz., Mr. T. Chapman's 4 years and 9 months old short-horned bull.

The judges commend No. 11, in class 1, viz., the

Rev. Charles Mordaunt's, of Badgeworth, near Cross, 3 years and 2½ months old short-horned bull.

The judges commend No. 12, in class 1, viz., Mr. Richard Ratcliff's 6 years and 9 months old short-horned bull.

The judges highly commend No. 14, in class 1, viz., Mr. Strickland's 3 years 8 weeks and 1 day old short-horned bull.

The judges commend No. 16, in class 1, viz., W. William Torr, jun.'s, 2 years and 10 months old short-horned bull.

The judges highly commend No. 24, in class 2, viz., Mr. Thomas C. Beasly's 1 year and 2 months old short-horned bull.

The judges highly commend No. 37, in class 2, viz., Mr. Strickland's 2 years 18 weeks and 1 day old short-horned bull.

The judges highly commend No. 53, in class 3, viz., Mr. J. D. Jefferson's 5 years and 8 months old short-horned cow.

The judges commend the short-horned cows generally.

The judges commend No. 68, in class 4, viz., Mr. John Booth's 2 years 3 months and 1 week old short-horned in-calf heifer.

The judges highly commend No. 80, in class 4, viz., Mr. W. Raines' 2 years and 6 months old short-horned in-calf heifer.

The judges highly commend No. 81, in class 4, viz., Mr. Strickland's 2 years 22 weeks and 5 days old short-horned in-calf heifer.

The judges highly commend No. 92, in class 5, viz., Mr. John Outhwaite's 1 year and 7 months old yearling heifer.

HEREFORDS.

Judges—Mr. Thomas Chapman, of Stoneleigh; Mr. J. Buckley, of Allithwaite; Mr. W. Trinder, of Wantage.

Class I.—The first prize of 30 sovereigns for the best bull calved previously to the 1st of January, 1841, is adjudged to No. 104, viz., to Mr. Thomas Jeffries, of the Grove, Pembridge, for his 3 years 8 months and 3 days old Hereford bull, bred by himself.

The second prize of 15 sovereigns in class 1, is adjudged to No. 105, viz. to Messrs. John Walker, of Burton, near Worcester, and John Johnson, of Hampton Wafle, near Bromyard, for their 2 years, 7 months, and 13 days old Hereford bull, bred by Mr. Duppa, of Puddleston.

Class II.—The prize of 20 sovereigns, in class 2, for the best bull calved since the 1st of January, 1841, and more than one year old, is adjudged to No. 110, viz. to Mr. William Perry, of Monkland, near Leominster, for his 1 year, 7 months, and 16 days old Hereford bull, bred by himself.

Class III.—The prize of 15 sovereigns for the best cow in milk, in class 3, is adjudged to No. 114, viz. to Mr. Thomas Jeffries, of the Grove, Pembridge, for his 3 years and 8 months old Hereford cow, bred by himself.

Class IV.—The prize of 15 sovereigns, in class 4, for the best incalf heifer, not exceeding 3 years old, is adjudged to No. 119, viz. to Mr. John Walker, of Burton, near Worcester, for his 2 years, 5 months, and 2 weeks old Hereford incalf heifer, bred by himself.

Class V.—The prize of 10 sovereigns, in class 5, for the best yearling heifer, is adjudged to No. 123, viz. to Mr. Thomas Jeffries, of the Grove, Pembridge, for his 1 year, 6 months, and 1 day old Hereford yearling heifer, bred by himself.

COMMENDATIONS.

The judges commend No. 191, viz. Mr. W. Carren's 10 years 2 months old Hereford bull, in class 1.

The judges commend No. 111, in class 2, viz. the executors of the late Mr. John Price's 2 years and 5 months old Hereford bull.

The judges commend No. 115 in class 3, viz. Sir Francis Lawley's 10 years and 4 months old Hereford cow.

The judges commend No. 116, viz. Mr. John N. Carpenter's 2 years and 6 months old incalf heifer, in class 4.

The judges commend No. 124, in class 5, viz. Sir Francis Lawley's 1 year and 8 months old yearling heifer.

DEVONS.

Judges:—Mr. Thomas Cooper, of Norton; Mr. Edward L. Franklin, of Ascott; Mr. J. King, of Brighton.

Class I. The first prize of 30 sovereigns, in class 1, for the best bull, calved previously to the first of January, 1841, is adjudged to No. 129, viz., to Mr. George Turner, of Barton, near Exeter, for his 3 years and 3 months old Devon bull, bred by himself.

The second prize of 15 sovereigns, in class 1, is adjudged to No. 130, viz., to Mr. Thomas Umbers, of Wappenbury, near Royal Leamington Spa, for his 3 years and 3 months old Devon bull, bred by Mr. Quartley, of Molland, North Moulton, Devon.

Class II. The prize of 20 sovereigns, in class 2, for the best bull, calved since the first of January, 1841, and more than one year old, is adjudged to No. 131, viz., to Mr. Thomas Reynolds, of Thomerton, near Exeter, for his 1 year, 42 weeks, and 5 days old Devon, bred by himself.

Class III.—The prize of 15 sovereigns, in class 3, for the best cow in milk, is adjudged to No. 745, viz., to Mr. George Turner, of Barton, near Exeter, for his 6 years and 2 months old Devon cow.

Class IV.—The prize of 15 sovereigns, in class 4, for the best incalf heifer, not exceeding 3 years old, is adjudged to No. 134, viz., Mr. George Turner, of Barton, near Exeter, for his 2 years and 4 months old Devon incalf heifer, bred by himself.

Class V.—The prize of 10 sovereigns, in class 5, for the best yearling heifer, is adjudged to No. 136, viz., to Mr. George Turner, of Barton, near Exeter, for his 1 year and 4 months old Devon yearling heifer, bred by himself.

ANY BREED OR CROSS CATTLE,

Not qualified to compete as Short-horns, Herefords, or Devons.

Judges:—Mr. John Hall, of Wiseton; Mr. Philip Chasemore, of Horsham; Mr. William Smith, of West Rasen.

Class I.—The first prize of 30 sovereigns, in class one, for the best bull calved previously to the first of January, 1841, is adjudged to No. 140, viz. to Mr. James Hextall, of Snibstone, Ashby-de-la-Zouch, for his 3 years and 6 months old pure long-horned bull, bred by Mr. John Dean, of Ibstock.

The second prize of 15 sovereigns, in class one, is adjudged to No. 139, viz. to Mr. William Daniel, of Burton-upon-Trent, for his 3 years and 5 months old long horned bull, bred by himself.

Class II.—The prize of 20 sovereigns, in class two, for the best bull, calved since the 1st of January, 1841, and more than one year old—prize not awarded.

Class III.—The prize of 15 sovereigns, in class

three, for the best cow in milk, is adjudged to No. 154, viz. Mr. Edward Pratt, of Caldwell, Burton-upon-Trent, for his 9 years and 3 months old pure long-horned cow, bred by Mr. Minion, of Statfold, near Tamworth.

Class IV.—The prize of 15 sovereigns, in class four, for the best in-calf heifer, not exceeding 3 years old, is adjudged to No. 157, viz. to his Grace the Duke of Buckingham, of Stowe, near Buckingham, for his Grace's 2 years and 11 months old pure long-horned incalf-heifer, bred by himself.

Class V.—The prize of 10 sovereigns, in class five, for the best yearling heifer, is adjudged to No. 161, viz. to the Rev. Cornelius Thompson, of Elkesley, near East Retford, for his one year and 4 months old Ayrshire and short-horned cross-bred yearling heifer, bred by himself.

LEICESTER SHEEP.

Judges:—Mr. Jonathan Clarke, of Weedon; Mr. Richard Hewitt, of Dodford; Mr. Thomas Metcalf, of Harleston Park.

Class I.—The first prize of 30 sovereigns, in class 1, for the best shearling ram, is adjudged to No. 231, viz., to Mr. Thos. E. Pawlett, of Beeston, near Biggleswade, Bedfordshire, for his 17 months old Leicester ram, bred by himself.

The second prize of 15 sovereigns, in class 1, is adjudged to No. 230, viz., to Mr. Thomas E. Pawlett, of Beeston, near Biggleswade, Bedfordshire, for his 17 months old Leicester ram, bred by himself.

Class II.—The first prize of 30 sovereigns, in class 2, for the best ram of any age, above 2 years old, is adjudged to No. 305, viz., to Mr. Thomas Stone, of Barrow-on-Soar, for his 40 months old Leicester ram, bred by himself.

The second prize of 15 sovereigns, in class 2, is adjudged to No. 306, viz., to Mr. Thomas Stone, of Barrow on Soar, for his 52 months old Leicester ram, bred by himself.

Class III.—The first prize of 10 sovereigns, in class 3, for the best pen of five shearling ewes, is adjudged to No. 319, viz., to Sir William B. Cook, Bart., of Wheatley, near Doncaster, for his five 15½ months old Leicester ewes, bred by himself.

The second prize of 5 sovereigns, in class 3, is adjudged to No. 318, viz., to Sir William B. Cook, Bart., of Wheatley, near Doncaster, for his five 15½ months old Leicester ewes, bred by himself.

SHORT WOOLLED SHEEP.

Judges:—Mr. Edward Pope, of Great Toller; Mr. William Stace, of Berwick; Mr. William Arkoll, of Langney.

Class I.—The first prize of 30 sovereigns, in class 1, for the best shearling ram, is adjudged to No. 455, viz., to Mr. Jonas Webb, of Babraham, near Cambridge, for his 16 months old Southdown ram, bred by himself.

The second prize of 15 sovereigns, in class 1, is adjudged to No. 458, viz., to Mr. Jonas Webb, of Babraham, near Cambridge, for 16 months old Southdown ram, bred by himself.

Class II.—The first prize of 30 sovereigns, in class 2, for the best ram of any age, above 2 years old, is adjudged to No. 471, viz., to Mr. William Sainsbury, of West Lavington, near Devizes, for his 29 months old Southdown ram, bred by himself.

The second prize of 15 sovereigns, in class 2, is adjudged to No. 477, viz., to Mr. Jonas Webb, of Babraham, near Cambridge, for his 40 months old Southdown ram, bred by himself.

Class III.—The first prize of 10 sovereigns, in class 3, for the best pen of five shearling ewes, is adjudged to No. 490, viz., to Mr. Samuel Webb, of Babraham, near Cambridge, for his five 16 months old Southdown ewes, bred by himself.

The second prize of five sovereigns, in class 3, is adjudged to No. 488, viz., to his Grace the Duke of Richmond, for his five 16 months old Southdown ewes, bred by himself, at Goodwood, near Chichester.

COMMENDATIONS.

The judges commend No. 461, in class 2, viz., Mr. James Beaven's 64 months old ram.

The judges highly commend No. 464, viz., Mr. S. Grantham's 28 months old ram.

LONG WOOLLED SHEEP.

(Not qualified to compete as Leicesters.)

Judges:—Mr. William Gillet, of Stoneleigh; Mr. John Harris, of Hinton; Mr. John Elliot, of Chapel Brampton.

Class I.—The first prize of 30 sovereigns, in class 1, for the best shearling ram, is adjudged to No. 502, viz., to Mr. Edward Smith, of Charlbury, Oxon, for his 15½ months old Oxfordshire ram, bred by himself.

The second prize of 15 sovereigns, in class 1, is adjudged to No. 496, viz. to the executors of the late Mr. Wm. Faulker, of Bury Barns, near Burford, Oxon, for the 15 months old improved Oxfordshire ram, bred by himself.

Class II.—The first prize of 30 sovereigns, in class 2, for rams of any age above 2 years old, is adjudged to No. 511, viz. to Mr. Edward Smith, of Charlbury, Oxon, for his 51½ months old Oxfordshire ram, bred by himself.

The second prize of 15 sovereigns, in class 2, is adjudged to No. 512, viz. to Mr. Edward Smith, of Charlbury, for his 51 months old Oxfordshire ram, bred by himself.

Class III.—The first prize of 10 sovereigns, in class 3, for the best pen of five shearling ewes, is adjudged to No. 513, viz. to Mr. Charles Large, of Broadwell, near Burford, for his five 16 months old new Oxfordshire ewes, bred by himself.

The second prize of 5 sovereigns, in class 3, is adjudged to No. 514, viz. to Mr. Edward Smith, of Charlbury, Oxon, for his five 15½ months old Oxfordshire ewes, bred by himself.

COMMENDATIONS.

The judges commend highly No. 506, viz., the executors of the late Mr. William Faulkner's 62 months old ram.

The judges highly commend No. 507, viz., the executors of the late Mr. William Faulkner's 40 months old ram.

HORSES.

Class I.—The first prize of 30 sovereigns, in class 1, is adjudged to Mr. D. Howsin, of Bathley, near Newark, Notts., for his 6 years old cart stallion, bred by Mr. Haden, of Baldock, Herts.

The second prize of 15 sovereigns, in class 1, is adjudged to Mr. Galton, of Edstone Hall, Stratford-on-Avon, Warwickshire, for his 8 years old cart stallion, bred by Mr. Thomas Moss, of Scargill, near Barnard Castle, Durham.

Class II.—The prize of 15 sovereigns, in class 2, is adjudged to Mr. Thomas Cutler, of Somercoats, near Alfreton, Derbyshire, for his two years old cart stallion, bred by Mr. Radford, of Denby.

Class III.—The first prize of 20 sovereigns, in class 3, is adjudged to Mr. Matthew Ingli, of Dun-

bleton, near Evesham, for his cart mare and foal; mare bred by the late Mr. T. Edward, of Dumbleton; sire of the foal belonging to Mr. Willet, of Bishampton Field, Evesham.

The second prize of 10 sovereigns, in class 3, is adjudged to Mr. Robert Bean, of Orston Grange, near Bingham, Notts., for his cart mare and foal; the mare bred by Mr. Brewster, of Bingham, sire of foal belonging to Mr. D. Housin, of North Muskham, Notts.

Class IV.—The prize of 10 sovereigns, in class 4, is adjudged to Mr. Charles Stokes, of Kingston, near Kegworth, Leicestershire, for his two years old filly, bred by Mr. John Palmer, of Ratcliffe, Notts.

Class V.—The prize of 10 sovereigns, in class 5, is adjudged to Mr. Arthur Chester, of Nottingham, for his 7 years old thorough-bred cart stallion, got by Jerry, out of Beeswing's dam; bred by Mr. Orde, of Nunnykirk, near Morpeth, Northumberland.

PIGS.

Judges:—Mr. John Farncomb, of Brighton; Mr. Tawney, of Oxford; Mr. Owen Cambridge, of Wimpole.

Class I.—The first prize of 10 sovereigns, in class 1, for the best boar of a large breed, is adjudged to No. 525, viz. to Mr. Moses Cartwright, of Stanton House, near Burton-on-Trent, for his 1 year and 9 months old boar, bred by himself.

The second prize of 5 sovereigns, in class 1, is adjudged to No. 522, viz. to Mr. Pusey, M.P., of Pusey, near Faringdon, for his 1 year and 2 months old Berkshire boar, bred by Mr. John Harris, of Hinton.

Class II.—The first prize of 10 sovereigns, in class 2, for the best boar of a small breed, is adjudged to No. 532, viz. to Mr. Wm. Fisher Hobbs, of Marks Hall, Coggeshall, for his 10 months old improved Essex boar, bred by himself.

The second prize of 5 sovereigns, in class 2, is adjudged to No. 538, viz., to Mr. Thomas Atkin, of Grendon, near Atherstone, for his 1 year old boar, bred by himself.

Class III.—The prize of 10 sovereigns, in class 3, for the best sow of a large breed, is adjudged to No. 539, viz. to his Grace the Duke of Devonshire, for his 2 years and 4 months old Lincolnshire sow, bred by Mr. Gratton, of Swarby, Lincolnshire.

Class IV.—The prize of 10 sovereigns, in class 4, for the best sow of a small breed, is adjudged to No. 562, viz., to Mr. Thomas B. Shilcock, of Hose, near Melton Mowbray, for his 2 years and 10 months old cross bred sow, bred by himself.

Class V.—The prize of 10 sovereigns, in class 5, for the best pen of three breeding sows, is adjudged to No. 579, viz. to Mr. Wm. F. Hobbs, of Coggleshall, for his 8 months old improved Essex pigs, bred by himself.

COMMENDATIONS.

The judges commend No. 519, in class 1, viz., Mr. W. F. Hobbs's 1 year and 8 months old, improved Essex boar.

The judges commend No. 530, in class 2, viz., the Rev. John Higginson's 1 year old boar.

The judges commend No. 548, in class 3, viz., Mr. John Wightman's 1 year and 8 months old sow.

The judges commend No. 551, in class 4, viz., Mr. John Buckley, junior's, 4 years old sow.

The judges commend No. 564, in class 4, viz., Mr. Richard Smith's 1 year and 1 month old sow.

They commend No. 583, in class 5, viz., the Rev. C. Thompson's 6 months and 3 weeks old sow pigs.

EXTRA STOCK.

The judges award 2*l.* to No. 604, viz., to Mr. R. Burgess, of Cotsgrove-place, near Nottingham, for his 9 months old Durham heifer.

3*l.* to No. 615, viz., Mr. William Worthington, of Newton park, Burton-upon-Trent, for his 4 years old short-horned heifer.

5*l.* to No. 21, viz., to the Hon. Mr. Wilson, of Diddlington, near Brandon, for his 2 years and 6 months old Ayrshire and short-horned heifer.

2*l.* to No. 653, viz., to Mr. T. Harris, of Fletchampstead, for his 17 months old Leicester ram.

3*l.* to No. 715, viz., to Mr. Watkins, of Ormsby, for his 52 months old fat ewe.

3*l.* 10s. to No. 716, viz., to Mr. Watkins, of Ormsby, for his 40 months old fat ewe.

2*l.* to No. 661, viz., to Mr. Harris, of Fletchampstead, for his 17 months old Leicester ram.

1*l.* 10s. to No. 669, viz., to Mr. Harris, of Fletchampstead, for his 17 months old Leicester ram.

2*l.* 10s. to No. 724, viz., Mr. John Buckly, jun., for his 7¼ months old sow.

2*l.* to No. 726, viz., to Mr. Wiley, of Bramsby, for his 2 years and 6 months old sow.

3*l.* to No. 727, viz., to Mr. Wiley, of Bramsby, for his 6 months and 2 weeks old sow pig.

5*l.* to No. 728, viz., to Mr. Wiley, of Bramsby, for his 6 months and 2 weeks old sow pig.

The Chairman then gave the health of the successful competitors for cattle. He felt sure that the value of such men as had gained the premiums that day could not be lightly estimated in any country, but must be especially important and valuable in an insulated country whose population increased in the ratio of a thousand per day. The exertions of these competitors should be held up as patterns and examples to the industrious yeomanry of England. He remembered to have read in the report of some meeting of this society a speech of the gentleman who sat on their vice-chairman's left hand (Mr. Pusey) a quotation from some ancient writer, which informed them what was at that time the state and characteristics of the animal kingdom. It appeared then to have been the custom of anointing the horns of the young heifers with oil to increase their growth, and which was thought to produce beneficial effects in improving the breed. The length and plenitude of the horns was then the great desideratum; and so much attention was paid to the extent and quality of this excrescence, that it was a matter of doubt whether they might not have considered the horns were formed as the food of man. In the present day, however, it was a matter of small consequence whether the beast had any horns or not, for the animal was judged by its points of flesh and fattening properties. There was another reason which should stimulate to renewed exertions in arriving at the most approved breeds of stock, and which should induce them all to look up with gratification to the yeomen and farmers of the country, and that was, that in times of depreciation, when prices were fluctuating in this country, that which was really and intrinsically good would always be in request, and maintain its price. Parties who saw fine animals exhibited, would be sure to enquire from whence they came, how they were bred, and where animals of the same excellence could be procured;

and he was sure it was the character of the yeoman and real farmer and lover of his country, to diffuse good breeds, and to extend animals of good blood from one district to another. He (the Chairman) was present recently at a meeting in his own county (Cambridge) which went to prove the truth of his remarks, and bore out the observations he had made as to the permanent and increasing value of well-bred animals, the prices for which never depreciated. Mr. Jonas Webb, at his sixteenth annual meeting for letting rams, was, notwithstanding prices had been much reduced, enabled to realize a larger sum than he had ever received on any previous year. There was a curious fact, which he would have them bear in mind, that when bad animals were neglected, good stock still fetched high prices, and the depreciation of prices invariably led to a thirsting for a better description of animals. It was important that they should see and feel the truth of these observations, and that when they returned to their own neighbourhoods they should profit by them. The chairman concluded by proposing the health of the successful candidates for cattle premiums, and especially Mr. G. Turner.

The noble CHAIRMAN then proceeded to read the awards for sheep, pigs, cheese, &c., and afterwards proposed the successful competitors in these classes.

His Grace the DUKE OF RICHMOND rose, and said he was in hopes that some of those gentlemen who had beaten him by carrying off the more important premiums would have responded to the toast, but as no one rose to reply to it, the duty devolved upon him as one of the successful candidates. Often as he had attended and been called upon to address great meetings, custom had not yet reconciled him to the task, nor could he rise before such an assemblage without the greatest diffidence. He could not but confess that he should have been more pleased to have carried off some of the premiums in the higher classes, but nevertheless as a practical farmer he looked more to the character of his young stock than his old; and as he had succeeded in carrying off a prize this year for his young stock, he might next year be enabled to obtain a premium for his old stock. He was proud that at least he could take one premium into Sussex; and he doubted not that those farmers present from widely distant parts of the country would feel like himself pride and satisfaction in carrying home prizes and honorary rewards, which would tend to the credit and honour of their county. He made it a point to meet the farmers of England as often as he could, for feeling himself to be as it were one of themselves, he felt drawn towards them by sympathy, fellow-feeling, and a common interest. He could not but congratulate them upon the splendid show of implements they had seen that day, and also upon the prosperity to which this great association had attained. He had had some share, in connection with his noble friend Lord Spencer, in setting it on foot; and he felt that so long as it was supported by the practical farmers of England it must continue to prosper and to extend its usefulness and influence. Perseverance was the great point of which they one and all stood in need, and if they only persevered in their efforts many of those present would in future years have to rise to return thanks as successful candidates. He felt obliged for the patience with which they had heard the few remarks he had to offer, and though speaking to many farmers to whom he was before unknown, he trusted that when they came to know him better, they would not cease to respect him, nor receive him less warmly and cordially than they had done on the present occasion.

The noble CHAIRMAN then proposed the health of Lord Northampton, the president of the Royal Society. The members of the Agricultural Society, constituted as it was, must always feel that it was desirable and necessary for them to hold out the right hand of friendship to all those great institutions which had been established for different scientific purposes, but whose objects had been carried out for the common weal, and whose labours had redounded to the glory and honour of our country. The disposition of the noble Marquis was one of those which carried men through life without making a single enemy. And whether they looked upon his character and conduct in public or private life, they found him to be an ornament to the circle in which he moved, and an honour to the noble Society over which he presided (*applause*).

The MARQUIS OF NORTHAMPTON rose to respond to the toast, and said that he felt gratified for the compliment they had been pleased to pay to him as President of the Royal Society. He shared with them fully in appreciating the importance of the exertions they were making to improve the science of agriculture, which was, as it were, the mother and handmaid of all the arts. They were identified with every science and with every art, for what was the improvement of the soil but a branch of geology? What was the culture and growth of corn and roots and grass, but a branch of botany? What was the breeding and rearing of cattle but a branch of zoology? and what the application of various manures, the analyses of soils and vegetables, but a branch of chemistry? He appreciated to the full the value and importance of meetings such as these, which helped to remove all those feelings of petty jealousies, which invariably existed in local districts and excited a general and zealous desire to promote the welfare of the common cause by individual exertion. It had been well observed that he was one of the greatest benefactors of his country who made two ears of corn grow where only one had grown before. He could not but feel that the Royal Agricultural Society of England was in some degree indebted for its origin to the society over which he had the honour to preside; for if it had not been for the stimulus and example given to it by that and other scientific societies, it never would have arisen. If there had been no other geologists to encourage and appreciate his exertions, they would have had no Dr. Buckland; and but for similar examples no Dr. Owen in surgery, no Dr. Playfair in chemistry. His lordship concluded by wishing prosperity to the Royal Agricultural Society of England.

The CHAIRMAN said that although the award for implements had not yet arrived, and he believed it was not customary to go through the list which would occupy a very large portion of their time, still there must be, among those present, exhibitors who had been successful competitors, as well as others who had not been successful. He felt in duty bound to congratulate the society upon the noble show of implements of husbandry they had seen that day. He would venture to assert that in the whole civilized world there never before had been seen such an exhibition (*applause*). Such a show of implements of exquisite workmanship, of marvellous ingenuity, and at remarkably low prices, was especially deserving of the notice and approbation

of the agricultural world: and it was no small degree of gratification to know that this fine display of implements had been exhibited in a manufacturing town like Derby, where they were so well able to appreciate their construction and advantages. It opened to them all a field of advantage, never before known or properly understood in this country. It formed as it were a connecting link between those two great classes of the community: a fact so evident in itself that it conveyed at once the idea of an union between them. He had heard it however remarked, that it was an exhibition fearful to the heart, and to the welfare of the labouring population. He believed, however, that so far from this being the case, the opposite was the fact, for the improvement and progress of one furthered and promoted the interests of the other. They could not impede the progress of science: it would master them; it would bear them down. How desirable therefore was it to direct it into proper channels, that it should perform those great benefits which it was specially intended by the great Creator to carry out. Would any one venture to tell him that the use of the drill had reduced the employment of manual labour? Or who would tell him that the employment of threshing machines had impeded labour? On the contrary, it gave employment to increased hands. They were now enabled to thresh out their wheat in the barn more rapidly than ever—not by hand—not by horse power, but by machinery. To cite another instance, had the spinning jenny impeded the work of man? Had it not, on the contrary, given an increased impetus to trade, and to the employment of labour? If it were not so, how did it happen that they saw such great masses of people springing up in their manufacturing towns, and actively employed? They indeed occasionally heard of the want and misery of some of these men, who were thrown for a time out of employment; but how small was their number compared with those who were deriving their bread from the employment of spinning jennies, power loom machines, &c. He was convinced, upon higher grounds than these, that it was utterly impossible to resist the onward march of science. They would find the helping hand of God was visible in these aids and incitements to improvement, and therefore it would be utterly useless to oppose them. He would therefore conclude by urging upon them the necessity of improving and extending the cultivation of their land by every means in their power, for they would find that every permanent improvement in the soil would furnish an increased demand and stimulus for labour.

Mr. RANSOME rose and said:—Lord Hardwicke and Gentlemen,—Whatever difficulty I might under ordinary circumstances experience in attempting to address so large a company of noblemen and gentlemen, that difficulty is doubled under the circumstances in which I feel myself to be placed at the present time; and I feel it will be impossible for me adequately to convey to you the expression of feelings which, as far as regards the manner in which your acknowledgment of the value of mechanics as applied to agriculture has at the present time been made, are at once both gratified and grateful. Gratified, in so far as your reception of the sentiment has proved a justification of those principles which throughout the whole course of our professional engagements we have been faithfully endeavouring to carry out; and grateful—doubly grateful—for the manner in which that acknowledgment has at the present time been made. *(Cheers.)* As far as regards the compliment to myself personally, it will not be needful to detain you by multiplying words; those in the present company who know me best will need no strong expressions to convince them how gratefully I feel and have ever felt the kindness I have ever received at their hands, and those who know me not will be able far more easily to imagine than I am able to express, the emotions I would desire to convey to you. *(Cheers.)* Having thus imperfectly discharged my personal obligation to you, it yet remains for me, on behalf of the agricultural implement makers as a class, to acknowledge on their part their thanks for your notice, and I know they highly value your acknowledgment of the value of our humble labours; but it will also be needful for me, as their representative on the present occasion, to attempt to convey to you the full and fair expression of feelings of a somewhat different character, and to avail myself of this the only opportunity which has yet been afforded us as implement makers, of coming directly and immediately into contact with you, the council and managers of this Society, in full conclave assembled; and I owe it as a duty to you, as directors of this great national institution, not less than a duty towards those I stand here to represent, to lay before you the strong feeling of mortification and disappointment which we have one and all experienced, believing that in the full, free, and candid expression of our views lies the first step towards future amendment; for I am fully persuaded without a more just understanding of our relative position, we shall not be able to secure those advantages which the President has so strongly alluded to, in the mutual co-operation of all classes to promote a national good. *(Cheers.)* You have stated your high appreciation of the value and importance of mechanics as applied to agriculture, and you do not over-estimate these advantages as a means to the furtherance of the cause of agriculture. If we turn our eyes to the large manufacturing districts, and ask what has enabled us to maintain and employ the dense masses of their population, has it not been the result of the application of mechanics to the lessening the hardship of labour, and reducing the cost of production? And there yet remains a wide field in agriculture for increasing its prosperity from the same source—at once reducing the cost and increasing and consequently cheapening its production, for the benefit of all. *(Applause.)* I am aware that it has been frequently asserted that such improvements lessen the employment of the poor, and rob him of his birthright; but I have no hesitation in making the assertion, upon a more than commonly extended range of observation, that, with regard to agricultural machinery, I have never known an instance to the contrary, but that those who have most largely availed themselves of the advantages of machinery have invariably found their advantage in the employment of a fuller complement of labourers to carry on other operations, to the improvement of their means of production. Knowing this, I feel to value my position as a manufacturer of agricultural implements, believing as I do that through our means the cause of agriculture is advanced, the cost of production lessened, and the greatest benefit that can result to a nation—a ready supply of food for its people—is secured. Ours, gentlemen, is a proud position. Not only do we number amongst our ranks the humble and ingenious ar-

tisan, and the experienced and able engineer—not only have we as coadjutors men of science and practical skill—but even aristocracy itself has condescended to honour us by enlisting in our ranks; and while we can boast the names of Lord Somerville, Lord Western, and Lord Ducie, and though I believe it is far less difficult to a lord to become an implement maker than for an implement maker to become a lord, we justly value our privileges, and "I stand by my order." *(Applause.)* Gentlemen, you have established a grand national society for the encouragement of agriculture, and you have summoned us agricultural implement makers to come up to the help of the cause. Have we not to a man responded to the call? *(Cheers.)* Have we not brought our implements from the north, from the south, from the east, and the west? Have we not braved for them perils by sea and perils by land, till, what with the delay and uncertainty occasioned by their transit by water, equalled only by the certainty of awful expences by land—what with light carriages breaking down with implements which were too heavy, and heavy carriages jolting to pieces implements which were too light—after the suspense and anxiety attendant upon our getting them into your yard barely in time to be too late, we come to survey the idols, which at great cost of labour and of thought we have cherished as the means of our attaining the bubble reputation, we find rents and patches—holes and fractures far beyond the mysteries of paint and putty to cover or to hide. *(Cheers.)* And what has been our reward? After encountering these evils, time after time, under the promise from your Society that their merits shall be adequately and fairly tested, we do feel that we are entitled to expect at your hands full, fair, sufficient trials—trials which shall suffice, not simply to make amusement for a crowd, but trials which shall be sufficient for a test. *(Immense approbation.)* We come not to your meeting as showmen, to afford amusement: we come not here to sell our implements, as at a booth in a fair. We claim no greater degree of disinterestedness than other men, but we are all interested in the weal of the cause, and we come expecting that the Royal English Agricultural Society shall justify the expectations they have held out, that our implements shall have a full, fair, adequate trial; that they shall be tested by practical and competent judges, aided by the intelligence of others skilled in mechanical combinations; and that so tested they shall have the stamp of value fixed where merit is due. And this is the reward we seek. *(Cheers.)* We value not your prizes of five pounds, and ten pounds, and twenty pounds; we value not your medals of silver or gold, if awarded merely on the ground of the novelty of their construction, or the intricate ingenuity of their arrangements. We bring you our instruments—we ask you to subject them to the sound or even severe test of practice and trial under competent judges; and when you do this, we shall highly value your awards—far, far above their nominal amount; and if the decisions and awards of this Society are to have any value, they must be fair, full, and honest, and then they will be a permanent stamp of value and utility. Otherwise, they will be degraded to become the mere medium of puffing advertisement, enabling makers of implements to ride into notoriety on the back of the Society; and the agricultural public, who, misled under the apprehension of their value, purchase them on their faith in the Society's decisions, will be continually subjected to the mortification of finding themselves gulled and disappointed by their defective performances. *(Continued cheers.)* I esteem highly this opportunity of addressing you as the representative of the class with whom I am associated, in order that you may be put in full possession of our feelings and opinions; and I should not do justice in conclusion did I not, on their behalf, take the opportunity of expressing our thanks to the gentlemen who have filled the office of stewards on the present occasion, and to bear testimony to their kindness, attention, and courtesy, in the attempt to remedy the various matters of difficulty as they have from time to time arisen. To the judges we are not less desirous to accord our thanks, in that, to the best of their ability and of the time afforded, they have given their attention to the tedious details of inventorship; but so limited were their opportunities that the intelligence of angels would scarcely suffice for the proper performance of their task. Again, gentlemen, I thank you for the compliment you have been pleased to pay us, and especially for the patience with which you have listened to my remarks. *(Cheers.)*

The CHAIRMAN having called upon Lord Spencer, that nobleman observed that the toast with which he was intrusted was one which, from his own personal observation, he was well qualified to do justice to; and he felt much satisfaction in bearing his ready testimony to the care, zeal, and impartiality of the judges of the show. He had been with them all day, and as far as he could judge they had had no easy task to perform in making their decisions. They had already heard favourable mention made of the great and important show of implements. He would not go so far as to say that the show of stock would equal it, but they must prepare themselves on the morrow to see such a show of cattle as had never before been exhibited at a meeting of their society. It was not the conflicting merits of the animals alone, but it was the enormous number shown, which added greatly to the difficulties of the judges; the office was a most painful and responsible one to fulfil at the best of times, but how much more so on an occasion such as this. He had been much gratified by many of the speeches he had heard that evening, but by none more so than that of the talented gentleman who had last addressed them. He completely concurred with that speaker in telling them that the show of implements should not only be great in the yard but useful in the field; their judgment and opinion must be given for their successful operation in the field. With respect to the assistance they were deriving from the labours of men of science, he looked forward with confidence to much greater advantages for the future than what they had derived from the past. But even if they looked to the rude implements formerly in use, and compared them with those now employed, they would learn to appreciate the immense advantage they were deriving from the labours and improvements in this branch of science. He would therefore impress upon them the paramount importance of affording trials and comparative tests to those agricultural implements. The noble earl concluded by giving the health of the judges of the cattle.

The CHAIRMAN called upon Professor Owen to propose the next toast, who rose and said, that when he came among them that evening as the humble disciple, anxiously seeking information, he

had not thought he should have been called upon to address them. The science which he represented was almost solely indebted to agriculturists for its very existence and being; and the physiologist felt how much he owed to the noble Lord Spencer for some of the most important improvements and discoveries in that science. In attending one of their large shows and meetings for the first time, he had done so in order to have the opportunity of carefully examining the anatomical configuration and peculiar qualities of those prize cattle of which they were so justly proud. And in acquiring information of this nature, he hoped to be able to give back somewhat of that knowledge to agriculture again. It had been sometimes asserted that prize animals were, from an exuberance of fat, in a morbid or diseased state; but their power of accumulating flesh was one of the best proofs of health. In the tropical climates nature had wisely ordained that the ruminating animals should be endowed with the peculiar property of accumulating nourishment with rapidity, and they were thus enabled in the course of five months to lay up a store in the humps on their backs on which to subsist for the remaining seven months of the year. Agriculture was by no means of modern origin, but it was only latterly that we had begun to discover how much the knowledge and practices of our fathers and forefathers in this art might be improved. Anatomy and physiology were never in so low a condition as when the works of Galen were published; and so wedded to prejudice, and so bigotted were practitioners in his time, that not one of his contemporaries past the age of forty would listen to or accept his doctrines. In the hope that they would ultimately be enabled to compete successfully, and in a generous spirit of rivalry, with Scotland and the Continent, in all agricultural matters, he had much pleasure in proposing the toast which had been entrusted to him—"Success to Agriculture all over the world." (*Applause.*)

Mr. COLMAN began by observing that he never rose with more diffidence in his life than on this occasion. He felt oppressed by the conviction of his inability to say what would be worthy of the attention of this distinguished assembly, and by his grateful sense of the treatment which he had received, which had been nothing but a succession of acts of kindness and hospitality since his arrival in the country. He agreed with the noble President in his admiration of the implements and machines exhibited in the show-yard, but he left the yard with great regret that among all these various and ingenious productions, there was not to be found a machine for making a dinner speech. He hoped that some one of the ingenious gentlemen at the other end of the hall might presently supply the deficiency. It might not be necessary for the members of the Royal Agricultural Society, whose speeches he desired, in the language of the committee, "to commend generally", nor the minister Plenipotentiary from the United States, who has an admirable machine of his own, which always turned out the best work, but for such a poor wight as himself, from the Yankee-land, it might prove extremely convenient. Agriculture was the great subject of that occasion, and he meant no invidious reflections when he pronounced it the art of all arts, the foundation of true wealth, a source of rational pleasure and useful occupation, and a great conservator of morals. Its indispensableness must be universally acknowledged. They might do without the physicians, if they would observe strictly the laws of health, and without the lawyers, if they would keep their tempers, and possibly without preaching, if every man would take care of his own conscience, and without soldiers, if men would observe the great law of Christianity, and "do to others as they would that others should do to them", but how they were to do without the farmers he did not well see. Agriculture, he had said is the foundation of true wealth, and is indispensable to human subsistence. Gold and silver are the mere exponents of wealth, and a man might command the mines of Golconda, and heap up his accumulations of money as high as the Andes, and yet starve in the midst of them. Agriculture is the source of many of the luxuries of life. Agriculture is favourable to morals. He would not assume for the farmers more virtue than prevailed in other classes, but he would say of the agricultural profession, that there is nothing in its pursuit prejudicial to good morals. Agriculture is a source of innocent and rational pleasure. Many of the brightest and best minds which ever adorned human nature, have so found it. He believed his excellent friend (the Duke of Richmond) —for so his kindness permitted him to call him— highly and justly as he prized the duty of defending his country's honour on the field of battle, would yet acknowledge that he had found some of his sweetest pleasures in the pursuits of agriculture, in the improvement of this art, and in rendering the earth productive for the subsistence and comfort of man and beast. There was another great mind, to whose reputation he was surprised to find the English were not more sensible; he meant Washington—for Washington was an Englishman, a British subject, and defended the honour of the British flag; and though afterwards he became an undutiful son, yet every fair mind would do justice to his convictions of duty. Washington found in agriculture the highest and purest gratification; and his agricultural journals, as they exhibit the most minute and exact attention to the management of his farm, even amidst the burdensome and anxious duties of public life, were among the most instructive documents ever given to the world. England takes the lead of the world in its improved agriculture. It has long been distinguished for its enlightened improvements. The names of Tull, Young, and Sinclair, form a bright constellation. There are other names to be added to them, of whom he would say in the words of the Roman poet, "may it be late before they return to the stars," who are destined to share even a more brilliant immortality. He could not speak from personal observation, but from information; and it is said that, of all nations, Belgium had most fully tested the productive capacities of a single acre. The agriculture of Germany must be highly improved, as he had the most authentic assurance from a German friend, that he had himself assisted in gathering 4,000 bushels of potatoes from five acres of land; a crop which, he believed, had in no country been surpassed. The agriculture of China is reported to be carried to a high degree of perfection. It is stated that the Chinese literature has 27,000 treatises upon agricultural subjects. This may be Chinese exaggeration, but one or two of their treatises, which had been translated, he had read, and he could say that they showed intelligence and exactness of observation. Indeed, it would hardly be well to treat with disdain the agriculture of even a barbarous nation, who by their agriculture had subsisted such an immense

population, and accumulated such vast amounts of wealth, and laid so large a portion of the world under tribute. America was urging on her agricultural improvements, and like young Julus, was following in the path of her ancestor "with unequal steps." The advancement of agriculture he deemed among the highest pursuits of philanthropy. Its moral and religious tendencies deserve consideration. There is every thing in the cultivation of the earth to invite the mind to the contemplation of that invisible and beneficent agency, which, from the wide-spread table of its bounty, supplies the wants of all living things. He would call the attention of that assembly to one other subject, which was the improvement of the condition of the labourer. A high authority commanded us "not to muzzle the ox which treadeth out the corn." Every effort should be made for the education and elevation of the labouring classes. It is too late in the day to decry the value or disparage the influence of education, as though it would injure the labourer. He would ask if it injured those classes in society who were already blessed with it. It should be given to the labouring classes as a consolation under their severe toil, and as a means of wholesome recreation, and of withdrawing them from the beer house, and other places of corruption, and making their homes more happy. Mr. Colman asked leave in conclusion, to offer the following sentiment:—England, the sun in the political sphere; like her own Eddystone, a blaze of light in the midst of the ocean. May she send forth her radiance not to wither, but to cherish—not to make desolate, but to quicken and make alive. May her intellectual and moral energies be concentrated upon the highest objects of philanthropy, the spread of knowledge, the advancement and diffusion of the useful arts, and the universal extension of civilization, liberty, and peace.

The Chairman next gave the health of the members of the local committee, coupling with it the name of Mr. Charles Colvile. They were much indebted to the zeal and assiduity of that committee, who had had a great deal of business on their hands. (Drank with three times three.)

Mr. Colvile, in returning thanks, said he felt very highly the compliment which had been paid to him, coming as it did from the *élite* of the English agriculturists. He feared they had greatly over-rated the exertions of the local committee, for at best they had merely been the tools in the hands of the society, to carry out their views and wishes, as far as their local knowledge enabled them to do, and to execute promptly and fully the instructions sent down to them from the Council in London. He confessed he should like to enter the lists with his friend Mr. Ransome, and discuss the comparative merits of the implements shewn; and he did not think the agricultural implement makers had so much cause of complaint. If they wished to bring their implements for the improvement of the Derby farmers, they should bring such as were suited to Derby soils, and not scruple to try them on Derby land. (*Hear, hear.*) He could wish that time would allow him to discuss the long-horn question with the noble chairman, as he (Mr. Colville) was still an advocate for oiling the horns. (*Much laughter.*) He felt rejoiced that he had been able to be useful to the society, and he had throughout endeavoured to act up to those right principles which their chairman had laid down—of never doing any thing that might reasonably give offence to any one. (*Hear.*) He should never cease to rejoice that he had been the means of procuring for the farmers of Derbyshire the splendid exhibition they had that day witnessed; he hoped that the society would again visit Derbyshire, and if he were alive and well, his best exertions should be again at their service. (*Cheers.*)

The Earl of Yarborough begged to propose the health of his noble friend, the President of the Society. (*Much cheering.*) He had the greater satisfaction in doing so because he had known the noble lord from an early period, when he was no higher than his (Lord Yarborough's) hip, before his noble friend entered the navy, of which he (Lord Yarborough) confessed himself a great admirer. (*Cheers.*) Now, his noble friend found himself on shore, and most efficiently performed the duties of a country gentleman. (*Hear, hear.*) He felt that his noble friend could not be more effectually employed for the benefit of his country than in pursuing agriculture, although he had most honourably and usefully served it while engaged in his earlier pursuit. (*Hear.*) He believed he might congratulate his noble friend on having become a good agriculturist, not a theoretical but a practical one, inasmuch as he was able to tell to the penny what each experiment he made cost. He should not detain the company longer than by proposing the health of his noble friend, "The President of the Society," who had filled the influential office with credit and satisfaction to the members and to himself. (*Great cheering.*)

The Earl of Hardwicke rose to return thanks, and was received with renewed cheering. He said he had gone through his duty on that evening without the slightest oppression until that moment, when it became his duty to return thanks for the proposal of his own health. He felt that he mainly owed the reception his name had met with, to the fact of his being President of the Royal Agricultural Society. (*No, no.*) He should not detain them any time, but he trusted he might be permitted to say that in his opinion agriculture could be best followed by adopting the practised rules of science, but there was in many places enough to do to land before science could be brought to bear upon it. He knew that by proper cultivation the produce of land might be doubled—he knew it by his own experience, because he had land himself which had doubled its produce in fifteen years. This had been mainly effected by dibbling, by deepening the ditches and draining the land, by using the straw of the farm-yard for manure; in fact, the farmers of England had as yet but little idea of what might be done by those simple means. (*Cheers.*) If they but looked back for a few years, in what a wretched state did they find agriculture? The rich and the thinking—those who had the ability and the means—had, however, since come to its aid. He would call their attention to a work written one hundred years since, showing that even then the application of science to agriculture was thought of. [The noble earl then read the passage from Mr. Pusey's paper, which spoke of agriculture as in itself a science, and as requiring the aid of chemistry to bring it to perfection. There was, it stated, one great obstacle to experiment in agriculture, that the time required to ascertain their results rendered them most expensive, and the difficulty of finding a channel through which to give such results to the public.] The farmers of England had now that channel in the Royal Agricultural Society. (*Hear, hear, and cheers.*) It would enable them to communicate these facts to the world, a proof of which had been given in the volumes of its proceedings already published. He begged to remind his

hearers of the fact stated in that article of Mr. Pusey's, in the first number of their Journal, that by increasing the produce of wheat only one bushel an acre, they would add twenty-four millions of bushels to the food of the country. (*Hear, hear.*) They should be careful in their selection of seed, and in their mode of making experiments. For what did they see in a recent number of the Society's Journal, but an extraordinary instance of the importance and difference of yields, arising from the selection of seed wheat? It was stated in a tabular form; from which he would, however, only read one or two extracts. The golden drop wheat produced 46 bushels per acre, fine Suffolk wheat 76 bushels, but another and more improved description had yielded 82 bushels per acre; and this was all from the same piece of land under the same treatment—the only difference consisting in the selection of seed.—This great society had been instituted for the benefit of the labouring classes as well as the wealthier classes of agriculturists. Mr. Colman, in his able and instructive speech, had feelingly alluded to that class of the agricultural population by whose exertions all the others were mainly supported. He hoped that he had not said anything that evening inimical to the interests of the labouring classes; he wished to augment their domestic happiness, and to raise their social position.

Let not ambition mock their humble toil,
Their homely joys and destiny obscure;
Nor grandeur hear with a disdainful smile

The short, but simple annals of the poor. (*Cheers.*) He hoped and trusted that the society would speedily turn its attention to the condition of the labouring classes. (*Hear, hear.*) Already, in the short time in which it had been in existence, there had issued from its press various papers and essays fraught with advice and information to that class; and the society, he knew, was most anxious to do all in its power to enlighten and improve their minds, as well as to better their condition. The noble Earl concluded by repeating his thanks to the meeting for the proof they had given of their approval of his presidency by receiving his health with such marked cordiality.

This being the last of the toasts, his Lordship left the chair, and the meeting separated.

THURSDAY.

This morning the Show Yard was opened to the public at six o'clock. Soon afterwards the field presented an animated aspect; considerable numbers of persons were seen perambulating the extensive grounds in all directions, inspecting with the greatest interest the vast assemblage of agricultural implements, and the magnificent collection of domestic animals which had been brought from all parts of England, to compete for the honour of the society's prizes. The judges' awards were affixed to each of the successful animals; the greatest order prevailed, and every facility was afforded the public to examine and inspect them. The company continued to increase till towards noon, when the Yard became quite crowded in every part where there was either implement or animal that excited more than common interest. At one o'clock the price of admission was reduced from 2s. 6d. to 1s., when the influx of visitors was astounding, the Yard being crowded in most parts to excess. We understand the several railroads this morning presented a spectacle never before witnessed; the special and general trains were loaded to excess, two and three engines being attached to the several trains. The whole town presented an appearance of bustle and interest such as we have never or seldom witnessed.

The number of objects inviting the attention of all persons interested in agriculture was so great, that it would have occupied two days to have inspected them all with common care.

Amongst the horned cattle there were many beautiful specimens of the breeder's skill, possessing symmetry of form, aptitude to fatten, early maturity, greatness of weight, and the finest quality of flesh.

The collection of milking cows was splendid indeed, but we should judge from their appearance that they would do better for the butcher than the pail. In fact, they were generally animals which showed the greatest disposition to fatten, and were excellently adapted for breeding superior stock. A very large proportion of these, of which there were eighteen, were *commended* by the judges, some of them *highly commended*. It will be seen, by reference to the list of successful competitors, that the first prize was awarded to Mr. Thomas Crofton, of Holywell, near Durham, for a short-horned cow, bred by Mr. John Colling, of Whitehouse. The show of young bulls and heifers in-calf was excellent indeed, giving every promise of forming animals of great beauty and excellency in those points so much desired by breeders.

There was also a fine collection of Herefords, both bulls and cows. For bulls, Mr. Thos. Jeffries, of the Grove, Pembridge, carried away the first prize of 30 sovereigns for a bull bred by himself—it is a splendid animal. The same gentleman also obtained the prize of 15 sovs. for the best cow in milk. This class of animals was much admired by graziers; their quiet aspect, heavy forms, and apparent aptitude to fatten, must please a grazier's eye, though in this dairy district they are not thought so highly of as the short horns.

We were exceedingly pleased with the few Devons that were exhibited, for they appeared to be few in comparison with the other breeds. The first prize was awarded to Mr. George Turner, of Barton, near Exeter, for a bull three years and three months old, bred by himself. The aptitude to fatten in this animal is very great, in so much that the symmetry of his form is marred by the masses of fat by which he is covered—his flesh is of the first quality. The Devon breed stands in high repute amongst some of the first graziers in the country, and we doubt not would pay well in some of the warmer districts of Derby. They have the reputation of fattening on comparatively little food, but graziers pretty generally object to them on account of their light weight; this objection, however, is not well founded, if they produce meat of the best quality, and comparatively less cost, whatever the weight may be.

There was not a large show of cross breeds. The gentlemen in the neighbourhood of Derby gained some of the prizes for this class; three out of the five prizes being awarded to graziers from Burton-upon-Trent and Ashby.

The number of sheep on the ground was very large, but the quality we think did not come up to general expectation. Three competitors, it will be seen, carried away the six prizes for Leicester sheep, some of them awarded certainly for beautiful sheep, but they seemed deficient in hardiness and size: we particularly allude to the younger animals.

The show of pigs was very large, and many of them of surpassing excellence. They excited great

and deserved attention. Mr. Moses Cartwright, of Stanton House, near Burton, obtained the first prize for the best boar of a large breed. And his Grace the Duke of Devonshire obtained the first prize for the best sow of a large breed. The prize for the best boar of a small breed was adjudged to Mr. William Fisher Hobbs, of Marks Hall, Coggeshall, Essex. And that for the best sow of a small breed to Mr. Thos. B. Shilcock, of Hose, near Melton Mowbray. The improvement in the breed of pigs has made rapid progress, and the country will reap the advantage of a variety of breeds of great aptitude to fatten.

There was an excellent collection of cart stallions for agricultural purposes, most of them of improved breeds, possessing muscular frames, and carrying but little hair on their legs. The first prize was awarded to Mr. Josh. Green, for a cart stallion, six years old, bred by Mr. Hutchinson, of Gedney, near Long Sutton, Lincolnshire. His head is small, with a remarkably fine powerful neck and shoulders, little hair on his legs, but full of bone, and as near perfection for this class of animals as possible. We understand this horse gained the first prize at the Nottingham Agricultural Meeting, last October. He was got by a Lincolnshire horse out of a Herefordshire mare. The first prize for thorough-bred stallions was awarded to Mr. Arthur Chester, of Nottingham, for his dark bay horse, bred by Mr. Orde, of Nunnykirk, near Morpeth, Northumberland.

THE GREAT PAVILION DINNER.

This, the great banquet of the week, took place on Thursday, in the magnificent pavilion erected by Mr. Manning, of High Holborn, London, the spirited contractor, who is also the contractor for the Show Yard, which comprises 30 large and commodious sheds, capable of accommodating nearly 1,000 head of cattle, besides sheep, pigs, seeds, implements of husbandry, &c.

1500 persons sat down to dinner in the Pavilion. This very handsome building is of an octagonal form, 160 feet in length, and upwards of 150 feet in breadth, containing a superficies of more than 30,000 feet. The roof, which was the admiration of all the professors and scientific gentlemen who visited Cambridge, where it was erected on nearly the same plan in 1840, is in seven compartments, the framing being entirely of wrought iron, and the construction such as to combine a strength capable of resisting any storm, with an appearance of extreme lightness. The whole is covered with floor-cloth, manufactured by Messrs. Hare of Bristol, rendering it totally impervious to any weather. The building, which will accommodate 3,000 persons, is floored entirely with deal, the centre consisting of a level area capable of dining 400, around which rise tables on an inclined plane, in the form of a large amphitheatre: all the tables being single, every person faced and had a view of the Chairman, Earl Hardwicke, who sat at a table on a platform raised four feet above the level area, and was supported by noblemen and gentlemen of the Council. Immediately behind the President's table was a gallery capable of accommodating 300 ladies to view the feast. At each end of the building was a large stained glass window, which gave it the appearance of a banqueting hall of our ancestors rather than a building sprung up within a few weeks.

The dinner was well got up by Mr. and Mrs. Huggins, of the Royal Hotel.

Soon after four o'clock, the company was seated, and the noble chairman and principal guests having taken their seats, grace was said, and the clatter of knives and forks began. After ample justice had been done to the viands, the business of the evening commenced. Amongst the company present we noticed on the right of the Chairman, the Duke of Cleveland, Marquis of Northampton, Lord Yarborough, Professor Owen, Lord Hatherton, Dr. Buckland, Lord Scarborough, Lord Waterpark, and other noblemen and gentlemen.

On the left of the Chairman we observed the Hon. Mr. Everett (the American Ambassador), Duke of Devonshire, John Bell Crompton, Esq. (the Mayor), Professor Playfair, Lord Morpeth, Earl of Burlington, Mr. Henry Colman, (from the United States), Wm. Evans, Esq., M.P., Sir Henry Wilmot, Bart., and others.

Earl Spencer, the President-elect of the Society, was in the vice-chair, surrounded by a distinguished party. The stewards of the different compartments were as under:—

A
Duke of Richmond.
William Miles, M.P.
E. S. Chandos-Pole.
Professor Sewell.
T. H. S. E. Sotheron, M.P.
Charles Stokes.

B
Hon. Robert H. Clive, M.P.
Colonel Challoner.
C. Hillyard.
Sir J. V. B. Johnstone, Bart., M.P.
Sir C. Lemon Bart., M.P.

C
Sir F. Lawley, Bart.
W. T. Bramston, M.P.
Hon. G. H. Cavendish, M.P.
E. W. W. Pendarves, M.P.
Colonel T. Wood, M.P.

D
Earl of Chichester.
W. G. Hayter, M.P.
Samuel Jonas.
William Shaw.

E
Thomas R. Barker.
Charles R. Colvile, M.P.
Francis Pym.
Henry S. Thompson.
George Wilbraham, M.P.

F
Lord Portman.
Stephen Grantham.
George Webb Hall.
John Kinder.
Rev. W. L. Rham.

G
Earl Talbot.
Colonel T. Austen.
Edward Buller, M.P.
Sir C. Burrell, Bart., M.P.

H
Lord Worsley, M.P.
David Barkley, M.P.
W. Fisher Hobbs.
George Kimberley.
Henry Wilson.

I
Earl of Ducie.
John Benett, M.P.
Sir Hungerford Hoskyns, Bart.
Sir Robert Price, Bart.
W. R. Crompton Stansfield, M.P.
John Villiers Shelley.

The trumpet having sounded to proclaim silence, the noble Chairman rose to propose the health of her most gracious Majesty "The Queen," which was drunk with three-times-three, followed by clapping of hands.

The Queen Dowager, Prince Albert, Albert Prince of Wales, and the rest of the Royal Family, was the next toast.

The Chairman then called upon

The Duke of Cleveland, who, on rising was received with loud and continued applause. He said that in the usual routine of the evening it had fallen to his lot to offer the next toast to their notice, and he would venture to say it was

equal to all the others in the importance attaching to it; and, notwithstanding the difference of opinion existing amongst them on minor points, it was one that would be drunk with the utmost cordiality. Having been selected to propose this toast, he should be wanting in his duty if he did not state how much he felt flattered by having this toast committed to his hands, although he could not help regretting, when he looked around him and saw men of superior ability and of greater practical experience than himself, that it had not fallen into better hands. He hoped that, to make use of a homely phrase, the assembly would "take the word for the deed," and not let the toast suffer in importance from the want of an abler proposer. (*Applause*). From his youth upwards he had taken an interest in agricultural proceedings—not because he was interested as a landowner, but because he felt that the interests of agriculture and its prosperity were of the highest importance to the welfare of the community at large. (*Applause*). He had for many years past, before being called to the Upper House, represented a most important agricultural constituency in the House of Commons. It would be presumption in him to say he was an efficient representative, but he would undertake to say he had never wanted in the desire or the determination to do his duty. (*Applause.*) He had always sought for that protection for the interests of agriculture to which he thought they were so justly entitled. (*Applause*). It was not, perhaps, permitted him by the rules of the Society to speak of protection, but he must state his opinion that, without protection, agriculture never could have flourished. (*Loud applause*). His lordship concluded with some remarks upon the necessity for improvements in practical agriculture, and with saying that when he looked at the men who were at the head of the Society, and saw on the one hand Earl Spencer,—one of the most eminent breeders in the country, whose time, energy, and labour had been devoted to the improvement of cattle for so many years past—and to the Duke of Richmond on the other, who had come from the distant mountains of North Britain to diffuse the improvements of that part of the country amongst them—it was not surprising to see great success attending the operations of this society. (*Applause*). His grace concluded with calling upon the meeting to drink most sincerely and most heartily to the success of the Royal Agricultural Society.

Earl Spencer rose to acknowledge the toast, and was received with several rounds of cheering. Owing to the distance the noble lord sat from the reporters, we heard not a word he said. He was frequently cheered during the delivery of his speech. We understood him to claim for the society the approbation of all engaged in agricultural pursuits, and to say that it had already been the means of producing an improved breed in cattle, and considerable progress in machinery.

The Chairman called upon all present to fill a bumper, and drink the health of the illustrious guest who sat on his left hand—the minister from the United States of America. (*Prolonged cheering*). The manner of his reception rendered the presentation an easy one. He (the Chairman) would not call him a foreigner, for he was too happy in acknowledging that Mr. Everett was in blood an Anglo-Saxon. (*Renewed cheers*). He is one of us! (*Cheers*). That great and powerful people whom Mr. Everett had the honour to represent in this country, had pushed its power to the utmost extremity of the earth, and was still progressing in the march of power and opulence in a manner astounding to the other nations of the world. (*Hear, hear*). The people of America must ever be esteemed by us as brethren; and, notwithstanding differences of opinion existed at times, that must ever be the case with a free people. (*Loud cheers*). If the American Government and people were blended with us in feeling and affection, we might defy the powers of the whole world. (*Cheers*). The gentleman whose health he was about to propose, was peculiarly deserving the respect of Englishmen—he had risen to the high station he holds by his character and talents, in a country where opinion was free. (*Cheers*). They were not to heed what were the private and individual opinions of a free people, it was to the collective acts of the Government they were to look; they should not heed what was published in print or spoken in public assemblies in a country where he freedom of discussion was one of their greatest boasts. It was the acts and proceedings of the officials and of the Government of the country they were to scrutinize, and what was the social intercourse that existed between the Governments of different nations. In a free nation like America the tailor of the country village could make a noise, and think himself somebody, and the man who printed the opinions of himself and others conceived he was of immense importance to the state. But it would invariably be found that those who were the most patriotic and enlightened, were those who took the least prominent part in public agitation, but who nevertheless wielded the largest share of power, and possessed the greatest moral influence. He begged them to throw overboard entirely anything they might have read or heard of lawless meetings on the other side of the water, which were adverse to all rule and order, and struck at the root of all good government, and to contrast with this what had been done by the United States towards the amicable settlement of that great question, which had threatened to throw the torch of discord and disruption between us. The noble Chairman then referred to the state of feeling between this country and America, and to the terms of amity on which they were agreed; and had no doubt that by cultivating those commercial relations which had for a time been partially discontinued, owing to embarrassments, the two countries would progress in the arts of science and of peace. (*Cheers*). The noble lord then referred specially to the English people, and said, would that in Europe we were better understood as a people than we are! Would that they could see this meeting, and know that among those present there exists every description of political opinion—(*cheers*)—that we could here meet on the most friendly footing for the purpose of founding a great and mutual interest! (*Cheers*). Talk of this country "breaking up," and the social machine becoming destroyed! Oh, they little knew how strong was the old ship, and how easy was it with a free people to discuss their political opinions on debatable ground, without a severance of the bonds of friendship! and might they not do the same in America? (*Cheers*). The noble lord concluded by proposing "the health of Mr. Everett, the Ambassador from the United States."

The toast was drunk with three times three, and "several cheers more."

Mr. Everett, on rising, was received with a spontaneous burst of cheering. He said, for such a notice of his country and of himself, and from such

a company—from such a highly intelligent assembly as the present, comprising so many of the English gentry and yeomanry—and from their Chairman, too, who had borne the flag of his country with honour upon the seas (*loud cheers*), and who sustained a position of such importance and respectability on shore—for such a notice, he wanted words to thank them as he ought. He could not help entertaining the kindest feeling for the land of his forefathers: he was a great believer in the efficacy of race and blood, and he did not believe that efficacy was confined to "short horns" and "Herefords," "Southdowns" and "Leicesters;" he believed it extended to man as well as the other animals *(cheers and laughter)*. Attached as he was to his native country—ardently, passionately, prepared even to shed his blood in her defence, to the last drop, if it were required—he never forgot that their ancestors were the countrymen of his own ancestors *(cheers)*. He rejoiced when he spake in his own native tongue, that he spoke in the mother tongue of a kindred people. The sound of his native language beyond the sea, was music to his ear *(cheers)*—he believed that if one thousandth part of the energy, of the skill, and of the treasure, that had been expended by rival nations in the deadly struggles of what was called the field, had been expended in a generous emulation to excel in the arts of peace (*cheers*)—he believed if this were done, the farmers would very soon drive the diplomatists out of the field (*laughter*). At any rate they would leave little to be done in carrying on angry national disputes (*cheers*). The Chairman had alluded to the growth of commercial intercourse between this country and his own; he hoped that intercourse might become yet more extensive than it had been (*cheers*). A thought had struck him since this subject was introduced last evening; the commerce between the two countries was the largest that existed between any two countries on the face of the globe. The amount of that commerce was nearly two-fold of that between any other people. To what did they suppose it amounted? Why, the exports from this country to America, and the imports into this country from the United States, amounted to as much as the annual crops of oats and beans in Great Britain *(hear, hear)*. That fact he had taken from the able pamphlet of his collabarateur, Mr. Pusey. There was one more fact he would mention; the whole of the foreign commerce of this mighty people, to support which the ocean was covered with its fleets, and distant colonies were maintained, amounted to little less in value than the annual crops of grass in the kingdom (*Hear, hear*). It did not become him—he would not say as a stranger, for they had permitted him to throw that term overboard—(*cheers and laughter*)—to enter much into details, but he must say he could not fail but be struck with the exhibition in the stock yard and the show of implements; and however inattentive and neglectful they might have been heretofore in these respects, there was nothing to complain of now (*cheers*). The exhibition evinced an amount of science and practical skill on the part of the higher orders, and ability, capital, attention and interest on the part of the intermediate orders, and of diligence and perseverance on the part of the lower—that were never equalled before in the history of this country (*Loud cheering*). It was a most remarkable fact that till lately all inventions in agriculture were of the simplest character. Referring to the improvements in agriculture, his Excellency observed that if they could have discovered the man who first taught the wild dog to shepherd his flock, a monument of brass or of marble—a higher monument than to hero or monarch—should be reared to his honour; and were not, then, the improvements in agriculture of the present day worthy of especial commendation? (*Cheers.*) It seemed, he proceeded, as if mankind had followed the law which one of the learned professors had explained to them last evening, relative to a certain animal with large humps on its back, which the first five months of every year ate as much as enabled it to get along for the seven succeeding months of the year. So it appeared to be with mankind in respect to agriculture. During its infancy it got this large ugly lump between its shoulders, and for three thousand years it subsisted on the knowledge which it had thus acquired (*Cheers and laughter*). Why, the plough they read of in Virgil was the same as that which was now in existence in some parts, and which might be seen in the south of Europe at the present day. It was pleasing to bear in mind that all the improvements which had followed from this simple invention were the work of that Anglo Saxon race, to which allusion had already been made. It was pleasing to know that this revival in agriculture was the work of the Anglo-Saxon race. Living, as we do, in these uncongenial climes, beneath these "weeping skies," it has been left for us to do that which neither Italy nor Greece have been able to accomplish in all their sunny climates (*cheers*). We have not the luxuries of the fabled lands, but then the very want of those enervating breezes had given us that hardihood, perseverance, and resolution, which all the spices and all the golds of the tropical climes cannot confer (*cheers*).

> "Man is the noble growth our soil supplies,
> And souls are ripened in our northern skies."

—(*Loud cheers*). He could assure them that when, in the course of sixteen or eighteen days, the shouts with which they had greeted the favourable mention of his country had reached across the Atlantic, they would be echoed back by shouts as loud, and by hearts as warm, from the other side (*loud and long-continued cheers*).

Lord Morpeth rose, and was received with tremendous cheering, again and again renewed. He said—My lords and gentlemen, the office has been assigned to me of proposing a toast upon the present occasion, and as I apprehend that absolute submission, and unquestioning obedience are the principles which regulate the proceedings of this week, I will not endeavour to dispute the reasonableness of the command—that would be labour lost under such a despotism as your lordship's—(*laughter*)—but proceed at once to do as I am bid (*laughter*). My lords and gentlemen, I have but one fear upon the occasion, and I think it is a just one—for I ought to mention to you that I have now for the first time the privilege of being present at one of these annual celebrations. I have no knowledge whatever (and to my great loss be it spoken) of the business of agriculture, either in theory or (what is still more essential) in practice; and I have no other pretensions to be enrolled among its votaries—much less to stand thus forward among them— beyond what is contained in a full recognition of its importance, and a lively desire for its welfare (*cheers*). My fear then is lest, if I should be so unwise as to allow myself much latitude in my preface to the toast, that I should commit some egregious blunder —that I should plough my furrows crooked, or put

too many horses to my team (*laughter*)—in short, do something which would serve to show me up completely in the eyes of my more competent and better instructed audience—(*laughter* and *cheers*)—the more especially, as to tell the truth frankly, I am not aware whether the toast with which I am charged will appeal with equal sympathy to all whom I have the honour to address. My toast is "Agriculture" (*cheers*). So far, good; that is all plain sailing (*laughter and cheers*) for you will all pay to agriculture the honour which it deserves (*hear*). Then it goes on, "Manufactures and Commerce" (*much cheering*). Now I think I can, very briefly, lay down good grounds why these adjuncts should also be entitled to your favourable reception. And in the first place, though I have the happiness of believing that in this crowded area there must be many persons eminently distinguished for their services in both manufacturing and commercial pursuits, yet I take it that the agriculturists have a clear majority in the present assembly (*laughter, and hear*). Therefore, for mere gentility's sake, I hope the majority will be inclined to extend a cordial and courteous greeting to the minority (*cheers*). Agriculturists are too much impressed with the merits of *good breeding* (*laughter*) to exhibit themselves in the character of what has been termed "a tyrant majority" (*laughter and cheers*). Moreover, gentlemen, deep and unfeigned as is my respect for all that pertains to agriculture—honourable, invigorating, and benevolent as are its principles, dating from the very birth of time, growing with every growth of civilisation, and advancing with the advance of light and knowledge—indispensable as are its aids to the public welfare and the national greatness—I greatly question whether you could conveniently dispense with the other adjuncts in the toast (*hear, hear*). We are no longer able, if we would, to become a nation of Arcadian shepherds (*laughter*). It has been our lot to bear a great part in the concerns of the world, and we have the privilege of having incurred a large public debt (*hear, hear*). Manufactures and commerce have materially assisted us to attain the height of influence and renown at which we have arrived—and so much so that though the pipe has always been recognised as the pastoral instrument, we must rely on manufactures and commerce to help us to pay the piper (*laughter and cheers*). Agriculture furnishes able and vigorous hands, but we must also rely upon commerce and manufactures for some of the open and capacious mouths. (*Laughter and cheers*). The more we look into every employment, and every interest that engages the family of man, the more we shall find that we stand in need of each other. (*Much cheering.*) The copious producer is an admirable personage, but he has a useful adjunct in the stout consumer. (*Continued cheers.*) Persons have thought at various times that they could make themselves better men by becoming hermits and cooping themselves up in solitary cells or untrodden deserts; but this was pushing the principle of protection—(*laughter*)—of morality I mean—rather too far. (*Hear, hear.*) That can only thrive by the exercise of social virtues. (*Cheers.*) Man's works must thrive by the aid of mutual dependencies. (*Cheers.*) I am as ready as any man to cry "speed the plough," but ploughs to be used must be manufactured; and though we read in our ancient story books of the dragon's teeth growing up into a crop of armed men, I doubt whether any of the successful competitors in drill or broadcast machines, could succeed in turning up a plough ready made. (*Laughter and cheers.*) Those who have looked at the exhibition of agricultural implements, will see the perfection and skill to which they have attained, and the reasons why manufactures should be associated with agriculture in our aspirations for successful pursuit in every great branch of the national industry—and especially should this be the case in the particular place where we hold our present meeting in the county and borough of Derby. (*Cheers.*) Here it was that the first machine for throwing silk was introduced by Sir Thomas Lombe, and I think it will be felt that the claims of manufactures for support should not be made light of in a county which has been—which is, the favourite residence of the Arkwrights, and near those shades which have been planted by the benevolence of the Strutts. (*Much cheering.*) I assure you, gentlemen, that it has been no common gratification to me to have had the privilege of attending the present meeting—looking, as I do, at the materials of which it is composed, the spirit by which it is conducted, and the object which it seeks to obtain. (*Cheers.*) It has been brought together through no motive of party excitement—(*cheers*)—to swell the draft of any popular movement, or to oil the wheels of any political intrigue. (*Loud cheering.*) Its purposes are purely and simply patriotic. It places side by side goodly examples of the honest faces and high hearted yeomanry, with some of the brightest specimens of its ancient aristocracy—(*cheers*)—and when I say this, it is because I feel assured that their own good and charitable wishes entitle them to that praise far more than any accumulation of mere ancestral honours. (*Cheers.*) Let it be shown that in the very heart and centre of England this gathering is not even limited to English boundaries. (*Hear, hear.*) Among others, we have such a man as Mr. Smith, of Deanston—(*cheers*)—who invades us with his subsoil plough, and has penetrated, like the Pretender, even as far as the good city of Derby. (*Cheers and laughter*) But I am happy to say that there the parallel ceases. (*Laughter.*) Mr. Smith must by no means be called a pretender—(*hear, hear,*)—for we find he has done what his prototype failed to do, made his halt in the metropolis of London. (*Cheers and laughter.*) We have also present an agricultural deputation from Ireland—(*cheers*)—who are prepared to assure us that they have no intention of repealing the Union between them and us. (*Much cheering and laughter.*) I don't wish to be betrayed into graver subjects, but the Union which they are desirous of maintaining is that of Irish oats and Saxon horses. (*Laughter and cheers.*) We have, too, among our guests on this occasion those who come from a still more distant shore, though—as we have all just had the highest gratification in hearing—speaking the same language and derived from the same origin as ourselves. (*Cheering*). You have testified by the warmth of your reception that you are glad to see among us such of the citizens of the United States as we have here present, and especially to see at their head the amiable and accomplished statesman who so worthily represents them. (*Cheering.*) And, gentlemen, you may believe one who speaks from experience, that in frank and cordial hospitality to the guest and the stranger, John the Elder Bull must work hard to come up to Jonathan the lusty yearling. (*Much laughter and cheering*), Gentlemen, I have already sufficiently intimated the claims which manufactures and commerce

have to be allied to the toast of agriculture. They are the leading branches of industry, and when you reflect, besides all else, what commerce does to develop the resources and augment the welfare of the country—how much it does to unite the scattered branches of the human family—to join nation and nation, clime and clime, man and man in one cemented bond—to soften the asperities of international jealousies, and to calm the savage tendencies to strife and to murderous war—I think you will agree with me, that commerce ought to be associated in the same goodly partnership, and therefore it is with pleasure and with confidence that I call upon you to drink "Agriculture, Manufactures, and Commerce." (*The noble lord resumed his seat amidst loud cheering, and the toast was drunk with three times three*).

The Chairman called upon Lord Hatherton to propose the next toast.

Lord Hatherton said the sentiment he had to propose embraced in two words the great, important, and primary object which the originators and supporters of this Society had in view—the union of "Practice with Science." Its institution had afforded practical farmers the opportunity which they so much desired, of meeting those scientific instructors to whose lessons they were so greatly indebted. The mechanist, the chemist, the geologist, the botanist, the hydraulic engineer, the meteorologist—all, in their several departments, contributed much to the advancement and prosperity of agriculture. From the magnificent display of implements and cattle at this Meeting, they could see what it was possible for science to do; and he was pleased to learn that the great improvement which was manifest in many of the implements so important to agriculture, had resulted from suggestions received at the great Bristol Meeting. At these gatherings, the machine-maker and the operative mechanic from the hardware districts, had the opportunity afforded them of conferring with the agriculturists and those who were to test the value and utility of their implements of husbandry when made. The many excellent papers which had appeared in the Society's Journal, proved how ready were the members to test experimentally any suggestions offered to them by men of science, and to report upon them for general information. He referred in special terms to the benefit derived from the labours of Professors Playfair, Drs. Buckland, Henslow, and Daubeny. As one means of showing their gratitude to these gentlemen, his lordship proposed the toast of "Practice with Science," in connexion with the mention he made of them (*applause*).

Professor Playfair returned thanks, and entered into an exposition of the relative influences of science and experience. It was not to be expected that the accumulated experience of centuries could derive great immediate advantages from its connexion with science, though ultimately all would be realised that was expected and promised. When they remembered, from the visible experience of that day, what remarkable achievements the manufacturers had been enabled to make by keeping to the motto of their Society, he trusted that they would make strong efforts to follow the example. Let practice lead science by the hand, and do not permit her to part company until she has trimmed her lamp, and thrown a radiant light on the treasured stores of information she had accumulated, and taught you how to turn them to lasting advantage. It could not be expected that she could do this until she had herself explored these regions, and narrowly examined the path, else would she be no better than a blind guide. She can aid you mightily (continued the speaker), but it must be the result of experience and study, for without a knowledge of facts how can she recommend any course or system which shall be likely to benefit your interests? They might be disappointed at the slow progress of science, at the comparatively small aid they had yet afforded. (*Cries of "no, no."*) But they should remember that it would be long before science could overtake their practice, before the great mass of facts and experiments they had accumulated could be thoroughly weighed and sifted. It might be urged that their theories were sometimes vague and useless, and the experiments which they suggested might not always lead to profit or improvement. But they should remember that learned men were as fallible as themselves; and it might sometimes happen that they misinterpreted the oracles of science. Nevertheless, he considered theories to be the leaves of the tree of science, the means of affording nutriment to the limbs and to the trunk, and of circulating the healthy current of the sap throughout the whole system; and even when they fell to the ground they were not entirely useless, for they served to fertilize and to shade it. Professor Playfair concluded by thanking them for having distinguished him so highly as to place him among their honorary members, and appoint him consulting chemist to the society. These were honours not usually bestowed on one so young, but he could assure them no exertion should be wanting on his part to aid the progress of science, and he trusted they might be able to derive benefit and advantage from the labours of his matured age, and which they had the confidence to reward in his youth. The professor resumed his seat amidst loud cheers.

The Chairman, having called upon the company to "fill a bumper," proceeded to propose, in very complimentary terms, "The Mayor and Corporation of Derby." In acknowledging in the warmest possible terms the kind reception which the Society had met with from the town of Derby, he was speaking the sentiment of every member. (*Cheers.*) The Mayor and inhabitants of Derby had paid the highest compliment to the Society which it was in the power of any men to confer, and he would take upon himself to say, on behalf of the Society, that they appreciated the attention and courtesy they had received. (*Cheers.*) The town of Derby was distinguished by its manufactures, its numerous philanthropic societies, and for the intelligence of its artisans; and, in the way of pleasantry, he supposed he might say that it possessed a peculiar claim to their sympathy. If there was any truth in public rumour, Derby was once famed for its stock. (*Loud laughter.*)

"As I was going to Derby all on a market day,
I saw the finest ram, sir, that ever was fed on hay.
This ram was fat behind, sir, this ram was fat before,
And between the horns of the ram, sir, you could turn a coach and four."

(*Roars of laughter.*) The Noble Lord concluded with a high panegyric upon the town, its institutions, and progress in the arts and sciences, and paid a becoming compliment to the Mayor.

The toast was drunk with three times three, and loud cheers.

John Bell Crompton, Esq., the Mayor of Derby, acknowledged the toast in a brief but neat speech,

which was loudly cheered. The inhabitants of Derby had met the Society in good feeling, and it was a source of no small gratification to him to hear that reception spoken of in the manner he had heard from my Lord Hardwicke. While they were met to advance the interests of agriculture, he was pleased to find that the importance of the manufacturing interest was also duly appreciated. While it was necessary to grow food to fill the stomach, it was equally necessary to have clothing to cover the back; and it was difficult to say which was the superior art of the two, both were equally requisite and each was dependent on the other. In the course of his life he had seen the town of Derby not only rise into character and notoriety as a manufacturing town, but it had in that period increased its population from 8,000 to 30,000—that circumstance alone was sufficient to convince them of the importance of the manufacturing interest, of the stimulus it gave to the prosperity of a district, and of the number of hands it gave employment to. After the bursts of eloquence which they had listened to for the last two hours, it would be wasting their time for him to address them at greater length. His Worship paid a just compliment to the members of the Town Council, who, he observed, though they could not collectively as a corporation, vote any of their funds towards the support of this noble institution, had yet, individually, opened their purse strings in the first instance, and used their utmost endeavours to bring the meeting to their threshold. His Worship said he felt the high honour conferred upon him, in being selected for the office he then held—an honour as unlooked for, as it was unexpected.

The Duke of DEVONSHIRE rose to propose the next toast in the list, and was enthusiastically cheered for several minutes. After silence had in some degree been obtained, his grace said the extreme satisfaction they had derived from that day's meeting would lead them naturally to revert to their noble president, whose health it was now his pleasure to propose. *(Cheering)*. The zeal and ability with which the noble earl had fulfilled the duties of his office, and the ardour and devotedness he had shown in the cause of the society, not only entitled him to their thanks, but would in themselves prove a source of satisfaction to the noble earl. *(Cheers)*. And now allow him to say a very few words in reference to the society itself. In his opinion such a society was not only useful in itself, and calculated to produce the most beneficial results, but an honour to the country which originated it. *(Cheers)*. It would advance the knowledge of science, and in dispelling ignorance and self conceit it had a tendency to unite all classes in harmony and good will towards each other. *(Cheers)*. It enables the man with little wealth, who may have an ardent desire for improvement, to contend successfully with those in more affluent circumstances, and conduces to the mutual advantage of all. *(Hear, hear)*. Its beneficial influence extended to all ranks of society. From the principles it inculcates the labourer will learn to set a proper value on industry and sobriety, and will have opened before him a career of usefulness in the condition of life in which it is his lot to be placed. *(Hear, hear)*. He (the Duke of Devonshire) knew of no means so certain to increase the happiness and welfare of agricultural labourers, while, at the same time, it would conduce in an equal degree to the interests of those they serve. *(Immense applause)*.

The toast was drunk with three times three.

The noble CHAIRMAN, in acknowledging the toast, said, although he had managed to get through tolerably well with the other business of the day, yet he was almost overpowered by the distinguished honor they had now paid him, and the kind manner in which they had received his name. He feared he should fail adequately to return his thanks from the deep emotion that filled his heart. When he considered at whose hands he had received this honour, and what the class of individuals who were under that roof—men who were in themselves patterns of loyalty and good order, steady supporters of the crown and constitution, true patriots and lovers of the comforts of their own firesides—attached by the strong ties of fond affection to the inmates of those dwellings around which their honest exertions shed a bright lustre—in short, patterns and examples to their countrymen for persevering industry and quiet contentedness in the even tenor of their lives—when he considered all this, and received so distinguished a mark of respect at their hands, he found it difficult in decent language to respond to their kindness. He confessed it was with pride and gratification that he had presided over that society and this great meeting; it was indeed a feather in his cap. *(Hear, hear)*. Knowing too that he had sought it not—but that the greatness was thrust upon him—he only felt what every one of them would feel in a similar situation if they had honourable and feeling minds. The progress the society had made proved that the farmers were in earnest in what they had undertaken—all doubt of the success of the society was now scattered to the winds. The temper of five annual meetings, the rapid increase of its members, the publication of the important essays and papers contained in its journals, and, to put aside all other views, the policy of interest bound them together in one indissoluble bond, and stamped the success of the society, and of its country meetings as indisputable. It might be said that they had no excitement at their meetings, no topics of agitation, no politics; but were they not met for a most benevolent and Christian purpose, that of increasing the means and capabilities of providing food for mankind? The artizan and the manufacturer, the soldier and the man of science, all were dependent for their daily bread on the cultivator of the soil. England was one great farm, the inhabitants of which were mutually dependent on each other, and therefore it was desirable that those who had the means of carrying out improvement should unite with those who had the will and ability to perform it. *(Applause.)* By this combination the first step would be taken towards gathering in the harvest which was waiting for them. In the course of his remarks, the noble earl said the time was come which called imperatively upon them to turn their attention to the farm labourer, and he was happy to inform them that the society was fully alive to the importance of the subject, and he had no doubt the result would be highly satisfactory. Depend upon it the farm which was the best cultivated diffused the greatest degree of happiness to the surrounding labourers *(Cheers.)* He would ask them to accept that as a maxim—to repeat it at home, and let the mind absorb that which repetition always produces, a certainty that it is true. If the society succeeds in that one axiom being believed and maintained, it has done its work—it has peculiarly done it in the state of England. *(Loud cheers.)* The noble earl then referred to the able speech of Mr. Ransome on the previous evening, in reference

to the trial of implements, a speech which had done him infinite credit. The society were extremely anxious that a subject of so much importance should be met in a way that might prove satisfactory to the talented and ingenious implement manufacturers. The council would in the course of next year take into mature consideration those points in reference to the trial of implements (which are so vastly important), with the view of bringing them to a fair test, and having before them the result of careful experiment, due deliberation, and just judgment. He felt that the manufacturers would, waving their differences, meet them again next year with a corresponding desire to place confidence in their intentions. He could assure them on the part of the Society that no pains should be spared in future in affording them every facility, not only for exhibiting their implements, but for having them fairly and sufficiently tried, before any judgment was given on them. The Council would not fail to select such persons as had a proper knowledge, not only of the use and objects of the implement, but as to its fabric, mode of construction, mathematical strength, and so on; and from the combination of excellence in the material, the construction, and the use of the model, would alone, in future, any judgment result (*cheers*). From henceforth they were entitled to call agriculture a science, and having adopted it as such, and enrolled it as one of the sciences to be taught in future in this country, it behoved them to conduct and carry out the art in a manner befitting such an alliance. He would especially urge on them the duty of being liberal, kind and on friendly relations with those who had preceded them and assumed the title of science before them. Casting aside all differences of opinion on minor matters, and calling, as they had done, to their aid, those who had before differed with them, he doubted not that this society would do much to advance the progress of agriculture, and form a common centre of union for all those engaged in the social intercourse of labouring for the general interest of mankind. The noble lord concluded a manly speech by impressing on them the desirableness of acting up to the Christian sentiment of good will towards man and love for their Creator, and sat down amidst loud cheers.

The PRESIDENT next proposed "Success to the Highland and Agricultural Society of Scotland, and the health of the Duke of Richmond."

In proposing this toast, the noble President said, I should like to extract from my noble friend a speech, by throwing a little discredit on the Institution whose success I have just proposed, because I know how he would vindicate and stand up for the Society which flourishes so much under his auspices; but I fear I dare not, and my heart will not be content to adopt such a course, even for such an object (*cheers*). I believe it is the parent of this Society, and by their example we have been stimulated to our present exertions. (Drank with three times three, followed by reiterated cheers).

The Duke of RICHMOND was sitting at the far end of the Pavilion. His Grace came a little forward, but he was imperfectly heard. He commenced by apologizing to some of those around him for turning his back to them in order to make himself more distinctly audible throughout the room. It was the first time he had ever turned his back on the farmers of England (*cheers*). His Grace went on to assure them that he always felt the greatest honour in being elected to preside over any body of his fellow subjects, because it was a convincing proof that they had confidence in him (*cheers*). He begged to acknowledge the complimentary manner in which his health had been proposed by their noble President, and to thank them for the very flattering reception they had given it. The Highland and Agricultural Society of Scotland had on its first establishment great difficulties to surmount, but by energy and perseverance, by uniting practice with science, they had overcome them all; and he believed the Royal Agricultural Society of England would also by energy and perseverance be successful in everything they ought to attempt (*cheers*). The Highland Society was decidedly popular with the tenantry of Scotland, not only with the occupiers of the fertile plains, but with the residents of the far off hill sides. The establishment of the Highland and Agricultural Society of Scotland more than 60 years ago, had set an example to them, the farmers of England, which had been followed by the formation of a society, the utility and importance of which were exemplified in the splendid exhibition which they had witnessed that morning (*cheers*). He knew very well, as the President of the Highland and Agricultural Society of Scotland, that they would be eager to co-operate in anything and everything that would promote the prosperity of agriculture, but he thought it time to conclude and must apologize, (not being connected by the possession of property in this district), for detaining them so long. It might appear presumptuous on his part (*no, no*) for he was probably unknown to many, he might say most of them, until he came to Derby. (*No, no.*) His Grace went on to state that they ought all to to feel indebted to the founders of the noble Society whose anniversary they had been that day celebrating; but he would venture also to say the Society never would have been formed had not the farmers of England established local Societies amongst themselves; these had connected them in friendly and social intercourse in the same honourable cause, and in doing so had cemented that bond of union which now embraced the owners and occupiers of land throughout the whole country. (*Cheers.*) He could assure them that to meet them on such occasions afforded him one of the greatest pleasures of his life—(*cheers*)—and in his conscience he believed these meetings to be of the greatest importance to the country at large. (*Cheers.*) They had led to the reward of meritorious labourers, to whom the farmers had shown their gratitude for long services, and their desire to better their condition. (*Applause.*) They had done more in leading to discussion and experiments, advantageous to agriculture; and they had removed much local prejudice that was a bar to improvement. His Grace then sincerely congratulated them on the success of the day's exhibition, and hoped when the time came round for the next annual meeting of the Society, which was held in the district in which he resided, that many gentlemen now present would meet them. He had received advantage from visiting them there, and he hoped they would derive some benefit by visiting him. He begged to assure them that his best exertions should be continually directed to promote the prosperity of agriculture, and to thank them for the cordial, and he might say enthusiastic, reception they had given him. (*Cheers.*) This he did not do as a matter of form, but from his heart he wished them every happiness, and prosperity to their cause. (*Cheers.*) Before he sat down he begged to propose a toast, and there was no man who called himself a farmer that would not respond to it, for it was their

interest as well as their duty to promote the welfare of the class of men to whom he alluded—the labourers of England. When agriculture prospered, the agricultural labourer would also prosper. (*Cheers.*) He begged to give them "The Labourers of England." Drank with three times three.

The PRESIDENT next said it was his duty to give "Success to the Royal Agricultural Improvement Society of Ireland." A deputation, consisting of the Marquis of Downshire, Sir Percy Nugent, Mr. Bullen their secretary, and Mr. Purcell, had come from Ireland for the purpose of attending their meeting, and he must say it was most gratifying to receive a deputation from the Irish Agricultural Society. The hearts of the British people were with the Irish farmers—that hospitable, kind, and honest hearted class, who were ready at all times to receive with open arms all who visited them. This deputation must be very acceptable to that great meeting, and he hoped that the society by its steady progress would improve the condition of the people of that country. He thought that sympathy between the two countries in agricultural pursuits would be of service to both, for they were one people. (*Cheers.*) Their views and objects were the same—freedom, peace, and contentment to their own fire sides—(*cheers*)—and the love of their Sovereign. (*Cheers.*) He wished he could say they entertained the same views and opinions on all things: this was most earnestly to be desired and anticipated, because they felt that the hearts of the people of both countries were the same. (*Cheers.*)

The Marquis of DOWNSHIRE rose and said—Lord Spencer and gentlemen, I rejoice that this toast, which you have done the Royal Agricultural Society of Ireland the honour to drink with so much kindness, has had the able and strenuous advocacy of my noble friend your President, because his lordship's powerful eloquence will in a great measure make up for any deficiency on my part. My lord, I stand before you as one of the deputation from the Royal Irish Agricultural Improvement Society, and the order in which the toasts have been placed is in exact accordance with the time of formation of the three societies. We have been told by the Duke of Richmond, the noble President of the Highland and Agricultural Society of Scotland, that this great and successful society, whose fifth anniversary we are celebrating, was formed in consequence of the example of Scotland; and I have the satisfaction of saying that the Irish Society was formed in consequence of the success of the English society; and if one thing more than another could tend to the support of the Agricultural Society of Ireland, it was their notice and countenance. (*Cheers.*) I regret to say that I am too often doomed in speaking of Irish matters to tread upon tender ground. (*No, no*). Give me leave to say that with respect to political differences I have here nothing to do; I wish now to speak of the fertility of the soil and its great capabilities, of the blessings which Providence has showered upon it, of the benefits which its inhabitants possess, and which are also advantages to the three kingdoms at large. The supporters of the Irish Agricultural Society wish to promote the general advantage, and by increasing the fertility of the soil, drawing at the same time together the kindly affection of all classes for each other. I wish to state that since the formation of this Society, which does not date further back than three years, fully ninety district societies have joined in the support of its general objects. (*Cheers*). Let me express a hope that no public event may mar and impede the great national object the Society has in view. (*Cheers*). There is a strong disposition on the part of the people of Ireland to improve their land; in the course of the last year, and during the beginning of the present year, there was a general desire expressed to obtain the best information respecting the drainage of land, and I had the honour of proposing in the North of Ireland that Mr. Smith, of Deanston, should be invited to lecture upon this subject. These lectures were delivered at Belfast, to 500 persons, of all opinions; Nor were they confined to this particular district, for the lecturer went into the south, where he was also received with that attention and respect so justly due to the subject and the individual. (*Cheers*). The more attention the people of England pay to those of Ireland the more will they gain the affections of the Irish people, and the more it will be for the benefit of both. If you will permit me again to give expression to sentiments I advanced at Bristol, I would say that I regret that there is so great a want of information in this country respecting the real condition of Ireland, and the sooner it is supplied the better it will be for both countries. To inform yourselves on this subject you cannot do better than visit Ireland, if you possibly can; I am certain that whoever follows my advice will derive benefit himself and also confer benefit on the people of Ireland. (*Cheers*). There is one person present this evening towards whom I should not discharge my duty if I did not call your attention—I refer to Mr. Purcell, one of the deputation from Ireland. He has the merit of proposing the Royal Agricultural Society of Ireland. (*Cheers.*) I mention his name with pleasure; whatever difference of opinion there may be between us on other subjects, his heart and soul is absorbed in the single object of improving the agriculture of Ireland, and with it the rest of her Majesty's dominions. I feel fully the importance of the connexion of the two countries; the more this is encouraged by the visits of Englishmen to Ireland the better. (*Cheers.*)

The Marquis of NORTHAMPTON rose and said, there was one omission of a serious nature in the list of toasts of the day—"The Ladies." (*Cheers.*) But printers were liable to error, and he supposed the blame must be thrown on that quarter. When it had been said that it was impossible that such a day could pass away without interest and excitement, it was forgotten that fair eyes were looking on us. (*Cheers.*) When my friend the representative of the United States reports our proceedings, I hope he will not fail to let it be known in his own country, that the ladies of England responded to every generous sentiment that had for its object good will amongst men, and union amongst all nations. (*Cheers.*) Every gentleman present will acknowledge the importance of agriculture—it was by agriculture that they fed their wives and children; and he was not worthy of the name of man who did not prefer such duties to all others. I will now call upon you to drink "The Ladies," with three times three.

The PRESIDENT, in proposing the next toast, said, I now come to the close of my duties; I almost feel regret that my presidency will cease after this toast. (*Cheers.*) It has been with unbounded satisfaction that I have held this office; and I know that the announcement of the name of my successor will be received with shouts of applause,

your future President—Lord Spencer. (*Loud and long-continued cheers.*) From the knowledge I have of his character as a public man, from the tolerable knowledge I have of his character as a private man, it is with no ordinary pleasure I know that my successor is the parent of this Society. (*Hear, hear.*) He is present, and his nature hates flattery; eulogy is painful to him, and it need not be given to secure to him the respect of the people of this country. (*Long-continued cheering.*) I shall remember him as a public man as long as I live; and although opposed to him, I must say in the discharge of the painful and onerous duties in that Parliament, in which I may say the terrible crisis occurred, it was impossible to follow him in his arduous duties without being struck with his remarkable character. (*Great cheering.*) The evenness of his temper was never broken; the integrity of his heart, and the love of his country were never doubted; his perseverance and determination no time, no circumstance, no badgering could abate. (*Cheers.*) He has laid down that distinguished office he held, and now follows the pleasures and pursuits of a private gentleman, whose virtues and talents raise him more than than his rank in the estimation of the people of this country. (*Cheers.*) I have now paid him off old scores. (*Cheers.*) I know how he hates this, but it is true, and in the prospect before us it is a great gratification to me to know that he has consented to rule over us; it is gratifying to the people of England, and I doubt not will be for the benefit of agriculture. (*Great cheering.*)

Earl SPENCER, who filled the vice-chair at the other end of the Pavilion, rose, but could not make himself heard. After some delay, occasioned by the desire that his Lordship should come into the centre of the Pavilion, he proceeded to return thanks; but, as in the previous instance, from the position the reporters occupied, being close to the President's table, we were not able to catch one complete sentence of his Lordship's speech. We understood him warmly to return thanks, and to express an ardent attachment to agriculture, and his desire to render it all the assistance in his power.

The President then left the chair, and the meeting broke up.

FRIDAY.

The number of visitors this day to the Show-yard was very large, the price being reduced to 1s. The doors were thrown open at seven, and the sale of a considerable portion of the stock took place at ten o'clock. The business of the meeting was concluded by the general meeting of the members, which took place at the Pavilion at twelve. The pleasures and amusements however were not yet ended, for at twelve the large dinner pavilion was thrown open to the public with further attractions. A very elegant horticultural exhibition and fête having been got up, the proceeds to be devoted to the building a church at Hazlewood, there was a magnificent display of fruit, flowers, and vegetables, especially some choice and rare stove plants, &c., from the greenhouse and conservatories of his Grace the Duke of Devonshire at Chatsworth.

We cannot conclude our report of this great meeting without joining in common with all our contemporaries in making honourable mention of the civility and kind attention of Mr. James Hudson, the Secretary of the Society, whose assiduity in the performance of his multifarious and onerous duties, and especially his obliging deportment and readiness to afford every information and facility to the press, were the theme of general remark.

THE FOLLOWING IS THE JUDGES' AWARD OF PRIZES FOR IMPLEMENTS:—

The GOLD MEDAL was awarded to Messrs J. R. and A. Ransome, of Ipswich, for their exhibition in general.

A Machine for heating a preparation of Gas-Tar, invented by C. R. Colvile, manufactured by Mr. John Harrison, of Derby.—Silver Medal.

A Patent Rick Ventilator, invented by John Gillett, of Brailes, manufactured by Lovett, of Shipston-on-Stour.—Silver Medal.

A Sub-pulverizer, invented by the Hon. M. W. B. Nugent, of Higham Grange, Hinckley, manufactured by Richard Clyburn, of Uley, near Dursley; with additions by John Morton, of Chester Hill.—Silver Medal.

A Patent Chaff-Cutter with two spiral knives, invented by the Earl of Ducie, R. Clyburn, and E. Budding, of Tortworth, Uley, near Dursley.—10*l.*

A Corn-Crusher, invented and manufactured by Richard Clyburn, of Uley, near Dursley.—Silver Medal.

A Corn-Meter, invented by John Morton, of Chester Hill, manufactured by Richard Clyburn, of Uley, near Dursley.—Silver Medal.

An Improved Drain Level, invented by Andrew Notman, of Painswick, manufactured by Richard Clyburn, of Uley, near Dursley.—Silver Medal.

A Winnowing-Machine, invented and manufactured by Mr. John Newham, of Kegworth, near Loughborough, Leicestershire.—Silver Medal.

An Implement for Draining, invented and manufactured by Mr. David Harkes, of Mere, near Knutsford.—10*l.*

A Hand-making Drain-Tile Machine, invented by the Marquis of Tweeddale, of East Lothian, manufactured by Robert Bridges, of North Berwick.—Silver Medal.

An Iron Skim, for paring stubbles, invented by J. Allen Stokes, Havington, near Evesham, manufactured by Edward Hill, Brierly-Hill Iron-Works, near Dudley.—Prize.

An Iron Cow-Crib, with roof, invented by Edward Hill, of Brierly-Hill Iron-Works, near Dudley, and manufactured by himself. An Iron Sheep-rack upon wheels, with roof and trough, invented by Edward Hill, of Brierley-Hill Iron-Works, near Dudley, and manufactured by himself.—Silver Medal.

A Harrow, invented and manufactured by Mr. Robert Hobkin, of Hartington, near Ashborne, Derbyshire.—5*l.*

A Machine for Dressing Corn, invented and manufactured by Bryan Millington, of Asgarby.—5*l.*

A Laud Presser, invented, improved, and manufactured by John Caborn, of Denton, near Grantham.—10*l.*

A Corn and Turnip-Drill, invented, improved, and manufactured by John Caborn, of Denton, near Grantham.—Silver Medal.

A Boat-Plough, manufactured by John Caborn, of Denton, near Grantham.—Silver Medal.

A Patent Grass Land Cultivator and Grass Drill, invented and manufactured by Mr. Crosskill, of the Iron Works, Beverley, Yorkshire.—Silver Medal.

One pair new invented Cart Wheels, made by Machinery, with Cast Iron Naves, turned up Axles and Hook, manufactured by W. Crosskill.—Silver Medal.

A Twelve Coulters Drill Machine for general purposes, invented and manufactured by Richard Hornsby, of Spittlegate, Grantham.—10*l.*

A Thirty-coulter small Seed Drill, invented and manufactured by Richard Hornsby, of Spittlegate, Grantham.—Silver Medal.

New Implement cart with patent Axle and Drills

attached, invented and manufactured by Richard Hornsby, of Spittlegate, Grantham.—Silver medal.

A Cake crusher, invented and manufactured by Richard Hornsby, of Spittlegate, Grantham.—5*l*.

A Combined Drag Harrow and Scarifier, invented and manufactured by Joseph Miller, of Barnetby-le-Wold.—Silver Medal to Wm. Abraham.

New Implement, viz., a plough with Subsoil Apparatus attached, invented and manufactured by John Bruce, of Teddington, near Stratford on Avon.—5*l*.

A Drill for Drilling Turnips on Ridges, invented and manufactured by Thomas Hunter, of Ulceby, near Barrow on Humber.—5*l*.

A Drill for general purposes, invented by R. Garrett, of Leiston Works, manufactured by R. Garrett and Son.—30*l*.

Patent Horse hoe, invented by R. Garrett, of Leiston Works, manufactured and patented by R. Garrett and Son.—Silver Medal.

Chaff machine, fitted in an Iron Frame, invented by Mr. James Smith, of Gloucester.—3*l*.

Self acting Cheese press, invented and manufactured by J. Smith.—3*l*.

New Implement, viz., a Stack Covering to supersede Thatching, invented by George Parsons, of West Lambrook, manufactured by his own carpenter and smith. Silver Medal.

Oat and Bean Mill, improved and manufactured by James Spencer, of Hopton, near Wirksworth, Derbyshire.—5*l*.

Spring Waggon, with the Patent Breaks—the Breaks invented by Charles Thatcher, of Midsomer Norton, manufactured by Richard Stratton, of Bristol.—20*l*.

Low Manure Cart, with Cranked Axle, invented and manufactured by Richard Stratton, of Bristol.—Silver Medal.

New Implement, viz., a Revolving Cooch Rake, invented and manufactured by Richard Stratton, of Bristol.—2*l*.

Double Cheese-press, invented by Mr. Gingell, of Bristol, manufactured by R. Stratton.—3*l*.

Patent self-acting and self-regulating Drag or Break for the Wheels of Carts particularly, and of Carriages generally, invented by Charles Thatcher, of Midsomer Norton, manufactured by R. Stratton, of Bristol, and others of the Patentee's Licensees.—Silver Medal.

New Implement, viz., a Subsoil Plough, invented and manufactured by Hugh Carson, of Warminster, Wiltshire.—10*l*.

Set of Patent Four-beam Iron Harrows, invented by William Armstrong, manufactured by John Howard.—5*l*.

An Improved Steam Apparatus for Roots, &c., invented and manufactured by James Richmond, of Salford, near Manchester.—5*l*.

Corn and Seed Drill, James Smyth, of Peasenhall, near Yoxford, invented by Messrs. Smyth and Son, manufactured by James Smyth, jun.—5*l*.

New Implement, viz., a Patent Machine for making Tiles and bricks, Messrs. Ransome, Do., invented by R. Beart, of Godmanchester, with additions by A. Hickney, of Redgmont, manufactured by themselves.—Silver Medal.

Set of Ransome's Patent Iron-trussed Whippletrees and Pomeltrees, invented and manufactured by themselves.—Silver Medal.

New Implement for Hummelling Barley, invented and manufactured by Mr. Joshua Cooch, of Harleston, near Northampton.—3*l*.

Newly improved Haymaking Machine, invented and manufactured by Thomas Wedlake, of Hornchurch, near Romford, Essex.—Silver Medal.

Newly invented Turnip-cutter, invented and manufactured by Thomas Wedlake, of Hornchurch, near Romford, Essex.—2*l*.

Corn-delivering Carriage on springs, for general purposes of road and field, invented and manufactured by A. White, of Old Sleaford, near New Sleaford, Lincolnshire.—10*l*.

Portable Steam-engine, improved and manufactured by Wm. Cambridge, of Market-Lavington, near Devizes.—10*l*.

Agricultural Carriage, invented and manufactured by Daniel Coombes, of Shipton, near Burford, Oxon.—5*l*.

Four-horse steam-engine on wheels, with shafts complete for travelling, invented and manufactured by Alexander Dean, of Birmingham.—10*l*.

The Bretforton Cider-Mill, suitable for one or two horses, hand power, &c., invented by James Ashwid, Esq., of Bretforton, Worcestershire, manufactured exclusively by A. Dean.—Silver Medal.

Weed and Bush extractor, invented by Joseph Hall, manufactured by Hall and Co.—2*l*.

Liquid Manure-drill, invented and manufactured by Thos. Huckvale, of Over Norton, near Chipping Norton.—5*l*.

Patent Weighing-machine for Cattle, invented by Monsieur George, of Paris, manufactured by H. G. James, London.—10*l*.

Set of strong Patent Iron Harrows, invented and manufactured by Sandars and Williams, of Bedford.—5*l*.

A Churn, invented by Thomas Wood, manufactured by W. Wood.—5*l*.

Dibbler, invented by G. Cottam, and manufactured by Cottam and Hallen, of Winsley-street, London.—2*l*.

Chain harrow with serrated rings, invented by G. Cottam, and manufactured by Cottam and Hallen, London.—Silver Medal.

Some Draining Tiles, Pipes, Sewer Pipes and Wall-Coping, invented and manufactured by F. W. Etheredge, of the Woodlands, near Southampton.—Silver Medal.

A Map in Relief, of a District, with Instruments, invented and manufactured by J. B. Denton, of Southampton.—Silver Medal.

A Cast-iron Thrawl, or Stillion, invented by William Hutchinson, of Derby, and manufactured by James Haywood and Co., of Derby.—2*l*.

A New Drain and Subsoil-Plough, invented and manufactured by J. Read, of 35, Regent Circus, London.—Silver Medal.

New Implement, viz., a Plough and Drill combined, invented and manufactured by Mr. John Meakin, of Spondon, near Derby.—Prize.

New Implement, viz., a Wrought-Iron Farmer's Field Gate and Iron Posts upon a new principle, invented and manufactured by Mr. E. Hill, of Brierley Hill Iron Works, near Dudley.—Prize.

Patent Steerage Lever Horse-hoe, invented and manufactured by Mr. Joseph C. Grant, of Stamford.—Prize.

Iron Horse-hoe, with Lever Rake attached for Cleansing Turnips and Potatoes, invented and manufactured by Mr. Joseph Scurrah, of Crakehall.—Prize.

PROCEEDINGS OF THE COUNCIL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Special Council was held at the Society's House, in Hanover-square, on Wednesday, the 28th of June, present—The Earl of Hardwicke, President, in the Chair, Duke of Richmond, Marquis of Downshire, Hon. R. H. Clive, M.P., Hon. G. H. Cavendish, M.P., Colonel Austen, R. W. Baker, Esq., T. Raymond Barker, Esq., T. J. M. Bartlett, Esq., John Benett, Esq., M.P., T. W. Bramston, Esq., M.P., W. R. Browne, Esq., Dr. Calvert, Colonel Challoner, F. C. Cherry, Esq., J. Walbanke Childers, Esq., M.P., Colonel Le Couteur, C. R. Colvile, Esq., M.P., L. Cooke, Esq., James Dean, Esq., John Ellman, Esq., J. H. Hodgetts Foley, Esq., A. E. Fuller, Esq., M.P., Humphrey Gibbs, Esq, S. Grantham, Esq., W. Fisher Hobbs, Esq., E. Holland, Esq., W.

H. Hyett, Esq., Sir John V. B. Johnstone, Bart., M.P., Samuel Jonas, Esq., G. Kimberley, Esq., John Kinder, Esq., Sir Charles Lemon, Bart., M.P., O. F. Meyrick, Esq., J. Lenox, W. Naper, Esq., E. W. W. Pendarves, Esq., M.P., Dr. Lyon Playfair, E. S. Chandos Pole, Esq., H. Price, Esq., Rev. Ralph Price, Philip Pusey, Esq., M.P., John Read, Esq., Professor Sewell, William Shaw, Esq., J. V. Shelley, Esq., R. A. Slaney, Esq., J. Spencer Stanhope, Esq., W. R. C. Stansfield, Esq., M.P., H. S. Thompson, Esq., T. Tweed, Esq., and Henry Wilson, Esq.

Letters having been read from Mr. Bates of Kirkleavington, Mr. Evan David of Radyr Court, and Mr. Ellison of Sizergh Castle, and distinct propositions laid before the Council from the Hon. R. H. Clive, Colonel Le Couteur, Mr. Dean, Mr. Ellman, Mr. Hobbs, Mr. Hillyard and Mr. Cherry, on the subject and conditions of Prizes to be awarded by the Society, the Council proceeded, agreeably with bye-laws, to the final consideration and settlement of the Prize Sheet for 1844, and after mature deliberation and discussion of the various points of the question, to agree to the following new classes of Prizes to be given specially at the Southampton meeting; namely, 50 guineas for "Short-woolled Sheep not qualified to compete as Southdowns," 50 guineas for "Cattle of the Channel Islands Breed," and 20*l.* for the best sample of Seed Barley, making the Prizes alone, for Stock, Implements, Essays, &c., to be awarded next year out of the funds of the Society amount to no less a sum than 1,690*l.*

It was decided that the prizes of 30*l.* and 20*l.* for the "best Stallions for Agricultural purposes," and those of 20*l.* and 10*l.* for the "best mare and foal for agricultural purposes," should not as heretofore be limited to those of the "cart" breed; that the exhibitors of Seed Wheat and Barley should next year be *required* to send along with the grain, specimens fairly taken, of the wheat or barley in the ear, with the whole of the straw, in a bundle not less than one foot in diameter, and with the roots attached; and that the last day for receiving Certificates for the Southampton Meeting should be the 1st of June, 1844.

The members of the Council who intended to be exhibitors at the Derby meeting having left the room, the Council proceeded in the usual manner to select the Judges required for the various departments of the show.

Mr. Thompson gave notice that he should present, at the next monthly Council, a Tile made by Lord James Hay, and move "that a select committee be appointed to conduct a model experiment with tiles made on that principle, and to report to the Council on their efficiency."

Mr. Clifford Cherry, principal Veterinary Surgeon to the army, presented a paper on the best mode of improving the breed of horses, which was referred to the next Council.

The Council then adjourned to Wednesday next, the 5th of July.

At a monthly council, held at the Society's House, Hanover-square, on Wednesday, the 5th of July—present, the Duke of Richmond in the chair, Marquis of Downshire, Earl of Euston, Lord Portman, Hon. Rbt. Henry Clive, M.P.; Hon. George Henry Cavendish, M.P.; Robert Archbold, Esq., M.P.; Colonel Austen; T. J. M. Bartlett, Esq.; John Benett, Esq., M.P.; Henry Blanshard, Esq.; French Burke, Esq.; Colonel Challoner; John Walbanke Childers, Esq., M.P.; Henry Colman, Esq.; James Dean, Esq.; Sir Trayton E. Drake, Bart.; John Ellman, Esq.; A. E. Fuller, Esq., M.P.; W. Fisher Hobbs, Esq.; Sir John Johnstone, Bart., M.P.; John Kinder, Esq.; Dr. Lyon Playfair; E. S. Chandos Pole, Esq.; Sir Robert Price, Bart., M.P.; Philip Pusey, Esq., M.P.; Wm. Shaw, Esq.; Rev. J. R. Smythies; Vincent Stuckey, Esq.; Sir Charles Taylor, Bart.; H. S. Thompson, Esq.; Henry Wilson, Esq.——Lord Calthorpe, of Grosvenor-square, London; and Robert Arkwright, Esq., of Sutton Hall, Derbyshire, were elected Governors; and 52 gentlemen (whose names were given in our paper of the 10th instant) members of the Society.

Finances.

The Report of the Finance Committee was presented by Mr. Raymond Barker, the chairman, and agreeably with its recommendation, the names of 49 defaulters were ordered to be struck out of the list of the Society, the Council giving special instructions to the Secretary to make such application to other parties in arrear as the terms of the charter would justify for the due and legal recovery of their unpaid subscriptions.

Concrete Tiles.

Mr. Thompson brought forward the motion of which he had given notice, on the subject of an enquiry into the merits of Lord James Hay's Concrete Tiles, when it was resolved, that a committee be appointed to conduct a model experiment with tiles made on Lord James Hay's principle, and to report the result to the Council; consisting of Mr. Pusey, M P., Mr. Childers, M.P., Mr. Davenport, Sir John Johnstone, Bart., and Mr. Thompson, with power to add to their numbers.

Appointment of Judges.

The Secretary laid before the Council the following list of the Judges for the Derby Show, appointed by the special Council on the 28th of June:—

Short-horns.

Charles Stokes, of Kingston, Leicestershire
William Smith, of West Rasen, Lincolnshire
Jesse Kemp, of Utterby Grove, Lincolnshire
John Godfrey, of Cottesmore, Rutlandshire

Herefords.

John Buckley, of Allithwaite, Lancashire
Thomas Chapman, of Stoneleigh, Warwickshire
William Trinder, of Wantage, Berkshire
William Pratt, of Long Ichington, Warwickshire

Devons.

Edward L. Franklin, of Ascott, Oxfordshire
John King, of Brighton, Sussex
Sir Francis Lawley, Bart., of Middleton Hall, Staffordshire
Thomas Cooper, of Norton, Sussex

Mixed Breeds.

John Hall, of Wiseton, Yorkshire
Philip Chesemore, of Horsham, Sussex
William Jones, of the Sheep House, Gloucestershire
William Smith, of West-Rasen, Lincolnshire

Horses.

Nathaniel Blake, of Stanton-Harcourt, Oxfordshire
Charles Bowman, of Greatford, Lincolnshire
William Greaves, of Bakewell, Derbyshire
Major Newton Shawe, of Kesgrave Hall, Suffolk

Leicesters.

Jonathan Clark, of Weedon, Northamptonshire
Richard Hewitt, of Dodford, Northamptonshire
Thomas Metcalfe, of Harleston Park, Northamptonshire
John Buckley, of Allithwaite, Lancashire

Southdowns.

Edward Pope, of Great Tolier, Dorsetshire
William Stace, of Berwick, Sussex
Hon. William Gage, of Westbury House, Hampshire
William Arkcoll, of Langley, Sussex

Long-Woolled Sheep.

William Gillett, of Southleigh, Oxfordshire
John Harris, of Hinton, Berkshire
John Elliot, of Chapel-Brampton, Northamptonshire
Richard Garratt, of Harrowden, Northamptonshire

Pigs.

John Farncombe, of Brighton, Sussex
Charles Tawney, of Oxford
Owen Cambridge, of Wimpole, Cambridgeshire
Robert Wiley, Jun., of Brandsby, Yorkshire

Implements.

Josiah Parkes, Civil Engineer, Great College Street Westminster
R. S. Graburn, Branswell Cottage, Lincolnshire
George Legard, of Fangfoss, Yorkshire

GRAIN.

James Stanbrough, of Isleworth, Middlesex
William Robinson, of Hemel-Hempsted, Hertfordshire
George Smith, of Royston, Hertfordshire
John Bright, of Teddesley Park Farm, Staffordshire

The Secretary reported that, agreeably with the directions of the Council, he had referred to the index of the entries for the Derby Meeting, and ascertained that Mr. Stokes and Sir Francis Lawley, as exhibitors, and Mr. Wiley, as the son of an exhibitor, would be disqualified to act as judges on that occasion: he had, therefore, not communicated to those gentlemen any intimation of their appointment, but had addressed a circular to each of the others, all of whom had accepted the office, with the exception of the Hon. William Gage and Major Shawe, who were unavoidably prevented from being present in due time at the Meeting.

The Council resolved, on the motion of Mr. Ellman, that should Mr. John Hudson, of Castleacre, Norfolk, or Mr. Crisp, of Gedgrave Hall, Suffolk, attend the Meeting at Derby, and their services be required, the Stewards of the yard should be recommended to select one of those gentlemen to supply Mr. Gage's place as a Judge of Southdown Sheep.

ENGLISH COTTON.

Mr. W. Draycote, of Edwinstowe, Nottinghamshire, presented to the Society a specimen of English cotton, with the following account of it:—"The enclosed cotton was grown, not in the interior of Mexico, but in the interior of the county of Nottingham. The tree has long been very interesting to me; and this is not my first effort to bring it into notice. I do so now in consequence of having read the report of the proceedings of the Council of the 21st of June, in which it is stated that Mr. Colman, the agricultural commissioner from the United States, exhibited some specimens of silk, silk-cotton, and cotton—this last the produce of a large tree. The specimen I send is also the produce of a large tree, growing upon the estate of the Earl Manvers, at Edwinstowe. With the cotton I send some foot-stalks, and also some leaves. I am much inclined to think it a pure specimen of the one described by Mr. Colman. I regret I did not attend to it sooner, as I then should have been enabled to procure some cotton in a better state, as well as finer foot-stalks, with the capsules more perfect. The seed is about twice the size of the germen in wheat. Some will be found amongst the wool. I think they are emitted immediately on the opening of the capsules. It is very desirable that an effort should be made to grow cotton in this country, if only for the purpose of making down pillows."

Mr. Cherry's paper on prizes for horses was referred, with several others, to the Journal Committee. The Marquis of Downshire presented a specimen of Irish flax of the growth of 1843, from a field averaging 3½ feet in height. Mr. Dean submitted to the inspection of the members the plans prepared by his son, Mr. Alexander Dean (civil engineer to the Haarlem drainage commissioners), of his proposed drainage of the metropolis. Mr. Shaw exhibited to the Council the paintings of a boar and sow belonging to Mr. Nutt, of York; and Mr. Easton, of Moortown Farm, Dorset, transmitted a specimen of an unknown plant which had yielded him a luxuriant crop.

The Council then adjourned to the Monday following at their pavilion at Derby.

At a council held at Derby, on Monday the 10th of July, present, the Duke of Richmond in the chair; Earl Spencer, Hon. Captain Spencer, Thomas Raymond Barker, Esq., Colonel Challoner, John Walbanke Childers, Esq., M.P., C. R. Colvile, Esq., M.P., John Ellman, Esq., George Webb Hall Esq., John Kinder, Esq., William Miles, Esq., M.P., and William Shaw, Esq.

The Council took into mature consideration the position in which the Society was placed in reference to the trial of implements, and instructed the stewards and judges accordingly.

The Council authorized the distribution of silver medals, by the judges of implements, requiring them to report to the Council any case of extraordinary merit which, in their opinion, deserved a medal of higher value.

The toasts for the pavilion dinner were finally arranged.

Earl Spencer was requested to undertake the selection and appointment of the judges for cheese.

The Council refused the application for leave to sell wine and spirituous liquors in the show-yard.

The arrangements proposed by the railway companies for additional trains to leave Derby for London, after the great dinner on the Thursday, and general meeting on the Friday, were approved by the Council, with their thanks for the accommodation.

The Council then adjourned to the next morning, at ten o'clock.

At a Council, present, The Duke of Richmond in the chair, Hon. R. H. Clive, M.P.; Colonel Austen; David Barclay, Esq., M.P.; Thomas Raymond Barker, Esq.; Colonel Challoner; John Walbanke Childers, Esq., M.P.; C. R. Colville, Esq., M.P.; John Ellman, Esq.; George Webb Hall, Esq.; W. Goodenough Hayter, Esq., M.P.; W. Fisher Hobbs, Esq.; Sir H. Hoskyns, Bart.; John Kinder, Esq.; E. W.W. Pendarves, Esq., M.P.; Professor Sewell; William Shaw, Esq.; J. V. Shelley, Esq.; H. S. Thompson, Esq.; and Henry Wilson, Esq.

The Council decided that no implement or other article of exhibition for the show-yard, arriving after the hour distinctly specified as the latest for their reception, should be admitted.

Mr. Warnes's offer to deliver a lecture on the growth of flax was received with thanks, but declined on account of the arrangements of the meeting precluding a favourable opportunity for its delivery.

The Stewards of the Implement Department reported their arrangements for the trial of implements on the light land at Coxbench, and the extraordinary and unexpected obstacles to their operations in the demands, conditions, and liabilities, to which they found the Society would be subject should that trial be attempted at that place.

The Council then unanimously resolved that the trial of the implements on Mr. Meynell's land, at Coxbench, in the occupation of Mr. Chambers, should be altogether abandoned; and that the Judges should be informed that it was the determination of the Council, that a trial of such implements as were adapted to heavy land should take place at Mickleover, on Mr. Chandos Pole's land, in the occupation of Mr. John White, at 12 o'clock the next day; Mr. Miles, M.P., being requested to take the necessary steps to make that determination public.

Mr. Miles stated to the Council that he had inspected the heavy land selected for the trial, and that it certainly had been brought into the best possible state that such land could be brought into.

Mr. Charnock, of Wakefield, had leave granted to explain to the Council the construction and advantages of his new tiles for draining; and received their thanks for the same.

Mr. Turner reported the occurrence of symptoms of the epidemic among his Devon stock on their reaching Derby, though perfectly free from it on their leaving home, having caught the disease, as he supposed, from some pigs at the Euston Station, and requested leave, that, as it would be contrary to the rules of the Society to introduce infected animals into the yard, the Judges might be allowed to inspect them in the field adjoining.

The Council thanked Mr. Turner for his communication of this circumstance, and unanimously acceded to his request, referring his case with a recommendation to the Stewards of the yard.

The Council having then proceeded to the considera-

tion of various details of business connected with the meeting, adjourned.

The General Meeting of the members was held at Derby in the Council-room, adjoining to the Pavilion, on Friday, the 14th of July, at 12 o'clock precisely, Earl Spencer in the Chair. The following resolutions were carried unanimously:

On the motion of the Duke of Richmond, seconded by Mr. Shelley, Resolved, that the thanks of the Society be given to the Mayor and Corporation of Derby for their courteous attention.

On the motion of Mr. Pusey, M.P., seconded by Mr. Miles, M.P., Resolved, that the thanks of the Society be given to the Earl of Hardwicke, for his valuable services to the Society.

On the motion of Colonel Challoner, seconded by Mr. Stokes, Resolved, that the thanks of this Society be given to Mr. Colville, M.P., and the Local Committee.

On the motion of the Duke of Richmond, seconded by Mr. Shelley, Resolved, that the thanks of the Society be given to the different Railway Companies, for the liberal accommodation afforded to the Society.

No other proposition having been made, the Meeting adjourned.

A Meeting of the Council was held immediately after the General Meeting, present, the Right Hon. Earl Spencer, President, in the chair, Thomas Raymond Barker, Esq.; Colonel Challoner; C. R. Colville, Esq., M.P.; C. Hillyard, Esq.; Sir John V. B. Johnstone, Bart., M.P.; William Miles, Esq., M.P.; Philip Pusey, Esq., M.P.; William Shaw, Esq.; and Professor Sewell.

The Council resolved, that all questions relating to the decision of the Judges of Implements be deferred till the award of the Judges of Implements is before the Council.

The President informed the Council, that he should direct a Special Council to be summoned for Friday, the 4th of August, for the purpose of taking into consideration the Report of the Judges of Implements, and the arrangements for the Southampton Meeting.

The Council resolved, that the Judges of Implements should be requested to send their award to the Secretary, on or before the 1st of August, and in case they should have withheld any of the prizes offered by the Society, that they will be good enough to state the reasons for which they have so withheld them.

The President reported that the fence of the Show-yard, erected by the Local Committee, at the expence of the town of Derby, had been completed to the entire satisfaction of the Stewards of the yard.

The Council authorised the Finance Committee, before leaving Derby, to discharge the whole of Mr. Huggins's claims, as contractor of the Pavilion Dinner and Ladies' Refreshment, in consideration of the perfectly satisfactory manner in which he had fulfilled his engagements with the Society. They also authorised the payment of Mr. Cox's bill for horse hire; the advance to Mr. Manning of a further sum of 750*l.* on account; and the transfer to the credit of Mr. Colvile, M.P., and Mr. Gibbs, of 500*l.* to meet and discharge the local bills connected with the general business of the period.

The Council delivered to Inspectors Otway and May, a written certificate, signed by the President and addressed to the Commissioners of Police, in London, of the entire and complete satisfaction of the Council with the conduct of the Police Force under their orders.

The Council then adjourned to Wednesday, the 19th of July.

At a Weekly Council, held at the Society's House, in Hanover-Square, on the 19th of July, present, the Marquis of Downshire in the Chair, C. R. Colvile, Esq., M.P., John Evelyn Denison, Esq., M.P., E. W. W. Pendarves, Esq., M.P., E. S. Chandos Pole, Esq., Professor Sewell, and William Shaw, Esq.

Trial of Implements.

Mr. Denison, M.P., informed the Council of the great disappointment he had experienced in attending the Derby Meeting, at not finding on the Implements exhibited in the Show Yard, such information as would lead the Members of the Society and the public at large to profit by the decision of the Judges, and be enabled to draw just conclusions on the comparative merits of implements belonging to the same class. Mr. Denison stated that his case was this: he had gone to the Meeting and carried twenty of his tenants with him, along with an implement-maker of the village, and the great object of the party was to select such implements as appeared best suited to their land. They hoped, on arriving at the Show, to have had the benefit of the judgment of competent persons selected by the Society, and that they would have been at once directed to the best implements in the respective classes. Nothing, however, Mr. Denison remarked, could have been further from the fact. They found indeed a splendid show of implements, but hardly any assistance from the Judges to guide them in their purposed selection; and even in cases where prizes were awarded there was no explanation given of the grounds of the award; and thus the journey of the party, as far as its main object was concerned, proved entirely fruitless. Mr. Denison then applied to parties he thought most capable of giving him advice in the choice of two or three of the most important implements he wished to purchase, but he found to his still further perplexity that they each recommended different implements as the best. Considering that in such a state of things nothing could be more unsatisfactory to a member of the Society, or less likely to tend to the formation of a just decision, and that while the Society invites competition and expends its money in awarding prizes, the members of the Society who provide that money have a right to be put in possession of the results, carefully examined and deliberately judged, he thought it a great reproach to the Society that the omission had occurred. He would venture to suggest that a much larger number of Judges should be appointed, that their labours should be subdivided—one set of them for ploughs, another for drills, another for threshing machines and chaff-cutters, and so on. He thought that in this way something really useful might be done, and decisions of some value obtained.

The noble Chairman, on the part of the Council, thanked Mr. Denison for the statement he had made to them, and the suggestions he had offered; and so desirous were the Council to remove every just cause of complaint on every point, that he would himself second any motion which Mr. Denison would propose to lay before the next monthly Council on this subject.

Mr. Denison then gave notice, that he would move, at the next monthly Council, on the 2nd of August, "That at future country meetings, on or before the morning on which the show of implements is opened to the public, the award of the judges should be known, with all necessary information to guide the public in the selection and purchase of implements."

Mr. Shaw also gave notice, that he should move at the next monthly meeting, or at the Special Council on the 4th of August, "That a committee of three persons, to consist of one member of the council, one practical farmer of the district, and one implement manufacturer be appointed to take land, get it prepared, and make the necessary arrangements for the trial of implements at the Southampton meeting.

"That the trial of Implements shall take place in the week preceding the meeting, and that an exhibition of implements at work, and not a trial of their merits, shall take place on some day during the meeting.

"That the number of Judges of Implements be increased, and that there be one or more practical farmers among them.

"That it be imperative on every exhibitor of an implement for a prize, to state to the best of his ability, the name of the inventor (if known), the time when invented, the particular points of merit or improvement

(if the claim be for improvement), and in what district it has been and is used."

Council Dinner.

Mr. Neale, the contractor for the Council Dinner, attended the Council to explain the impossibility he experienced, on account of the sudden rush at the doors, to collect the tickets of all the members who entered the County Hall, at the Council Dinner, and his consequent inability to produce such tickets as vouchers to the Council for his claim of payment. He had, however, had all the guests counted as they sat at dinner, and accordingly requested of the Council the payment at that time of the number only for which his contract was made. Mr. Neale further stated that this sudden rush of Members into the body of the Hall had prevented his completion of the arrangements for the dinner.

The Chairman informed Mr. Neale that all outstanding claims against the Society, on account of the Derby Meeting, would be taken into consideration at the next Monthly Council on the 2nd of August, when he would be at liberty to make his application.

Alpaca.

Professor Owen having been informed that the Council were desirous of transmitting to the Royal Academy of Sciences, at Munich, replies to various enquiries made of the Society by that learned body on the subject of the Alpaca, willingly undertook to obtain the required information; in the meantime he enclosed specimens of the 4 varieties of its wool, of the value of which he had long been impressed with a favourable opinion. Professor Owen feared that the humidity of our mountain districts would prevent the growth of wool of the same beautiful quality as that which is developed in the Andes, if even the Alpacas could stand the climate; but he thought the experiment would be worth the trial.

Long-horned Cattle.

Mr. Daniel, of Burton-upon-Trent, presented to the Society the Catalogue of an important sale of long-horned cattle, which took place in March 1791, at Rollright, in the county of Oxford, showing the great interest that the breeders of cattle then took in the long-horns, the celebrity of the breed at that period being mainly indebted to the late Mr. Robert Bakewell, of Dishley, near Loughborough.

Mr. Beman, of Donnington, near Stow, Gloucestershire, communicated the mode of his trial of different varieties of wheat; Mr. Bennett, of the Park Farm Office, Woburn, his remarks on the advantages of the Tweeddale tile machine; the Rev. T. J. Powell, of Cantreff, near Brecon, his mode of registering (as an Honorary Distributor) the distribution of the Society's Journals; and Mr. Baker, of Cottesmore, a communication on Friendly Institutions:—all of which were referred to the Journal Committee.

Sir Charles Gordon, Bart., invited the Council to send a deputation to the meeting of the Highland Society, to be held at Dundee on the 8th, 9th, and 10th of August next. Mr. Hardman called the attention of the Society to a Museum in the course of formation at the Royal Dublin Society. Mr. Cotter, Hon. Sec. of the South Australian Institute, solicited the communications and correspondence of the Society; and Mr. Minta, of Stapleford, expressed his willingness to communicate the mode by which he prepared his compost manure.

The new plant, grown by Mr. Easton, of Moortown Farm, near Wimborne, Dorset, from seeds accidentally obtained from the continent, was referred to Mr. Loudon.

Mr. Pusey, M. P., transmitted specimens of pipe-tiles and draining tools; and Messrs. Robertson, of Berwick-on-Tweed, specimens of their new grated pipes for drains.

A large collection of specimens of plants and minerals was received from Dr. Daubeny, in Spain, and was ordered to be reserved for the Monthly Council.

The Council then adjourned to Weduesday next, the 26th of July.

SOUTHAMPTON.—Monday, July 17, a deputation from the Committee of the Royal Agricultural Society arrived here, for the purpose of inspecting the lands and other accommodations available for the society's meeting next year. The deputation comprised Colonel Challoner, Colonel Austin, D. Barclay, Esq., M.P., J. Deane, Esq., J. W. Childers, Esq., M.P., J. V. Shelly, Esq., F. King, Esq., W. Shaw, Esq., and J. Hudson, Esq. the society's secretary. The Duke of Richmond was prevented from attending by a domestic loss. The deputation found carriages awaiting their arrival at the terminus, to convey them to the Audit-house, where a cold *déjeûner à la fourchette* was provided for their refreshment. The mayor and other members of the town committee were there to receive them, and among these were A. Drummond, Esq., H. C. Compton, Esq., M.P., —Trench, Esq., J. R. Beste, Esq., G. W. Johnson, Esq., T. Trew, Esq., Capt. Ward, and about thirty other gentlemen. The wines and other refreshments were of the first quality, and redound in no small degree to the taste and liberality of the mayor. But one toast, proposed by Capt. Ward, was drank: "The health of the gentlemen of the deputation, with thanks to the society for the honour conferred upon Southampton." This was briefly replied to by Colonel Challoner, who concluded by complimenting the town upon the spirit and liberality which it had evinced. Carriages were then provided, and the deputation accompanied by some of the town committee, visited the East Marlands, the common, Houndwell, and Hoglands, and Mr. Caleb Gater's farm, at Bishop's Stoke. After their return to Southampton, they also inspected the Victoria-rooms, and then retired to draw up their report. Mr. G. Hunt very generously having offered a portion of Hoglands gratuitously, and some facilities connected with Houndwell, will be decisive, probably, in the selection of the sites for the dinner pavilion and show sheds. Mr. Caleb Gater's similarly liberal offer of lands at Bishop's Stoke will also, it is thought, be conclusive as to the spot where the trials of the implements will come off. It is gratifying also to know that the members of the deputation declared that at no town where any previous meeting of the society had been held, were the lands and other accommodations offered so suitable as at Southampton; and they added, that it is the general opinion that the meeting of 1844 will be the most brilliant that the society has hitherto assembled.—*Hants Chronicle.*—[The mayor is most assiduous in his attentions to promote the object of the society, having attended the meeting at Derby for the express purpose of making himself acquainted with the details of the meeting, in order that he might be better enabled to aid in the arrangements for the meeting at Southampton next year.—Ed. M. L. E.]

NEW MEMBERS.

The following gentlemen were elected members of the Society:—

Adams, James, Bishop Stortford, Herts
Adams, James, Southwell, Notts.
Arbuthnot, John A., Coworth, Chertsey, Surrey
Atkinson, John, Chronicle Office, Chesterfield
Beardsley, William, Shipley Colliery, near Durham
Beck, Charles William, Upton Priory, near Macclesfield
Blakeway, William, Leigh Hall, Worthen, near Shrewsbury
Blake, William, John, F.R.S., 62, Portland Place
Blackwall, Joseph, Matlock, Derbyshire
Boddam, Alexander, Kirklington, Southwell, Notts.
Boote, Daniel, Donnington, Albrington, Wolverhampton
Bracebridge, Charles Holt, Atherstone Hall, Atherstone
Brickwell, Overthorpe Lodge, Banbury, Oxon.
Browne, Rev. Thomas Cooper, the Priory, Sydenham, Kent

Brown, Thomas, Hartshorn, Derbyshire
Boulton, John, Humphreston, Albrington, Wolverhampton
Canner, William, Locko Grange, near Derby
Capper, Henry, the Willows, Coar's End, Woburn
Chambers, Joseph, Great Peatling Grange, Leicessh.
Chambers, John, Wilne, near Derby
Charnock, John Henry, Wakefield, Yorkshire
Clare, William Harcourt, Twycross, Atherstone, Leicestershire
Clark, John Were, Tiverton, Devon
Colegrave, William, Brebridge and Meer Hall, Lincolnshire
Cotton, Rev. Charles E., Dalbury Rectory, Derby
Coleman, John, Kearsney Court Farm, near Dover
Crewe, John, Calke Abbey, near Derby
Crowdy, Henry Crowdy, Highworth, Wilts
Crowdy, William Morse, Swindon, Wilts
Crump, James, Melbourne, near Derby
Dawson, Edward, Long Whatton, near Loughborough
Des Vœux, Henry, Drakelow Park, Derbyshire
Dod, Henry Davenport, Mansfield, Woodhouse, Notts
Didsbury, Thomas, Rotherham, Yorkshire
Dixon, James, Page Hall, Bakewell, Derbyshire
Earle, Thomas, Itchen, near Alresford, Hampshire
Else, John, Holloway, near Matlock, Derbyshire
Evans, Daniel, Millar's Farm, Kingston, Surrey
Evans, Thomas William, Allestree, Derby
Farrer, James, Ingleborough, Settle, Yorkshire
Farnham, E. B., M.P., Quorndon House, Loughboro', Leicestershire
Faulkner, Francis Macnamara, Blackheath, Kent
Fitzroy, George, Grafton Regis, Stony Stratford
Fletcher, William, Rhadmanthawite, near Mansfield
Flower, George, Mansfield, Notts
Fowle, John, Burrowash, near Derby
Fox, Douglas, Derby
Gambier, Charles Cornish, 9, Harley-street, Cavendish-square
Goodwin, George, High House, near Heath, Chesterfield
Goodwin, Charles John, Heath, near Chesterfield
Gething, William, Mansfield, Notts.
Greaves, John, the Grove, Ashbourne, Derbyshire
Graves, Robert, Charlton, Shaftesbury, Dorsetshire
Grey, James, Kimmerston, Wooller, Northumberland
Guilford, Thomas, Nottingham
Hacker, John Heathcote, Leek, Staffordshire
Halfhide, George, Coventry-street, London
Hamilton, Francis, Kinsworth, Market-street, Herts.
Harding, William, Popham, near Basingstoke, Hampshire
Harding, William C., Lower Winchendon, Aylesbury, Bucks.
Harper, John, Newcastle-under-Lyne, Staffordshire
Harvey, John, Ickwelburg, Biggleswade, Bedfordshire
Harwood, S., Madley Hall, Ashbourne, Derbyshire
Hatfield, Thomas, Rugeley, Staffordshire
Hemsley, William, Melbourne, near Derby
Hobson, Matthew. Ilkeston, Derbyshire
Hodson, Rev. J. J., Yelverloft Rectory, Welford
Hole, Samuel, Caunton Manor, Newark, Notts.
Holden, Robert, jun., Locko Park, near Derby
Holmes, Alfred William, Derby
Hudson, George, York
Hunt, George, Southampton
Jackson, Matthew, Bilsthorpe, near Southwell, Notts
James, Collingwood Forster, Kirknewton, near Wooller, Northumberland
Jermyn, Earl, M.P., 6, St. James's-square, London
Jessopp, Francis, Derby
Knight, Richard, Headly, Lipbrook, Hampshire
Lewis, Laurence, Northington, near Alresford, Hampshire
Littledale, George Henry, Crick, Daventry
Lopez, Sir Ralph, Bart., M.P., Mariston House, near Plymouth
Lowe, George, F.R.S., 39, Finsbury Circus
Lukis, Rev. William Collings, The Vicarage, Bradford, Wilts
Manley, John Shawe, Manley Hall, Lichfield, Staffordshire
Marsland, Rev. George, Beckingham Rectory, Newark, Notts.
Mason, Henry, Branstone, Burton-on-Trent, Staffordshire
Miles, Roger Dutton, Keyham, Leicestershire
Morant, John, Brockenhurst, near Lyndhurst, Hants
Moore, the Rev. Bernard, Rector of Staveley, Chesterfield, Derbyshire
Morley, Richard, ——, near Nottingham
Morley, Benjamin, ——, near Nottingham
Moss, William, Ully, near Rotherham
Moss, Joseph, Aughton, near Rotherham
Newington, Joseph, Horsmonden, near Lamberhurst, Kent
Oakden, Daniel, Bentley Hall, Ashbourne, Derbyshire
Padwick, William, Hayling, Portsmouth
Palmer, Sir George, Bart., Wanlip, Mount Sorrell, Leicestershire
Pares, Thomas, Hopwell Hall, near Derby
Parrot, Thomas, Green Bank, Sutton, Macclesfield
Playfair, Dr. George, 7, Cecil Street, Strand
Pole, Peter, Drayton Hall, Uxbridge, Middlesex
Price, W. P., Tiberton Court, near Gloucester
Puget, Thomas, Leicester
Redfern, Francis, Manchester
Redgate, Thomas B., Nottingham
Robertson, E. William, Breadsall Priory, near Derby
Robinson, Thomas, Castle Ashby, Northamptonshire
Rolfe, Charles F. N., Sedgeford Hall, near Lynn, Norfolk
Ross, William, Fobdown, near Alresford, Hampshire
Ross, James, Dibden, near Southampton
Rust, James, Alconbury, near Huntingdon
Salvin, Marmaduke Charles, Burnhall, near Durham
Scorer, Matthew, Whiston, near Rotherham
Scott, Lord John, Cawston Lodge, Dunchurch, Warwickshire
Sheffield, Sir Robert, Bart., Normanby, Brigg, Lincolnshire
Smith, Rev. Loraine, Papenham Rectory, Bucks.
Stanbrough, James, Isleworth, Middlesex
Stannton, John, Talton, near Shipston-on-Stour, Warwickshire
Stephens, William V., 19, Pembroke-square, Kensington
Stephens, the Rev. Ferdinand, 49, Baker-street, Portman-square
Taylor, Thomas, Tiger Hotel, Derby
Taylor, John, Little Hallam, Derbyshire
Taylor, John, Morton Hall, Whalley, Lancashire
Tempest, Thomas, Little Eaton, near Derby
Thompson, R. James, Round Coppice, Iver, Bucks
Timmis, Joseph, Keel, near Newcastle, Staffordshire
Tomlinson, Captain Frederick, Cliffe Villa, Newcastle, Staffordshire
Underwood, Captain William, Castle Hill, Bakewell, Derbyshire
Unwin, Edward Wilberforce, Parkfield, Derby
Wade, George, Mickleover, Derby
Walker, Charles, Eilaston, near Ashbourne, Derbyshire
Warner, James, Steeple Court, Botley, Southampton
Watbey, John, Dethick, near Matlock, Derbyshire
Whalley, Capt. G. B., 2, Keynsham Bank, Cheltenham
Whalley, Robert, Brantham, Hull, near Manningtree
Wheatcroft, Nathaniel, Willesly Farm, near Matlock, Derbyshire
Whittaker, Rev. George Ayton, Knodishall, near Saxmundham, Suffolk
Williams, John, Treffos, Anglesey, N. W.
Wilmot, Sir Robert, Bart., Osmaston, Derby
Worthington, Andrew Jewks, Herton Hall, Staffordsh.
Wright, Samuel Job, Mickleover, near Derby
Wright, Peter, Eyam Hall, near Bakewell, Derbyshire
Wright, Samuel William, Witchport, near Ely, Cambridgeshire
Wright, James, Ravenhill, near Rugeley, Staffordshire
Young, John, Moor Court Farm, Romsey, Hants.

PICTURE OF THE COUNTRY MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

Mr. Agnew, of Manchester, had the honour of submitting to the inspection of her Majesty the Queen and his Royal Highness Prince Albert, the great picture of the Country Meeting of the Royal Agricultural Society, painted by Mr. Ansdell, containing upwards of one hundred and twenty portraits, including those of the Duke of Cambridge, the Duke of Richmond, Earl Spencer, Mr. Handley, Mr. Pusey, &c., of which her Majesty and his Royal Highness were most graciously pleased to express their approbation. Our readers generally may not be aware that Mr. Agnew, who is already known to the public by having published a fine print of the "Waterloo Coursing Meeting," has, in a most spirited manner, gone to a very heavy expense in causing a very large picture to be painted, in which upwards of one hundred and twenty of the principal parties in the kingdom connected with agriculture appear, all being excellent likenesses. This picture is now to be seen in Maddox Street, Regent Street, and will be removed to Derby, and exhibited during the Meeting of the Royal Agricultural Society at that place.

The following are the portraits introduced in the picture, and painted by Mr. Ansdell, who has displayed a talent in the performance which is more effective than any praise we could bestow upon him. We trust the agricultural public will appreciate and requite the spirit of the proprietor and the ability of the painter of this picture :—

"His Royal Highness the Duke of Cambridge, the Duke of Richmond, the Duke of Sutherland, the Duke of Bedford, the Duke of Rutland, the Duke of Cleveland, the Duke of Northumberland, the Duke of Beaufort, the Marquess of Downshire, the Marquess of Exeter, Earl Spencer, the Earl of Hardwicke, the Earl of Leicester, Earl of Ducie, Lord Western, Lord Burlington, Lord Portman, Lord Camoys, Earl of Lovelace, Earl of Talbot, C. Shaw Lefevre, M.P., Lord Worsley, M.P., Sir Charles M. Burrell, Bart., M.P., Sir Oswald Moseley, Bart., M.P., Sir Robert Price, Bart., M.P., Sir F. Mackenzie, Bart., Sir Charles Tempest, Bart., Sir J. V. B. Johnstone, Bart., M.P., Sir G. C. Morgan, Bart., Sir Hungerford Hoskyns, Bart., Sir Thomas Dyke Acland, Bart., M.P., Sir Francis Lawley, Bart., Sir Charles Lemon, Bart., M.P., George Wilbraham, Esq., F.R.S., William Ormsby Gore, Esq., M.P., C. R. Colvile, Esq., M.P., John Benett, Esq., M P., Joseph Neeld, Esq., M.P., Edmund Wodehouse, Esq., M.P., Philip Pusey, Esq., M.P., Hon. Robert Clive, M.P., John Villier Shelley, Esq., Hon. George Cavendish, M.P., Col. C. B. Challoner, Henry Handley, Esq., Hon Captain Spencer, W. R. C. Stansfield, Esq., M.P., W. G. Hayter, Esq., M.P., T. W. Bramston, Esq., M.P., David Barclay, Esq., M.P., Col. Thomas Austen, E. W. Pendarves, Esq., M.P., Col. J. Le Couteur, Hon. M. W. B. Nugent, J. Wilson Patten, Esq., M.P., Hon. Charles Cavendish, W. J. Childers, Esq., M.P., W. Miles, Esq., M.P. William Woods Page, Esq., Dr. Lyon Playfair, Dr. Justus Liebig, Rev. Dr. Buckland, Thomas Raymond Barker, Esq., M.P., Rev. J. R. Smythies, Rev. W. L. Rham, M.A., Professor Charles Daubeny, Professor — Johnston, Professor Henslow, Professor W. Sewell, James Smith, Esq., of Deanston, George Kimberley, Esq., George Tollett, Esq., W. Shaw, Esq., E. D. Davenport, Esq., R. M. Jaques, Esq., F. Pym, Esq., C. W. Johnson, Esq., Messrs. S. Wiley, J. Parkinson, T. Bates, J. Buckley, J. Elliott, H. Chamberlain, J. Hall, F. Chapman, S. Bennett, C. Stokes, S. Grantham, C. Burness, W. Wetherell, Master Mackenzie, Master Francis Mackenzie, J. Whitaker, T. C. Morton, R. Garrett, G. Cottam, R. S. Graburn, J. Parkes, J. Marmont, George Webb Hall, T. Gibbs, S. Druce, James Hudson, H. Gibbs, J. Webb, W. F. Hobbs, S. Jonas, J. Allen Ransome, C. Bowman, James Dean, J. Warsop, T. Crisp, John Hudson, Samuel Whitbread, H. T. Thompson, T. Kinder, J. Peake, J. Grey, W. Giblett, B. T. B. Gibbs, C. Hillyard, J. Price, W. B. Wingate, J. French Burke, Henry Blanshard, and C. Hampden Turner.

GUANO.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Having recently seen two treatises on guano, vaunting that its fertilizing properties are unrivalled, and exhibiting statements of the effects quite magical, I was induced to consider them with more attention than is perhaps ordinarily employed; and it results that I think these extravagant praises should be received with caution. Cases of failure or comparative merit are of course omitted; their insertion would be inconsistent with the obvious intention of the works: to force a profitable sale is one thing, to establish truth another. At various periods different articles have been pushed into prominence by the love of fashion (from that even the dung-cart is not free) and which have soon lost reputation; I am disposed to expect the like fate will befal guano. I am not objecting that it is without valuable properties, but that its purity, its pre-eminence, and its effects, are impartially and intelligibly set forth in these pamphlets, is what I feel myself obliged to doubt. As I am an independent observer, myself engaged in agricultural pursuits, I can have no anxiety but to promote the introduction of any commodity which may benefit the agricultural community, and thereby the public. But without deciding positively against the disinterestedness of the compilers of these works, I may suggest, that when a large expense is incurred by the gratuitous distribution of immense quantities of them, prepared for the especial purpose by mere literary men, some suspicion will naturally arise, more particularly if the accounts bear appearance of imperfect trials. Nor is it an affair altogether without difficulty to make accurate experiments: various minute circumstances affect the issue, which too many experimenters overlook, and may give preponderance to one article, which in another experiment would prove very different; a solitary trial can never be decisive.

Now in respect of the correctness of these statements, one of the circulars says that the importation is *exclusively* from the *coasts*, meaning the main-land, of South America, and that as it never rains, the original strength of the guano is fully preserved; whereas that brought from the islands being on the contrary frequently deluged with rain, is exhausted. All the accounts I have ever seen, and I have reason to believe them veracious, describe the contiguous *islands* as being *alone* the depositaries, where it is frequently covered by the waves and subsiding sand, and that small coasters are employed to take it to the shore. But in the other case it would be equally subject to admixture, as a fine sand from the uplands is almost continually in motion.

It is impressed on the reader that farm-yard dung,

by exposure and fermentation, loses its most valuable properties, and by inference that all these remain with the guano. Has a tropical climate had no exhausting effects during a long exposure—for these beds of manure are of very ancient date, the birds, it is well known, having sought more retired haunts? Yet in the same work the efficacy of several tons of rotten dung is imputed to *some cwts. of saline substances contained in it.*

That guano is by no means free from impurity all the analyses I have seen go to prove, and we all know that in qualitative and complicated analyses scarcely two chemists produce precisely the same results, and that in no operations are mistakes more easily made. The tables in these works are sufficient to shew the justness of this remark; one speaks of its purity, the other of its variable composition, and its liability to adulteration. To speak of all the extraordinary statements would exceed a reasonable limit, but I must observe that sometimes from 1¼ to 1½ cwt. is recommended, though in others from 4 to 7 cwt. is proposed, without any variety of circumstances. One and a quarter cwt. is like realizing the hope of Lord Kames that "a period may arrive when a man shall carry in his pocket sufficient manure for an acre." A gardener is said to have sprinkled *a few pounds* over a plot of ground, and the effects were equal to 30 tons of rotten dung on the same space! Has the age of miracles returned? I further notice that exclusive of the nitrates, the trials have been mostly against farm-yard dung, a few only including bones (which are truly said to be too often grossly adulterated) and but one or two with other artificial manures, which surely deserved competition. Of these latter, one is remarkable; the guano is stated to have cost 2*l.* 8s. per acre and carbon 4*l.* 2s. 6d. per acre. What kind of carbon I am at a lose to guess, but this I know, that wishing to try an article with a somewhat similar name, and being desirous to give a fair trial, I applied in quantity greater than directed; the cost was under one-third of 4*l.* 2s. 6d. and the effect beyond all promise.

In another account the application of guano rendered the grass so desirable to cattle that *it was almost impossible to keep them from it.* I suppose the fences had to be strengthened. Have the alkaline dressings never made grass palatable to cattle, or has guano created in them a faculty of communicating their preference for it? They must at any rate have a nice discrimination.

It is further said that the effects in a succeeding year were *undiminished* without any fresh application; if so, away with the aids of chemical knowledge in farming, for if all the virtues of a manure remain after the growth of a crop, it would have absorbed nothing. In one instance 1¼ cwt. of guano produced 45 bushels of wheat per acre! To be sure this was an unique piece of land, for without manure the quantity was 39 bushels! Happy the English farmer who raises the later.

21*st June*, 1843. A Middlesex Farmer.

Lime Water.—Opinions and practice seem very much at variance as to this liquid destroying worms. I tried it a short time ago on several collected together; it appeared to incommode them a little, as they moved off in double quick time; but as to dying, I, at least, could see no signs of it. The lime was good stone-lime, and the lime-water had just been made.

CALENDAR OF HORTICULTURE FOR AUGUST.

After a season of unusual drought for July—the temperature having been at an average considerably higher than during the same period of 1842—a very refreshing rain commenced soon after noon of July 18th. It is always at a risk that any attempt is made to describe the weather generally, so uncertain is the meteorology of a climate like that of the British Isles. But still, from all accounts, we learn that little rain fell, excepting during occasional thunder storms, between the 16th of June and the 18th of July, and that the ground in garden and field became hard-bound and arid to a degree most inconvenient to the labourer.

With the genial rain that now falls we may confidently hope that not only the ground will be meliorated, but that the potato crop, which began to dry off too rapidly, will improve, and almost double its produce.

Many complaints have been made of the potatoes without cause, excepting very partially; but it is certain that if, by dry weather in June and July, the growth of the haulm be checked, and its colour changed to yellow, the tubers must stand still, and become prematurely ripe. If rain does not occur while the growth is active, the fruit cannot swell; and if retarded till the half-formed tubes become ripe, the result will be, not an enlargement of their bulk, but the development of a new and useless second crop, to the still further degradation of the first.

Vegetable Department.

In the first week, cabbage seed for the next summer is sown. The sorts now preferred are the old small York, the larger London York, and the Imperial. In the present year plants of the cabbage tribe did well, in consequence of the dripping spring; they also like rich manure, but the seed and nursery-beds do not require it.

Winter spinach—a full crop is sown in the first and second week. A generous soil and open plot are favourable; by some the soil is first digged, then sown broadcast, trodden in, and then raked. Others prefer to sow in drills an inch deep, and two feet apart; drills are better in strong land; broadcast does well in light and sandy situations. This kind of spinach, called the "prickly seeded," is an invaluable herb; sown, as it should be, early in August, it vegetates speedily, and if the weather be moderately moist and warm, will be fit for table, by thinning out superfluous plants, in September; then, by taking the leaves in October and November, and so on (without its flying to seed) till the middle of June. The round-seeded spinach can never be trusted; and therefore we would urge families who are partial to the vegetable, to cultivate the prickly seeded more extensively, avoiding the trouble occasioned by repeatedly sowing the other tricky variety.

Sow repeatedly mustard and cress according to the demand, and lettuce twice; the best sort is that now called the "Paris cos"—it attains a very large size, and hearts perfectly, without tying; the brown Dutch is hardy, to stand the winter, but both may be tried; the first sowing is made about the 10th day, the second in the third week.

Cauliflower seed should be sown about the 21st day, to raise plants to be protected under glasses or frames during winter and early spring. A small bed is prepared in an open situation, digged, made

light, and even then sowed, and the seed covered with little more than a quarter of an inch of sifted earth.

In all seed-sowings, it is useless to attempt the work in dry parched earth. During drought, the surface must be effectually wetted, and covered with mats by day. On the third evening—the ground being moist—the seed is to be sown, the earth watered, and again covered, and thus vegetation may be promoted during the driest weather.

Onions.—According to Abercrombie—one of the best of our old authorities—the first week of August is the most eligible season to sow the general crop for spring service. The plants, he says, "will supply the table in spring for salads and other uses; they come in about the end of March and continue till April and May." If to this practice, which appears little thought of now, were added the cultivation by small bulbs in February, the succession would be continued till the autumn bulbs come in.

Sow a sprinkling of carrot, also radishes for late drawing. Take up the main crop of onions, if ready, towards the end of the month. Attend also to garlick and shallots.

Transplant the last celery, and another parcel of endive—giving effectual watering at the time, and again occasionally if the weather be dry, and the plants flag.

Artichoke plants continue to bear, and large heads should be cut for table. But as it is now found preferable to prepare succession rows of strong suckers every spring, it is advisable to prevent the bearing of those last planted; inasmuch as the plants are weakened by early bearing. All the small side-shoots bearing minute heads should be displaced, or cut back in every plant, for the same reason.

Asparagus beds and rows should be cleared of weeds by hand or light forking; and in every part of the garden sedulous care should be taken to prevent the seeding of groundsel, sow-thistle, &c., &c., as they now, if neglected, will fill the ground with rubbish.

Earth up celery. Those who have mushroom-houses would much enrich their soil by making the first earthing with the half-decayed horse-droppings of the beds—grasping each celery plant with one hand while the manure is placed around it. We have seen enormous celery produced where the trench has been nearly filled to the ground level with this material.

Fruit Department.

Vines.—Lay in occasionally the shoots which still advance a little, and secure close to the fence all the fruit-bearers. The exposure of the upper surface of every leaf connected with the latter is one source of security and future fertility.

In the late vinery—now beginning to colour its fruit, after the torpor which appears to occur during the formation of the seeds—care must be taken to guard it from too direct sun-glare, and also from wasps and flies. A good covering of foliage is sufficient for the former purpose; but it is also requisite to stretch a canvas, or muslin screen over the lights, so far as it is usual to let them down, in order to prevent the ingress of the flies. Early grapes are not exposed to these pests, but the meridian sun is very apt to scald the berries, and therefore a defence should be adapted to all good houses.

In the pine stove of succession plants a strong, moist, growing heat must be maintained by means of dung-linings, and by capping them with the mowings of lawns—a material which never fails to heat violently, and to extend its influence to the lower lining, the temperature of which it speedily revives.

Melons must have mid-day air, and occasional sprinklings over the leaves at 4 o'clock of sunny days, when the lights should be closed. The sprinkling is not, however, required where growth has ceased, and the last fruits are ripening off.

Wall-trees are now finally regulated: all the breast-wood removed, the best succession bearing shoots being trained in proper order to expose the fruit to sun and air, and to ripen their own wood.

Dwarf-standard, espalier, and wall apple and pear trees must now be immediately spur-pruned, or cut back to a few inches, to cause the lowest buds to swell. If this regulation be properly completed by the second week, enough of vital action will remain to excite those buds, and perhaps to develop the uppermost. In that event, the young shoot may be suffered to proceed an inch or two, when the lateral should be again pruned back to the eye below that which formed the shoot.

Flower Garden.

The due care and orderly regulation of the beds and borders are the chief duties of the gardener. The ground is liable to become littery and confused at this season; but foresight and diligence may still render lawns, walks, shrubberies, and parterres objects of extreme neatness. Thus, tall growers must be carefully supported, and all the parts of flowers or shrubs—the blooms of which are passed—should be nicely trimmed or cut away.

Greenhouse plants, particularly the pelargoniums, can now be easily propagated by strong cuttings of three joints, inserted in sand and leaf mould, and excited by a gentle heat in close frames.

Those plants from which the cuttings are taken should be pruned to a neat and compact figure, and permitted to break their first shoots ere they are re-potted in fresh soil.

AGRICULTURAL QUERY.

ON MOWING WHEAT.

Sir,—As the harvest is drawing near, and many of the agricultural societies in their discussions have recommended mowing wheat instead of reaping, I hope by your insertion of this I may gain some information on the subject: viz., what kind of cradle is best to be used on the scythe; and whether, after each mower, a person follows to bind up the wheat in sheaves; or whether it should be cut just like oats, and bound up at the end of the day, though I fear in that method much of the grain would be beaten out. I remain, Sir, your obedient servant,

Agricola.

We understand that Mr. Jaques sold nine short-horns at Derby for six hundred guineas, and that Mr. Watson, of Walkeringham, sold a short-horn heifer for one hundred and fifty guineas.

AGRICULTURAL REPORTS.

NOTTINGHAMSHIRE.

The weather for the past two months has been changeable, and we have suffered from the two extremes, wet and dry. The vegetable world has felt the ungenial changes, and its effects are too visible. The turnip crop—the very staple of all good husbandry, and which occupies the mind of every good farmer, more particularly than any other portion of the produce of his farm—is not, in consequence of those changes, the most promising; the soils were so saturated with wet at one period that even the operations of the sand land farmer were brought to a stand-still, and when the rains subsided the weather became parching and hot. Those farmers who had cleaned their grounds previous to the rains, and took advantage of the fine weather immediately after those rains to put in their turnips, have been generally successful, but those who were less fortunate, and whose fallows were in any measure foul, which had to be worked in the dry period till the soil became dry, have in very few cases succeeded. The old complaint of the devastating ravages of the (aphis) turnip fly, is now the common topic of discourse amongst all our holders of turnip soils, and a great many have, and are sowing the ground over again. One-third of the crop sown may, I think, be said to have failed; still we have not sustained, taking into account the resowing of that one-third, any material damage to produce alarm, because failures more or less occur every season; and taking into account the slight knowledge farmers generally possess of vegetable physiology, we may rather wonder that so many are so fortunate, as regards the result of the now growing crop. No finite mind can justly hazard an opinion, for of the heaviest crops I ever remember, some of those made very little progress in the first stage of their growth, and were in many instances filthy. The pastures generally are tolerably good. The hay harvest is now nearly brought to a close, and the crop was an average one; those fields that were not eaten in the spring, and got a good covering of grass at an early period, cut down very heavy; and in some instances where the reverse was the case, the crop was very light. Most of it has been secured in tolerable condition, taking the season as a whole. The wheat crop continues promising, and not at all thrown down, or inclined to rust or *mildew*. Oats are varied in their aspect; on wet lands very bad, and on good dry soils very good. Barley is generally a deficient crop, and may now be said to be a partial failure; let the future weather be what it may, if the time of harvest should be unfavourable for gathering, its value must be considerably enhanced. As regards the leguminous crops I cannot state a certainty; some fields of beans are short, stunted, and filthy, while on some favoured localities the crop is heavy and promising. Our flocks are generally in good condition. The wool markets remain steady, prices varying from 20s. to 26s. per tod, fine Down wool 28s., but in few instances have such prices been realized. The clip has been a good one, a shade heavier than usual. Our fat stock markets are plentifully supplied, and remain dull, lean ones equally so. The corn markets are a shade higher, and the farmers bring little to market. Potatoes—a root so closely approximating to wheat as regards nutriment—have risen materially in value, and which value must for the next twelve months range high, for one-half to one-third of the crop has completely failed; in some localities whole fields that were planted have been ploughed up and resown with turnips or mangel-wurzel, or planted with cabbage. The demand for labour still continues dull, and a considerable part of our agricultural labourers are unemployed. The prospect of the farmer and his dependant—the poor labourer—is cloudy;

"But hope dwells eternal in the human breast;
Man never is but always to be blest."

Let us trust to infinite goodness for the result of the future.—July 20, 1843.

SUFFOLK.

As so much depends on the prospects of the various crops at this season of the year, it requires more than ordinary attention in so wording an agricultural report as not to cause unnecessary alarm as to the probability of a deficient harvest, or to raise unfounded hopes respecting an abundant one. After the most careful observation, also from very extensive enquiry of our agricultural friends from almost all parts of this county, we are sorry to report that the prospect of the wheat crop is likely to be deficient—particularly with those wheats which follow beans and peas; from one-third to one-half is broken down, and has been for the last month—not laid by heavy storms, as is frequently the case, but part broken down and part standing, the appearance of which on passing is a very thin plant; the sample must inevitably be much deteriorated, and the quantity greatly lessened. We have examined many fields, and the opinion of our friends, as well as our own, is that, from the cause before alluded to, there is, and must be, a deficiency or injury of from two to four coombs per acre. There is also complaint even with wheats which are standing up well, of blight, or part becoming prematurely ripe; such will undoubtedly injure both quantity and quality. Nor are the above complaints confined to one locality, or to any particular kind of soil, but both heavy and light lands appear to be similarly affected: perhaps the injury by blight is more extensive on the lighter soils, and the damage by being broken down to the stiff or heavy lands. The appearance of the barley crop is rather better than that of wheat, except on the very stiff soils; of such description of land nearly all the interior of this county is composed: there, from the excessive quantity of rain which fell during May and part of June, attended with frequently severe frosts and a very low atmosphere, the land being so thoroughly saturated with wet, such barleys were completely set fast (to use a Suffolk expression), and wore a very yellow, sickly appearance; the ears of such are very short, and the bulk very light indeed. Even in the heavy lands there are exceptions. Since the 15th of June the weather has been more favourable, and barleys have improved; nevertheless, they will be below an average crop. What few oats are grown in this county are confined to fresh-broken lands; such are looking well, and promise an abundance of both straw and corn. Peas and beans—for which the season cannot be too wet—are unu-

sually luxuriant in straw, and tolerably loaded with pods, if not planted too thick. The value of that excellent root, mangold-wurtzel, will, we doubt not, this year be known from the general failure of Swedes, Scotch, or Hybred, and up to the time we write (July 22) also of common turnips; we know of many farmers who have sown three times, and as soon as up they have been taken off by the fly. Clover and grass this season are very abundant, the weather for securing which was most propitious; still we are of opinion that more stover is this year injured by premature carting than we have witnessed for several years. Now the altered corn law will be tried, whether it is or is not as much under the control of the gambler as the old one; from the manner in which the markets for wheat are advancing, we begin to fancy such is the case. We have little doubt, too, but they (the speculators) will accomplish their purpose, and bring in all they hold at a very low duty, if not at the very lowest. With a deficient exchequer, would not a fixed duty on corn have been of advantage to this country? It is evident the growers are not reaping (not one in twenty) any advantage from the rise at this time; and even those who do, the quantity of wheat they hold, compared to the quantity they have sold at about 46s. per quarter, is as a small drop in the bucket. The farmers, as a body, are indifferent about the corn laws; *nineteen-twentieths wish there never had been corn laws at all.*—July 22.

GENERAL AGRICULTURAL REPORT FOR JULY.

In reference to the state of the weather of this month, we have to observe that that experienced in its early part was seasonably fine, consequently favourable to the growing crops. From about the 18th up to the 25th it was very changeable, and far from imparting its wonted beneficial influence to vegetation in general, but more especially as regards the wheats. At a period like the present, when the stocks of old grain in the kingdom are of necessity becoming circumscribed, considerable attention is naturally directed to the prospect of the growing crops. Without, therefore, in any way attaching importance to the many questionable statements which have from time to time reached us, we shall endeavour to lay before our readers a statement of such facts as have come under our immediate notice. It appears then to us, that if we take England generally, though no serious deficiency of plant can be reported, the wheats do not wear so promising an appearance as could be desired, and we honestly confess our doubts whether the forthcoming yield will amount to an average. The immense quantities of rain which fell in the months of May and June appear to have caused the wheats to grow unkindly, that is to say, to have produced a much smaller ear than in the ordinary run of seasons. But, leaving out of the question the size of the ears, we have found, on a close examination of large breadths of corn, that they have a somewhat alarmingly small number of grains. This is not, it is true, a very glowing or charming picture to bring before the agricultural body, or the community at large, but we feel ourselves bound to state that it is too true a one of the actual condition of the wheats. It seems to be a generally received opinion that the harvest will, unless indeed the atmosphere should continue finer than it has proved since our last report, be a late one. This circumstance, together with the small supplies of wheat on hand of last year's produce, has, as might naturally be expected, caused the value of the article to rule very firm, and prices in consequence have had an upward tendency to some extent, with every prospect of further improved rates. Some parties may consider that the prevailing state of the markets has been chiefly influenced by large speculative purchases having been effected solely for the purpose of lowering the duty to its nominal point, and thereby releasing the present stocks and future arrivals of foreign corn; but to our minds, less speculation has been observed in the corn trade than at any corresponding period of the year since 1830, the state of the markets offering little inducement for thus purchasing. We have frequently stated that the yield of wheat last year was about an average, and such we still believe; but then that amount has seldom or never been found adequate to meet the wants of our population, without recourse being had to that of foreign production. This, therefore, is the case at this period. The quantity of wheat grown in one year is calculated in round numbers at 13,000,000 quarters, or 2,000,000 qrs. less than is actually consumed. During the present year only about 1,200,000 qrs. of foreign wheat have been converted into flour—consequently, it is fair to presume that the duty will fall to that point so as to enable importers to release their bonded stocks. The appearance of the barley is good, but, from the small quantity sown this year, it apears to us almost inevitable that the aggregate produce will be very small. Oats are short in straw, yet promise well on most lands. Beans and peas look healthy.

So far as we can judge, it would seem probable that we are again to have high prices for corn; but, for the sake of the interest of our farmers, who, we are sure, would be much better satisfied with fair supplies and steady and remunerative currencies, than short quantities and very high rates, we trust they will not ascend to that scale as to produce any farther outcry against them, and create another and perhaps more sweeping change in the corn laws. Now we have observed, and we regret much to be compelled to make such an assertion, that there is a certain class amongst them who really do not seem to comprehend their own position, in respect of the laws passed by the legislation for their protection; for what do we find? That which, without positive proof, we should have been inclined to doubt—viz., that of having, in very many cases, ranged themselves, by assisting the Anti-Corn Law League, in opposition to their own interest. The question which now is, do they suppose that an abrogation of the corn laws would be beneficial to them? So far from such being the case, we are confident such an alteration would ruin nearly, or quite, the whole of the industrious farmers of the country.

The transactions in store stock in the course of the month have been to a very limited extent, in consequence of the unprofitably low figures obtained for fat beasts and sheep in the various markets. This circumstance has, it would appear, prevented the importation of much foreign stock under the new tariff; only about twenty beasts have been entered, partly at Bristol and London. To such an extent have the importers sustained losses by these transactions, that it is now pretty well ascertained that no arrivals can come in, and from which a profit can be realized.

The various corn markets have been very scan-

tily supplied with wheat of home produce, owing to which, and to most of the dealers being short of stock, the demand for it has ruled brisk, at a considerable advance on previous rates, at which good clearances have been readily effected. In free foreign wheat a very extensive business has been done, and the rates have improved nearly 5s. per quarter, while for grain under lock more money has been asked and obtained. The sale for barley has ruled firm, and the quotations must be noted 1s. to 2s. per quarter higher. Good sound malt has risen in value 1s. per quarter, while the value of other qualities has been freely supported. The receipts of oats have been on the increase, yet the transactions in them have been extensive, at improved figures. Beans and peas have advanced 1s. per quarter; Flour, 3s. to 8s. per 280lbs. We are glad to observe that the ravages of the epidemic have not been of that extensive nature to which we have had such frequent occasions to allude; yet numerous losses have been experienced by the graziers in the country.

The advices from Scotland intimate that the weather in that portion of the United Kingdom has been unseasonably cold, yet the progress made by the crops is good. In the various corn markets, the general demand has ruled active, at an improvement in the quotations of wheat of from 2s. to 3s. per quarter, while the value of other grain has had an upward tendency. Wheat is stated to be looking well, but barley and oats are considered rather thin.

In Ireland the atmosphere has proved much more genial than with us, and the crops in consequence have progressed towards maturity remarkably well. The stocks of old grain in the hands of the farmers having become very trifling, the demand for most descriptions has ruled firm, and the quotations have had an upward tendency.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield cattle market. The former have consisted of—

	Head.
Beasts	11,249
Sheep and lambs	160,780
Calves	1,312
Pigs	1,514
Total	174,855

The prices have ruled thus :—	Per 8lbs. s. d.	s. d.
Beef, from	2 8 to	4 2
Mutton	3 0	4 4
Lamb	4 0	5 0
Veal	3 6	4 6
Pork	3 0	4 0

From the above statement, it will be observed that the supplies have been seasonably good, while we have to report a decided improvement in their general quality, compared with that observed in June; still, however, owing to the warm weather having caused the arrivals of slaughtered meat from Scotland and various parts of England to exhibit a great falling off, the general demand has ruled firm, and prices in some instances have advanced about 2d. per 8lbs. Of foreign stock, not a single head has been on offer. The Norfolk "season" for beasts may now be considered as rapidly drawing to a close, only about 1,900 Scots and homebreds having been received from that quarter. It is now, therefore, from the north—such as Lincolnshire, Leicestershire, Northamptonshire, &c., that the principal portions of the bullock supplies will be derived for some months hence. As is almost invariably the case thus early, the receipts from the northern districts have not been to say first-rate; but we understand that the beasts in that quarter are in good condition, and less affected with the epidemic than last year.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in Smithfield Cattle Market, on Monday, July 25, 1842, and Monday, July 24, 1843.

At per 8lbs. to sink the offals.

	July 25, 1842. s. d.	s. d.	July 24, 1843. s. d.	s. d.
Coarse & inferior Beasts	3 2 to	3 6 ..	3 0	3 4
Second quality do.	3 8	3 10 ..	3 6	3 8
Prime large Oxen.....	4 0	4 2 ..	3 10	4 0
Prime Scots, &c.....	4 4	4 6 ..	4 0	4 3
Coarse & inferior Sheep	3 4	3 6 ..	3 2	3 4
Second quality do.	3 8	3 10 .	3 6	3 8
Prime coarse woolled do.	4 0	4 2 .	3 10	4 0
Prime Southdown do..	4 4	4 6 ..	4 2	4 4
Lambs	4 4	5 0 ..	4 0	5 0
Large coarse Calves ..	3 8	4 0 ..	3 6	4 0
Prime small ditto	4 2	4 6 ..	4 2	4 6
Large Hogs.....	4 0	4 6 ..	3 0	3 6
Neat small Porkers ..	4 8	5 0 ..	3 8	4 0

SUPPLIES.

	July 25, 1842.	July 24, 1843.
Beasts	2 513	2,434
Sheep and Lambs	30,750	29,960
Calves	177	207
Pigs	381	321

Newgate and Leadenhall markets have been fairly supplied with London-killed meat, yet the demand has ruled steady, on the following terms:—Beef, from 2s. 4d. to 3s. 6d.; Mutton, 3s. 2d. to 4s. 2d.; Lamb, 4s. to 5s.; Veal, 3s. 6d. to 4s. 6d.; and Pork, 3s. to 4s. per 8lbs., by the carcass.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF JULY.

Since our July publication, a very considerable improvement has occurred in the value of wheat, but, for the general interests of British and Irish agriculture, it has happened too late in the season to be of much consequence. Indeed this advance in price has been occasioned chiefly, if not solely, by small supplies of home-grown wheats having, for several weeks past, been forwarded by farmers for sale to our great markets of consumption, and the reasonable inference to be drawn from this circumstance is, that few of them have at present any wheat to send. Since the commencement of this corn season, the value of all descriptions of agricultural produce has been most unnaturally depressed, and to the property of our wheat farmers in particular, this depreciation in prices has produced very unfavourable consequences. That the last crop generally was deficient in quantity,

late events have but too truly established, and the unusually small stocks of home-grown wheats now remaining in this country, are therefore operating on prices in all our markets of consumption. Besides this very natural cause for the present improved prices of wheat, another one may be found, for even a more considerable advance still, soon occurring in the value of agricultural property, than the one to which we are now alluding. Last year the passing of the corn bill, and the alteration in the duties previously paid at our Custom-house on the importation for home consumption of various descriptions of agricultural produce, caused a general panic amongst both the sellers and buyers of grain, and a most unjustifiable depression in prices was the natural consequence. To provide means for the payment of rent, taxes, tithes, parish rates and various other farm expences, the farmers in many instances were placed under the necessity of forwarding much larger quantities of wheat to the markets for sale, than the demand required. These excessive supplies increased the previously existing panic, and caused an opinion most generally to be entertained, that the wheat crop was a large one in quantity, and an excellent one in quality. The discovery is now however made, that there was no excess in the quantity of last year's wheat crop, and, as the coming harvest season must be a late one, the consumption must, for the next two months, be chiefly supplied by wheats of foreign growth. It is therefore not improbable that wheat may be still dearer, but to our farmers generally, we repeat that this advance cannot be of any material consequence. During the next three months, we shall again receive large supplies of foreign wheats of excellent qualities, and they, most probably, will be admitted into consumption on the payment of duties far under our maximum charge. These foreign wheats will press again heavily on our consumption, at that period when the crop now in the fields will first be brought into the market for sale; and as no serious damage at all events has yet been done to it, nor is there any just reason at present to presume that it may not be both abundant in quantity and excellent in quality, we exceedingly fear that the same scenes of distress amongst our agricultural labourers, and the same loss of money amongst our farmers, must be repeated this coming year, to which they were subjected during the last corn season. So long as our agricultural interest remains without protection against the repetition of these autumnal arrivals of foreign grain, so long must the farmers be subjected to annual losses of money, until the capital now embarked in their farms be entirely exhausted, and thus the tillage of the fields may be in future materially deteriorated, and the existing distress become more general amongst all classes in our society than it has even heretofore. The present corn law must be altered, and the tariff of Custom-house duties must be placed again on its previous foundation, before the wages of labour can be restored to a healthy state, and rendered equal to the necessary expences of living. It is a most mistaken notion to fancy that cheap provisions increase the means for productively employing the industrial classes. The state of the people in all countries, wherein the necessaries of life are too cheap, gives a perfect contradiction to these assertions; and it is therefore the duty of every patriotic government to protect internal industry against competition in the markets at home with articles produced by foreign industry. The present state of the United Kingdom unfortunately furnishes too convincing proofs of this fact. All the necessaries of life have, for upwards of one year at all events, been much cheaper than they can be produced in this country; and yet productive labour, either for home use or for exportation, has not been increased amongst the people. The Anti-Corn Law Leaguers have the courage, however, to assert that industry in this empire requires no protection, although the experience of every day perfectly contradicts these most extraordinary positions, on which these gentlemen have been pleased to found their false principles of political economy; for the vast majority of our labourers are complaining that their labour is most ruinously, to their comfort, interfered with by foreign labour of similar descriptions, introduced into consumption here, under the influence of our new Custom-house duties. Weekly, at present, are many hundreds of tons of Russian cordage, for instance, imported into Great Britain, whilst our rope and cordage workmen are idle, and in a state of nearly perfect destitution. Surely these unfortunate men require protection to their industry, which is a property far more sacred to them than money is itself. Need we add British hat-makers, and boot and shoe makers, who have most just cause to complain of the alteration in their circumstances which the new tariff has created; and likewise our fishermen are equally affected by this new system of free trade. But the most extraordinary place, in which we find a contradiction to Mr. Cobden's absurd theories, is in the steam-facturing trade itself, for the reduced circumstances of the landed interest have had a most unfavourable influence on all the country markets for the sale of British steam-factured goods. The low prices which the farmers have received for their produce of last season, have very materially reduced their means for the payment of their usual quantity of manufactures, and, consequently, the manufacturers themselves do not find the value of their property raised by the low prices at which the necessaries of life can at present be obtained; on the contrary, it is very much depreciated by this cause. In fact the depressed condition of agriculture in general has penetrated into every department of industry; it has materially reduced the rates of wages, and vastly increased want of employment amongst all the industrious classes within the United Kingdom. It has been the main cause of the great deficiency now prevalent in the public revenue, and it is now putting in jeopardy the public debt itself; for it is useless to expect any permanent improvement in the revenue until a radical alteration be effected in our internal polity, and, therefore, unless internal industry be effectually protected in future, prosperity cannot again inhabit the British Islands. To render the Empire flourishing, the laws should operate equally on the property of all. Under the faith of an act of the legislature, a vast amount of money during the last quarter of a century was embarked in agricultural improvements, and the result was, in every respect, advantageous to every interest within the Empire, until the currency was changed from paper notes to metallic money. Under paper money we contracted an enormous national debt, at something under 60*l.* received for each 100*l.* of stock, and under paper money we carried agricultural improvements to a great extent for the prosperity and benefit of all classes in society. An Act of Parliament encouraged these operations by declaring the mean value of British grown wheat to be 80*s.* per qr. in

the currency of the day. In 1819 it was thought expedient to alter the circulating medium from paper to the precious metals, and this alteration depreciated agricultural property by more than one-third of its previous value; it likewise reduced the value of all other descriptions of property in an equal degree, except those incomes which arose from money. The interest of the national debt, borrowed in paper money, has, ever since this currency alteration came into operation, been paid in the precious metals, because, as it was then generally urged, it would have been a breach of the national faith to have done otherwise. Now money invested in agricultural improvements, had an Act of Parliament to protect it as sacred as those had who embarked their money in the national debt, and that law which reduced the value of agricultural produce, to have been just, ought, in the same proportion to have reduced the half-yearly dividends now payable on the national debt. Wheat in 1815, was declared by the legislature to have been worth 80s. per qr. on the average, and the national debt, previously to that year, had been contracted for at something under 60*l.* for each 100*l.* of stock. The medium value of wheat has fallen from 80s. since 1819, to less than 50s., whilst the value of the national debt has advanced, during the same period, from 60 to 95. Wheat has declined, because the circulating medium has been changed from paper money to gold, and the value of the national debt has been increased by the payment of the same amount of half-yearly interest in gold instead of in paper money, the former being at least 30 per cent. more valuable than the latter. In common justice grain and the funds should be placed on a level; and the dividends should therefore be reduced in the same proportion as the value of grain and all the necessaries of life have been depreciated by the substitution of a metallic for a paper circulating medium. To reduce, even at present, the three per cents. to two per cents., would not be a more unjust act towards the fundholder, than the forced reduction from 80s. to 50s in the value of grain has been to the agricultural interest. An act of the legislature has caused this depreciation in the value of grain; and to place all interests on an equality, another act of Parliament should place the dividends on their level also, so long as the standard of value in this empire is gold. Instead of the annual dividends being upwards of twenty-eight millions sterling, which is their nominal value in paper money, they should be reduced to eighteen millions sterling, which is their extreme intrinsic value in a metallic currency. Justice would be done to the community at large, and no injustice greater than that was to which the agricultural and all other interests had been already subjected, would be done to the proprietors of the national debt, by some alteration of this description being effected in their incomes. It would enable our finance minister to reduce those taxes which press heavily on industry, by ten millions sterling annually, and it would place the national debt itself on the most solid possible foundation of security. To relieve internal industry, however, some effective means must speedily be resorted to, else our agricultural pursuits must gradually decay. The farmers are severe sufferers by the most uncalled-for and injurious alterations which have latterly been made in our corn laws, and in our tariff of importation duties—alterations which have given a vast quantity of productive employment to workmen residing in foreign nations, at the sole expense of our labouring classes at home. The consumers have been deprived of the means to pay for their usual quantities of the necessaries of life. The agriculturists have been deprived also of the means to give their usual quantity of employment to the manufacturing classes by the same causes; and surely, therefore, the sooner this prejudicial state of our society is changed the better, for under its malignant influence prosperity cannot be restored to the inhabitants of the United Kingdom. The present improvement in the value of wheat, we are sorry to repeat, is of little consequence indeed to our farmers, for it has come too late for their interests. To them it matters little also whether the coming harvest be abundant or deficient, for in either case the foreign land proprietor receives all the benefit. To our labourers, however, a deficient harvest must bring great misfortunes. It will draw from this country a considerable portion of the money now in circulation amongst the people; and, whilst it must increase the expenses of living, it will at the same time decrease their wages for the payment of even a moderate rate of expenditure. The weather latterly has been cold and wet, and genial neither to the ripening of the crops, nor to filling the ear of the wheat in particular. Should some favourable alteration not soon occur in it, a farther advance (which in wheat has already been from 10s. to 15s. per qr.) must still occur in the value of all descriptions of grain. The wages of labour will thus be reduced by the necessity of paying to foreigners, instead of to our own farmers, money for a portion of our necessary supplies of food; and thus also will foreign agriculture and foreign labourers receive great advantages, at the sole expense of our industrial classes at home.

The supplies of home-grown barley in all our markets of general consumption have been exceedingly small since our last publication. Indeed, had the foreign arrivals of this article not been considerable, the barley trade, for the present, would have nearly ceased to exist. The distillers and poultry feeders purchase these foreign barleys as soon as they are offered for sale, and the importers of them find the trade a profitable one, even after paying the importation duty of 9s. per quarter. This is certainly a most unhealthy state into which the property of our barley farmers is, by circumstances, placed, and for which there is no remedy, except in legislative protection being extended to them against the present injurious competition which they have to encounter in our markets with foreign barley growers. To produce barley in any of the barley districts throughout the United Kingdom profitably to our farmers, under the present corn laws, is utterly impossible; and unless some alteration be made, not only in our corn laws, but also in our malt and spirit duties, the quantity of barley grown at home must annually become less, for only loss of money can, under the existing system, attend its cultivation. In many of our previous numbers we have alluded to the gradual decline which has latterly, unfortunately for the best interests of the community in general, been in progress in the quantity of barley manufactured into malt. Last year the deficiency in this respect was little short of one-fifth of the quantity malted during the previous season, as the revenue has very perfectly established, the deficiency in the year's malt duty having been nearly nine hundred thousand pounds. This season the maltsters ceased

working about one month earlier than usual, and we shall be much mistaken indeed if, at its close, the deficiency in the malt duty collection be not found even more prejudicial to the revenue, and still more injurious to the general interests of the people, than it was at the period to which we have alluded above. That less beer has been consumed by the people this year than was in the previous one, we by no means believe, but that at least one-third of the quantity now used is spurious, and not the genuine extract of malt and hops, we re-assert. In the Excise courts the numerous convictions made for adulteration of beer sufficiently attest that the beer consumers are unjustly defrauded in the article for which they pay their money; but the extent of the fraud can be best estimated from the ease with which it can be committed, by the large profit attending its commission, and by the difficulty with which it can be detected. That one-third of the beer now in use is spurious, and not the extract of malt and hops, no reasonable doubt can be entertained. The falling away in the malt duty is proof positive of this fact. The public brewers are perfectly innocent, however, in these fraudulent practices. It is amongst the unworthy portion of the retail dealers where they are chiefly committed. To describe the adulteration on a small scale—one thirty-six gallon cask of beer is forwarded by the public brewer, being the genuine extract of malt and hops, into the retail palace; it is there started into a butt. To increase the quantity is afterwards the chief object of the retail dealer, and with this view eighteen gallons of water are started into the same butt. The colour is thus changed, and the strength is naturally deteriorated by this mixture, but means are cheaply resorted to for the restoration of the colour, and for imposing on the consumer by giving it a false appearance of strength. Treacle is introduced to restore colour and sweetness, and the juice of the worst description of pigtail tobacco is thrown into the butt, to give the beer an appearance of strength which it possesses not. Green vitriol is then introduced to create froth, and coculus indicus to render this beverage intoxicating. Pepper is used to give it the usual smack in the mouth, and salt is added to create thirst; for the greater the quantity of this mixture used, the greater is the desire to take more, if it be only sufficiently salted. That no vigilance on the part of the excise can prevent the commission of these fraudulent practices is by far too obvious to require any proofs; indeed, this is a self-evident truth, and consequently beyond the need and power of proof. The remedy for it, however, is most obvious and easy, and it is only in one quarter wherein it can be found. Hops and malt may be rendered not only the most wholesome, but likewise by far the cheapest, ingredients out of which beer can be extracted. Reduce, or entirely repeal, the hop and malt duties, and then the adulteration of beer ends, and with it also end the complaints of the people, and the many injuries done to the public health. The consumption of pure beer may be tripled by the reduction, or rendered four times greater than it now is, by the total repeal of the malt tax. As, however, the revenue cannot afford to lose any portion of the amount now paid into the treasury from the malt duty collection, the total repeal of this most unequal and most unnatural tax is, under the present state of the Empire, impossible; but its modification is easy, and also necessary to the real interests of the barley farmers, to the comfort and health of the great mass of the inhabitants of the United Kingdom; and to render the tax moderate will be beneficial to the public revenue itself. A reduction of the malt duty from its at present unnatural charge to the moderate one of one shilling per bushel on the barley itself, when first passed into the maltings for manufacture, would wonderfully increase the consumption of beer, would purify its quality, and render it a wholesome beverage to the people. It would either decrease the price of beer, or increase the means of the community to pay for it, and it would extend the consumption of it to millions of her Majesty's subjects, whose circumstances at present are too much depressed to admit of their using even the smallest quantity of it annually. It would render the cultivation of two or three millions of acres of light soils necessary, in addition to those already under tillage, and the profits which would arise from this additional improvement would far more than pay for the increased quantity of malt converted into beer. The excise collection on malt at one shilling per bushel would be considerably larger than is the sum now paid into the treasury from this source of revenue. Under legislative protection to capital, science, and labour, embarked in these agricultural improvements, many thousands of agricultural labourers now nearly in a state of the most abject destitution, would be employed productively, not only to themselves, but likewise for the public good. To encourage all descriptions of agricultural improvements, is the only way to restore prosperity to all classes throughout the United Kingdom, to make the national debt secure, and to render the public finances flourishing. In the barley trade another most important improvement may likewise be very easily accomplished, and the consumption of at least half a million of quarters of barley be rendered necessary, in addition to the quantity now consumed by the English distillers. Excessive taxation never yet has, and never can, produce the results for which it is intended. On the contrary, it is injurious to the revenue itself, and most prejudicial to public morality. The most abominable duty now charged on spirits distilled in England sufficiently attests this fact. In this channel originates the trade of the smuggler, with all its demoralizing consequences. Its most natural result is the illegal importation of more than one-half of the spirits, and those too of the worst quality possible, in common use in England. In Scotland moderate home-distilled spirit duties have for many years past nearly suppressed the foreign smuggling spirit trade throughout that kingdom. In Ireland the attempt to raise the home-made spirit duty last year again introduced smuggling to a fearful extent, but the repeal of that additional duty lately made in Parliament will now speedily restore the legitimate spirit trade in Ireland, and expel the immorality which always attends the operations of the smuggler. In England similar causes would be attended by similar consequences. The reduction of the duty on home-made spirits to five shillings per gallon would effectually destroy the profits of smuggling, and would confine the consumption of spirits to the pure and genuine extract of British-grown grain. It is impossible even to guess at any reasonable cause for this most unreasonable manner in which the inhabitants of England are deprived of the numerous benefits which those of Scotland

and Ireland derive from their distillery systems. There certainly exists no reason why the home-made spirit duties should not be equalized throughout the United Kingdom. The revenue is undoubtedly not increased by the heavier duty charged in England than that charged in the other two divisions of the British Empire. On the contrary, smuggling, and the enormous sums of money expended in the attempt to suppress it in England, are most seriously detrimental to the public income. A moderate reduction in the malt and English home-made spirit duties would, however, confer numerous advantages on the community at large, and would injure no class in our society, with the exception of the smuggling trade, which it would speedily destroy. In short, unless legislative protection be given to the farmers in the United Kingdom against the interference of foreign grain in our markets of consumption, and unless the malt and home-made spirit duties be most materially altered, no improvement in our public revenue need be considered as permanent, nor can the public debt be placed on a safe, sure, and lasting foundation. Foreign barley, when manufactured in this country, cannot produce the benefits to which we are now alluding, for our workmen are not employed in the production of foreign grain, and consequently their means are rendered still more inadequate for the payment of beer and spirits drawn from foreign barley, than they would be had they the productive employment given to them of growing the raw material at home from which the beer and spirits consumed by them are extracted. The effect would be the same, even were the value of beer and spirits reduced one half by the use of foreign instead of home-grown grain in their manufacture, for wages are already much more seriously reduced than prices can ever be, by the most unnatural preference which our corn laws are now giving to foreign agricultural produce over our own. A change, therefore, in the present *free trade system* in the importation of foreign agricultural produce, and also in our internal polity regarding our excise laws, is absolutely necessary to the perfect restoration of general prosperity to all classes within the United Kingdom, in whatever department of industry they may find employment; for, without these alterations, it is vain to expect any permanent improvement occurring in the existing depressed condition of the British empire.

The oat trade has continued, during the month of June, in a state of gradual improvement, although prices are still under that standard which remunerates the cultivators of this great article of agricultural production in the United Kingdom. In Great Britain the cultivation of wheat has in no inconsiderable degree now, however, superseded that of oats, but to Ireland the profitable growth of the latter article is deeply important. From this part of the United Kingdom all our great markets of consumption now receive by far the greater part of the supplies requisite to their wants; and, when such corn seasons as the present occur, when the prices obtained for oats are not equal to the expenses attending their production, the Irish farmers suffer in capital proportionably to the increased quantity produced by them. The advance of 3s. to 5s. per quarter, which must be noted in the value of oats in the course of last month, would no doubt have been of some advantage to the oat farmers had it happened to have taken place half a year ago, but under existing circumstances, when the last crop is so nearly exhausted, this advance is of but little consequence indeed to the agricultural interest throughout the United Kingdom. Want of confidence in the value of agricultural property, which the late alteration in our corn laws has created, had produced a perfect panic amongst both the producers and consumers, and the consequence has most naturally been a much greater depression in the value of grain of all descriptions, than the actual state of the last crop by any means justified. The depreciation in the value of oats has been in a most serious degree injurious to the farmers in the sister island, where by far the greater portion of the last oat crop was so severely injured by the weather, that to render it suitable to the voyage across the channel, required a considerable additional expense. Even afterwards the farmer could only obtain from 5s. to 7s. per barrel for his oats, which certainly was much under the cost price of their production. The present distressed condition of the Irish peasantry therefore may mainly be attributed to the late alteration in our corn laws; for in Ireland this article cannot be grown, and sent to the markets in Great Britain, on the same terms as it can be on the opposite coast of the continent of Europe, our maximum duty included. Prices of oats have for several years past been kept low by the rapid progress which agricultural improvements were making even in Ireland herself. No complaints have for years now been made by the consumers of the prices of oats being too dear, and the alteration in the corn laws, in as far as oats were concerned, was therefore entirely uncalled for. To the improvement of Ireland, and to the productive labour of her people hereafter, this state of the oat trade opposes almost insuperable bars. In that country there are many millions of acres of land in a state of perfect nature, and entirely useless to the human race, but, at the same time, capable of the highest degree of cultivation. The immense quantity of unemployed capital now in the United Kingdom might be—in part, at all events—most productively employed in the agricultural improvement of Ireland. Pursuits of this description, however, are not well understood by British capitalists; and consequently, without legal protection, they cannot be attempted; but plans may easily and safely be adopted by the British government for holding out a perfect guarantee for any money which hereafter may be embarked in operations of such immense magnitude and importance. An annual issue to a limited extent of exchequer bills, for the improvement of Irish fields, and for the productive employment of the surplus of Ireland's population, would for a few years furnish all the money necessary to these operations; and, as exchequer bills bearing an interest of only 1½d. command at present a premium of 60s., the annual expense to the empire would be trifling, whilst the *principal capital* itself would be repaid, within a very few years, out of the profits of the improvements themselves, with much more than compound interest attached to it, into the British treasury; and thus these exchequer bills would, by this money, be finally withdrawn from circulation. The British government has lately guaranteed a loan to Canada to the extent of one and a half million sterling, for the agricultural improvement of that distant colony; and surely assistance, in proportion to its greater importance, should be extended to Ireland; for the repayment of the money by the latter is far more certain than the repayment by the former is even probable. In a few years, Irish morasses, and the banks of Irish rivers and Irish

bays may, by this assistance, be converted into green pastures or grain fields; and the Irish people will then be rendered contented with their improved condition in life. The credit of the British empire cannot be extended to anything half so valuable as to internal improvements; nor can money raised on the public credit be half so safely employed as in protecting and encouraging agricultural industry within the United Kingdom. Than the repayment of money so advanced on exchequer bills for Ireland, nothing, shaded in futurity, can be more certain: and that great empire, therefore, which liberated her slave population at an expense of twenty millions sterling, can surely never hesitate to raise on her credit a very few millions sterling for the productive employment of her industrial classes at home—particularly as the repayment of this pecuniary aid out of future improvements would be as certain as anything prospectively can by any possibility be considered. If her Majesty's ministers would only open to the people of Ireland, therefore, channels for regular productive employment, the existing agitation there would cease, with the causes wherein it has its sole origin, and that country would then become a most valuable integral portion of the United Kingdom.

The intelligence received from the Mediterranean and Black Seas, respecting the state of the corn trade, since our last publication is, as usual, in due course of post; and is, in some respects at all events, of some interest to the agricultural interest in this country. At Odessa, considerable activity prevailed in the wheat trade, and large shipments continued to be made to the Italian and French ports within the Mediterranean Sea. At these dates it was not supposed that any extensive purchases had been made for British account, although several shipments had been forwarded in British ships, to call at Malta for their ulterior destinations. At Alexandria, in Egypt, also some quantity of wheat and beans had been exported, chiefly for the Adriatic and for the lower ports in Italy. Prices of wheat in Egypt had been as low as from 8s. to 10s. per quarter, *free on board*, for fair qualities. In other ports of the Mediterranean, the news from England, as usual, continued to regulate the value of wheat, although the crop in Tuscany was not then favourably spoken of. The information latterly received from the southern corn markets in Europe, without the Mediterranean, is of very little importance. For England there was no demand, and much dulness consequently prevailed in the corn trade throughout all of them. From the corn markets within the Baltic Sea, the advices latterly have been, on the contrary, of considerable interest. At Dantzig, Stettin, and in fact at all the lower ports in that sea, the supplies of wheat were large, notwithstanding extensive shipments continued to be made, chiefly to the United Kingdom, and prices, as is always the case, were regulated by the quotations received from Mark Lane. At the beginning of the last month, the best qualities of high-mixed Polish wheats had reached 42s. per quarter free on board; and the favourable intelligence received from London in the middle of that month had again reduced them to 35s. per quarter free on board. From this decline, however, the latest letters received here advise that they had much more than fully recovered—that much activity prevailed in the trade, and that shipments to England to some extent were then in progress. At Hamburg, and at all the ports of shipment in the north of Europe, without the Baltic Sea, the corn trade generally remained in a state of much uncertainty, the hopes of a large demand for England inducing the merchants there to observe much caution in their grain transactions. The supplies of wheat, in particular, were abundant, and prices varied in proportion as the news respecting the prospects of the next crop from England were favourable, or the contrary. Several shipments had already been made, and plenty will follow should the state of the wheat crop here unfortunately give encouragement to the foreign proprietors of grain.

By the Post Office steam-packet "Hibernia," we have received intelligence from Boston and New York, dated in the middle of last month; and from Halifax the letters received, by the same conveyance, are two days later than the foregoing. The information communicated through this channel, in a commercial point of view, is rather interesting than otherwise, particularly that from the United States of North America. The certainty that the Canadian Grain Import Bill would speedily become the law of this country was then viewed with the greatest satisfaction by the agricultural classes throughout that republic, opening, as it now does—unfortunately for the best interests of our farmers, and for the wages of our productive labourers at home, of all denominations—the British markets, at all times, and under all circumstances, to the wheat producers and millers of the United States. A considerable degree of activity, therefore, prevailed then throughout the Union in the wheat and flour markets, particularly in those districts which border on lakes Erie and Ontario, and on the banks of the river St. Lawrence; and some advance had occurred there in the value of this, the principal staff of life, in this country. This opening, however, our offspring, Jonathan, considered as only a stepping-stone to a direct trade in grain being eventually established betwixt his country and the United Kingdom. The American government has made—as we mentioned some time ago—the notable discovery that the heavy duties which they had imposed on the importation of British goods of all descriptions, neither filled the American treasury with money, nor decreased the usual consumption of British goods throughout the United States. These goods are at present chiefly introduced into the United States by a valuable smuggling trade, which the American tariff has created in British America and in Texas. Jonathan therefore begins to fancy that moderate import duties may be advantageous to himself, and a trade of reciprocity with the United Kingdom is therefore at present strongly desired by our transatlantic brethren. To admit their flour and grain direct into consumption on the payment of moderate and fixed duties here, will be of the greatest advantage to American agricultural improvements hereafter, and, at the same time, experience has latterly taught them that a reduction of the heavy duty now charged by them on the importation of British goods, will be of great benefit to their finances; whilst this reduction cannot increase the quantity of British goods now annually consumed in their country. By a commercial treaty, therefore, of this description, the Americans will gain many great advantages, whilst not the smallest benefit can arise from it to even one of the industrial classes within this country. The power of grain production throughout the Union is, in the real sense of the word, boundless; and it is not in the

slightest manner restricted by rents, tithes, and taxes, as is the case in this country. A few years' experience of a treaty of this description must render the production of wheat in this country unprofitable, must be hurtful to our milling trade, and put a perfect bar in the way of farther agricultural improvements. The minister of the British crown will be a brave and bold man indeed, who will listen to proposals for the improvement of American and of foreign lands, at the expense of our land proprietors, farmers, and productive labourers; but still, after late exhibitions—particularly that of the Canada Corn Bill—it is necessary that all the friends to British agriculture, who have seats in Parliament, should be on their guard, and closely watch any attempts at treaties of this description, which may be made by any foreign nation whatever; for the Canadian Corn Bill itself now annually will considerably influence our markets for wheat and flour, as large quantities of both will be imported even during this season from the river St. Lawrence. The supplies of flour and wheat at Quebec and Montreal, at the dates to which we are now alluding, were daily increasing, notwithstanding the large shipments previously made to this country. We have Lord Stanley's—her Majesty's Secretary of State for the Colonies—authority for asserting that the Canadas, until the population be materially increased, cannot feed the inhabitants, much less forward any quantity of flour and wheat to this country, which can in any manner be hurtful to the interests of the producers of the same articles at home; and the numerous cargoes which have already arrived from Canada in London, Glasgow, and Liverpool, and the still greater quantities which will arrive from the same quarter before the close of the present season, must therefore, from necessity, be the produce of the United States of America, smuggled across the borders and shipped to this country fraudently as the produce and manufacture of our North American possessions. This illegal importation of American wheat and flour will become gradually more extensive, and consequently more dangerous to our home industry, when the plans for its prosecution are better matured, than they can be in the commencement of any new trade, and when the system for conducting it profitably to the agricultural interests in the United States is rendered more perfect. This act, in fact, places our agricultural interest in a most critical position indeed; and we fear much that it eventually will accomplish all our predictions respecting it.

CURRENCY PER IMP. MEASURE.

JULY 24.

WHEAT, Essex and Kent, red	63	66	White	64	68	70
Irish	56	—	Do.	60	—	
Old, red	—	—	Do.	—	—	
RYE, old	—	36	New	—	36	
BARLEY, Grinding 32 34 Malting	34	36	Chevalier	—	36	
Irish	30	32	Bere	28	30	
MALT, Suffolk and Norfolk	60	62	Brown	56	58	
Kingston and Ware	60	63	Chevalier	60	63	
OATS, Yorksh. & Lincolnsh., feed	23	24	Potato	26	27	
Youghall and Cork black	20	21	Cork, white	21	22	
Dublin	20	22	Westport	—	22	
Waterford, white	19	22	Black	20	21	
Newry	22	23				
Galway	19	20				
BEANS, Tick, new	32	34	Old, small	34	32	
PEAS, Grey	32	33	Maple	33	34	
White	30	31	Bollers	34	35	

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	45	50
Hamburg	40	46
Rostock	44	46
BARLEY	20	—
OATS, Brew	16	18
BEANS	15	19
PEAS	22	24
FLOUR, American, per brl	24	28

Feed 14 17

Baltic 22 24

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, July 21st, 1843.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, July 23rd, 1842.	s.	d.
WHEAT	51	2	WHEAT	65	4
BARLEY	29	0	BARLEY	27	10
OATS	19	8	OATS	21	6
RYE	31	11	RYE	36	5
BEANS	29	6	BEANS	35	1
PEAS	32	4	PEAS	34	0

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
June 10th	48	4	27	3	18	5	30	5	28	3	29	7
17th	48	11	27	3	18	6	30	7	28	4	29	7
24th	49	8	27	7	18	9	31	2	29	0	30	11
July 1st	49	8	27	10	19	7	31	6	29	1	32	3
8th	49	10	28	8	19	7	32	8	29	9	31	7
15th	51	2	29	0	19	8	31	11	29	6	32	4
Aggregate average of the six weeks which regulate the duty	49	7	27	11	19	1	31	4	29	0	31	0
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	20	0	9	0	7	0	10	6	11	6	10	6
Do. on grain from British possessions out of Europe	5	0	2	0	2	0	2	6	1	0	1	9

PRICES OF SEEDS.

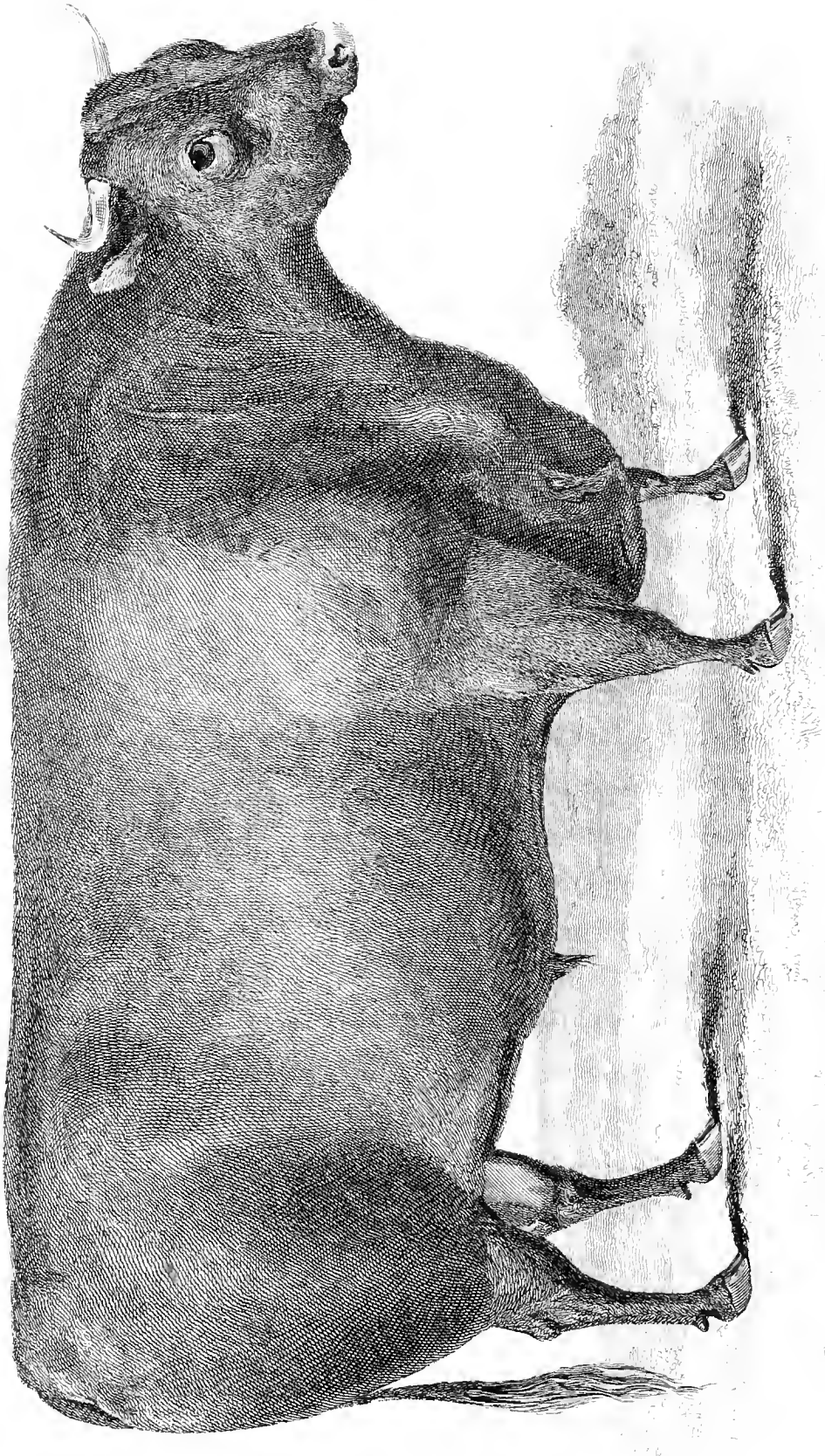
JULY 24.

Clover English, red	36	56	white	none.		per cwt
Flemish, pale	40	42	fine	44	48	nominal
New Hamburgh	none.		do	50	62	
Old do.	40	44	do	40	56	
French	40	48	do	none.		
Linseed, English, sowing	50	60				
Baltic	—	—	crushing	38	41	per qr.
Mediter. & Odessa	40	44				
Large, foreign	—	—				
Coriander	10	16	old	16	20	per cwt.
Mustard, brown, new	9	11	white	9	10s 6d	p. bush
Trefoil, new	18	26	old	12	17	
Rapeseed, English new	30*l.*	32*l.*	per last.			
Linseed Cakes, English	9*l.* 10s.	to 10*l.*	per 1000			
Do. Foreign	5*l.* 10s.	to 6*l*	per ton.			
Rapeseed Cakes	5*l.* 5s.	to 5*l.* 10s.				
Hempseed, small	34	36	large	36	38	per qr.
Rye Grass, English	20	25	Scotch	12	21	nominal
Tares, winter	—	—	New	3s 0d	4s 0d	p. bush.
Canary, new	70	72	fine	73	78	per qr.
Carraway	—	—	new	42	46	

PRICES OF HOPS.

	s.		s.	
Pockets, 1842, Wealds	98	to	109	per cwt.
East Kent.	110	—	130	..
Mid. Kent.	108	—	124	..
Sussex	97	—	109	..
Pockets, 1841, Wealds, good	60	—	70	..
East Kent choice	75	—	90	..
Mid. Kent.	70	—	85	..
Sussex	60	—	70	..

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.



THE FARMER'S MAGAZINE.

SEPTEMBER, 1843.

No. 3.—Vol. VIII.] [Second Series.

PLATE I.

A NORTH DEVON BULL.

Our first plate represents a North Devon Bull, five years and three months old, bred by Mr. J. Quartley, of Molland, South Molton, Devon. It was exhibited at the Bristol Meeting of the Royal Agricultural Society of England, in July 1842, and obtained a prize of thirty sovereigns, awarded to Messrs. J. S. Bult and J. Bond, of Kingston and Heathfield, near Taunton, Somerset.

PLATE II.

POISON—Winner of the Oaks, 1843.

Poison, a bright chestnut filly, was bred by the Earl of Orford, and is by Plenipotentiary, out of Arsenic, by The Colonel, out of Arsena by Morisco—her dam Arethissa, by Quiz—Persepolis, by Alexander—sister to Tickle Toby, by Alfred, &c. Lord Orford bought Arsenic of the Earl of Stradbroke, and sold her with Poison at her foot to Mr. Ford for 300*l.*, but afterwards repurchased the dam. In 1842, Newmarket First October Meeting, Poison, ridden by Butler, ran a dead heat with Cowslip for second place in the Hopeful, Pickpocket winning by a length; Tilcho, the Vulture colt, and the Rhodocantha filly, also started. 4 to 1 agst. Poison. In 1843, Newmarket First Spring Meeting, for a Handicap of 50 sovs. each, ridden by Chapple, she was beaten by a head by the Galata colt, giving him 4lbs.; Mr. Bird's Redshank colt also started. 6 to 5 on Poison. At Epsom, ridden by Butler, she won the Oaks by two lengths, beating Extempore, and twenty-one others not placed. Any odds agst. Poison. At Ascot, ridden by Bell, she won the Trial Stakes by two lengths, beating John o'Gaunt (2), Grace Darling (3), and the following not placed—St. Lawrence, Dil-bar, Temerity, Wee Pet, Ma Mie, Canton, Volo, and Monops. 4 to 1 agst. Poison. At Newmarket July Meeting, when dead amiss, ridden by Butler, she was beaten by a length, by Mallard, for the Town Plate. 5 to 2 on Poison. It is thought she might have won the Handicap in the Spring, at Newmarket, had not Chapple, according to orders, waited to the last moment; her July performance there cannot of course be held as any criterion of her merits, while the Ascot running is quite sufficient of itself to show that there was no mistake as regarded the winner of the Oaks.

THE CORN LAWS.—REPLY TO MR. THOMPSON.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Having read Mr. G. Thompson's first paper in your Magazine for May, and having seen nothing new in it, and nothing but what had been answered over and over again by various writers, and also by various speakers in the House of Commons, and also that some of his arguments have been admitted to be false by members in that house who are in favour of corn laws. Having seen this, I had not even cast my eyes over his second paper in the Magazine for June till a few days ago, when one of my sons asked me if I had read it. Well, having now gone through it, it is evident my friend Thompson supposes I am now lying in the mud with not a leg to stand upon, and made for ever incapable of again showing myself in the field to face my foes. He is mistaken, for here I am in a whole skin, unhurt and uninjured, ready and willing to fight if it were of any use. Of this I have my doubts, for two reasons. 1st, He does not appear very clear-headed. 2ndly, He is evidently without experience, or is very shallow in the practice of agriculture. However, as I have now and then a little time to spare, and as defending myself against his heavy blows will be a little amusement, I will take up my cudgel, purely in self-defence, not with any hope of being able of making any impression on my adversary, however hard I should happen to hit.

I shall first make a few remarks on his first

paper in the Magazine for May, and I will endeavour to be as brief as possible.

Mr. Thompson commences admirably; in short, just as I should recommend every writer who has a bad subject to deal with. All who differ from him on this subject of the corn laws or free trade, he sets down as "country Premiers, country Secretaries of State, country Chancellors of the Exchequer, political quacks, and unlicensed physicians." This is a very easy way of getting rid of ugly customers. Such arguments cannot be overcome; they are unanswerable. Of course, Mr. Thompson is a real licensed state physician, and, of course, any medicine, or "counteracting blister," which he may administer or apply, will have a healing effect on the shattered nerves of poor "John Bull." He also, I see, makes use of the regal style, "*We*." I make no doubt but the Kidderminster state physician will soon be the Government itself; we shall then have corn laws manufactured as quick as Kidderminster carpets, and made to fit every corn market in the world, so that we farmers will be able to ascertain to a penny what wheat will be worth in our markets for years to come.

Mr. Thompson talks, at page 333, of "our long-enjoyed and unprecedented prosperity." Why, since this century commenced there has been eight times a depressed state of trade, each of which brought thousands of merchants and manufacturers to bankruptcy, and tens of thousands of their labourers to starvation or to the parish. The depression, at each time, lasted more than a year, and the present one more than four years. So that we have had 13 years out of 42 of bad trade. I will not say that these depressions were caused solely by the corn laws, but they were, no doubt, one cause.

Now for the prosperity of the farmers. Since this century commenced there have been five corn laws passed, all of them, it has been said, for the benefit of the farmers and their labourers. Now the very fact of five different laws being passed is a proof of their not producing the effect intended or expected. There have been more than five periods in which the farmers have been brought to the brink of ruin. From 1820 to 1828 the devastation was so extensive as to make property unsafe in the agricultural districts, and to cause a very extensive change of tenants in the kingdom, on account of the ruin of the preceding ones. So much for one of Mr. Thompson's "simple facts" —"our long enjoyed and unprecedented prosperity." Mr. George Thompson, jun., must be very young indeed, or unconnected with either agriculture or trade, or he would have known better than to have talked of our "long enjoyed prosperity."

Another of his "simple facts" is, that under a free trade in corn "vast quantities of foreign corn would rush into the English markets—grain produced on the most fertile soils in the world—on land cultivated by men whose condition is not far removed above that of slaves, and in countries far less burdened with taxation than our own; the consequence of which would be, that for a few years they would sell corn at a less price than our poorest wheat soils could be made to produce it, even if they were rent-free." Now all this is mere theory; not a "simple fact" about it. Grain could not rush into the English market till it was grown. What has been grown abroad has been made use of in some way. To cause an overflow here, from abroad, would require time, labour, and capital. Mr. Thompson knows well, if he knows anything, that nothing can be done without the last article; and he admits that foreigners are without it. He says that on the continent of Europe "they are determined to become manufacturers themselves." So without capital they will build cottages and factories, erect steam-engines, buy or make machinery, purchase the raw material to work upon, require labourers in their mills which are now employed in agriculture. They will do all this without money; and, if we repeal our corn laws, extend and improve their agriculture also, and with fewer hands and without money. Now, if they can do all this on the continent, they certainly can do what John Bull never could do. With respect to slave labour, taxation on the continent, and their fertile soils, I shall say a little hereafter. He says free trade in corn would first give us very low prices, then they would be higher than ever. Why, this is the very state of things which the corn laws give us, even the sliding scale. I have myself at three different periods sold wheat at 5s. per bushel. At one of those periods, according to the then existing law, I should have got 10s.; at the second period, 8s. 10d.; and at the last 8s. Now these are "simple facts," not theory. Could I have been worse without a corn law? Should not I have been better? Should not I have had less rent to pay, and perhaps less in rates and taxes? But more of this when I come to Mr. T.'s second letter.

At page 336 he says, if the corn laws were repealed, "the price of corn would assuredly become higher than it is, on the average, under the present law." Where has he got this "simple fact" from, I wonder? Now this is the very state of things he and his party want, and is the very state of things he and his party are afraid will not take place. But he says, "It is needless to state that this would benefit no class." Yes, surely it would benefit the farmers, their labourers, and the landowners, according to his own arguments. In the same page he says, "The price of food regulates the price of labour." In another place he says, "Rent is regulated by the price of grain." Of course, according to his own showing, a farmer's expenses are reduced according to his incomings; therefore low prices, if a repeal of the corn laws should bring them, would do no injury to the farmer or the labourer, if they did them no good.

I shall now come to his second paper, in your Magazine for June, at page 413.

In summing up the burdens on land, to prove that we English farmers could not compete with the continental ones, he asks, "Who pay the chief portion of poor-rates? Who keep the highways in repair? Who pay the greater share of county rates? Who support a national church? And the answer is, the landlord and his tenants." Now, in every case the land only pays its due share. In an agricultural parish the rates are paid from that parish. In a manufacturing parish the manufacturers pay their due proportion. It is the same with the highways, with the county rates, and church rates. The tithes never belonged to the landowners. When they purchased their estates they only gave nine-tenths of their value; therefore the landowners pay nothing to the church but their share of church rates; in short, they pay less than their share of these. If the

tenant, upon the new system of tithes, had no rent-charge to pay, he would have so much more rent to pay to his landlord; of course it is the same to him, paying a part to each, or the whole to one. (Upon the old system, it fell hard upon an improving tenant.) "Well," my friend Thompson will say, "this has nothing to do with taxes, &c., on the continent." I am now coming to this, but do not be in such a hurry. I am an old clod-hopper, and rather stiff in my joints. First, have they no poor on the continent? If they have not, then they are happy. If they have, I suppose they feed and clothe them. Do we do more than this? No. Then the poor on the continent cost as much per head as the poor here. They take the same quantity of food, of course the same quantity of land, and the same quantity of labour. Mr. Thompson will say they are worse fed on the continent. This I deny. They cannot be worse fed. He may say so, but saying so is no proof.

Now for highways. Have they no highways on the continent? If they have, those highways will have to be kept in repair, and will take the same labour and materials as in England for the same amount of wear. If they have no highways, how will the farmers get their grain to the shipping ports, in order to get it to the English market? They will have to carry it on horseback, as in England 150 years ago, and this will be laborious and expensive.

Well, but the county rates. Have they no gaols to maintain, no thieves or rogues to prosecute? If they have not, the people are better fed, better taught, and better governed, than in England. If they have, then they cost as much labour to maintain them, according to numbers, as here, except the prisons are under better management than here, which I dare say is the case.

Oh! but the national church. So far as I can learn, on the continent there are more churches than here, according to the number of inhabitants, and they are national ones. But, national or not, they are to support by somebody, and if there be no trade must be supported by the land. I dare say they are supported as in England; that is, a portion of the land belongs to the church either in the shape of glebe lands, rent-charge, or tithes; of course it does not fall upon the landowner or the tenant. Now suppose a Russian serf gets 3d. per day wages, and a Russian farmer gets 3s. per bushel for his wheat. Would not a tax upon that serf of 3d. be as burdensome upon him as one of 3s. upon the English labourer who gets 1s. 6d. per day? Would not a tax of 3s. on the Russian farmer be as heavy as one of 7s. on the British farmer who got 7s. for his wheat? It is admitted by every one that the continental landowners and farmers are extremely poor. What is the cause of this? Mr. Thompson says, "they have the most fertile soils in the world." Mr. Thompson says, "the farmers have little or no rent to pay." This will account for the poverty of the former, but should make the latter rich. Mr. Thompson says, the labourers are only half fed. Mr. Thompson says, they have no rates or taxes to pay. Then, I ask, what makes them poor? He, I know, will say, "want of an outlet for their produce," and that "repealing the corn laws will give them that outlet." Stop, Mr. Thompson, not so fast! Now, Sir, I will prove that all you say about fertile soils, no rates, no taxes, half-fed labourers, &c., all rest in your imagination only, and that these assertions are like all your "simple facts," that is, no facts at all, mere assertion or mere theory. I say I will either prove this, or prove that respectable travellers are not to be believed.

I will take "An Agricultural Tour in Denmark, Sweden, and Russia;" by James F. W. Johnston, F.R.S. Published in the "Journal of the Royal Agricultural Society," and also in the "Farmer's Magazine" for June. I will take a farm near Gudumlund, in Denmark, and cultivated by the owner, a Mr. Hvass. This farm seems to be under better management than almost any other in the country.

The estate contains 1400 tonnen of land. I cannot say what proportion a tonnen bears to the English acre, but we may have some notion of this by the stock it keeps. 600 tonnen are wood, 200 meadow, 500 arable, and I suppose the remainder pasture or waste, &c. The stock kept are 160 oxen, 30 cows, 300 sheep, and 28 horses, wholly employed upon the farm, or upon 500 tonnen of arable land. The estimated rent was 1,000 dollars, without taxes; the taxes were 400 dollars. An English farmer, to pay in the same proportion, would have to pay 40*l.* in taxes for 100*l.* in rent.

We will now go to the living of the labourers—the "half-fed labourers." Mr. Thompson, do read pages 424 and 425 of the Magazine for June. But I had better give it you here. "In summer they have five meals a day. Breakfast, beer, bread, and dried or pickled herrings at 4 o'clock. 8 o'clock,—bread, butter, cheese and brandy." Brandy! the devil they have! I should recommend Father Matthew to go there. "At twelve o'clock, soup made of flesh and vegetables, with the meat, or a pudding of buck-wheat or barley with milk, and dried fish, or fried bacon, with potatoes and beer. 5 o'clock, bread, butter, cheese, and brandy again. 8 o'clock, buck-wheat or barley-pudding, made with milk." When Mr. T. has read this, let him compare these "half-starved" labourers of Denmark with "his well fed, well clothed, well housed" labourers of the agricultural counties of England. Upon this Danish farm nearly the whole of the produce was consumed by 44 servants and 28 horses. From 30 cows "the whole milk, butter, and cheese, were all used in the household." But what does the farmer say? Why, that the labour of the farm cost less now with free servants than with serfs. There is no doubt of it, and yet upon this farm there were about eight servants and eight horses where two men and two horses would have been kept in England. Whenever agriculture is in a rude state, and the land cultivated by serfs, bondsmen, or slaves, or by men little removed above them, then there will never be much surplus grain to dispose of. It was the same 200 years ago in England, when agriculture was in a rude state, although the cultivation was done by free labour. We had then no corn laws. We had plenty of land, and not one-fourth the number of mouths to feed. We had no poor rates, few taxes, and light county rates. Yet, let us see how the price of wheat averaged. For 10 years ending 1655, the average was 53s. 2d. per quarter. For the next 10 years, 52s. The lowest average for 155 years ending 1800 was 33s., taking 10 years together. This was for 10 years ending 1745. The lowest annual average was 22s. 9d. The highest annual average in the 155 years was 77s. 10d. See "Appendix to Willich's Tithe-table" for 1843. These facts clearly prove that a country in a rude state,

as I have before stated, never will have much surplus corn to export. But I have a little more to say upon this part of the subject, and I will take my facts from a country nearer home than Russia, within twelve hours of the centre of Lancashire. This is the Isle of Man. About 14 years ago I was there a month surveying. The land I was upon let for about half the price at which land in England, of the same quality, let for. The farmers had no poor, church, or county rates to pay. No King's taxes, either direct or indirect. The labourers got 1s. per day, without provisions. The English market was open to them every day in the year, and no farmer could be more than seven or eight miles from a sea-port. The roads were excellent, not such as we might expect to see in Russia at this time, or in England 200 years ago. Yet 14 years ago, notwithstanding these advantages, the Manx farmers and their labourers were miserably poor. While there, I at first asked myself what could be the cause. Before I left I found it out. The landowner and farmer were short of capital. Both them and their labourers were deficient in knowledge, either as masters or servants. They were altogether disinclined to labour. Their implements were rude, and their stock was bad, and as badly fed. These, all combined, made them poor and kept them so. They had little produce to sell, and it cost them more to raise it than in highly taxed England. A labourer upon my farm in Lancashire cost me 2s. 6d. per day; but I was perfectly satisfied that the same quantity of labour, upon my farm, cost far less than in the Isle of Man. Now this is near home —not in Russia or Poland, where the farmer may be hundreds of miles from a port, and know no more about the English market prices, or the corn laws, than I know about the man in the moon; and if he did he would be no better, and for two reasons. 1st. He could not help himself if he was inclined. 2nd, His habits would give him no inclination. Such men as Mr. Thompson suppose all farmers abroad to be like our English merchants or manufacturers; that is, when they see, or think they see, a market open for a certain article, they immediately forward what is wanted. We know foreign corn merchants will do this, but they must get the corn from the farmer first. In England, although we have the Royal Agricultural Society, hundreds of local societies, with lectures and publications on agriculture without end, yet we see how slow our farmers adopt new systems of cultivation, new implements, or the cultivation of new plants. I again repeat that, upon an average of years, with open ports, we should have no more foreign grain than we have had. How, then, could a repeal injure us by an overflow of foreign corn? My friend Thompson will perhaps say that the soil in Poland, Russia, Denmark, &c., is so fertile that it requires neither capital, skill, or labour. Read Mr. Johnston's tour, and then talk of the fertile soils in Denmark. He will find it the same or worse in Russia. In all, worse than in England, with a six months' winter in which nothing can be done on the land, and in which nothing can be taken to market. The whole work of farming and marketing must be done in the six summer months.

Having said quite enough to prove the folly of talking of a rush or overflow of foreign corn, in case of a repeal, I will now make good what I have before said on the expense of importation.

In a Parliamentary document from her Majesty's consuls from 15 continental sea-ports, the average freight in 1841 was 4s. 9¾d. to Hull or London; but to Bristol, Liverpool, or Glasgow, 5s. 3¾d. But we will take the average of the three ports of Dantzic, Petersburg, and Odessa. From these ports the average freight is 5s. 11d. to the east coast, and 6s. 5d. to the west. In a table published in Mr. Hubbard's pamphlet in defence of a fixed duty of 10s. on foreign wheat, the average freight from the three ports is 6s. 4d., I suppose to the east coast. To these charges have to be added "insurance, sound dues, metage, market dues, factorage, commission, damage from heating or moisture, interest, and profit." Altogether 13s. 10d. The writer says, "These charges cannot possibly be estimated lower; and the corn, if landed, would incur a further charge of from 1s. 3d. to 1s. 6d. per quarter." We will say 1s. 4d., making the total charge of 15s. 2d., when it is put in the same position, with respect to the English market, as that of English growth; namely, the farmer's granary. Both foreign and home-grown will have to be taken to market, the former from the English port to the interior, either by railways or canals, and the latter from the farmers' premises. But I have forgotten the English corn merchant's profit, which will not be less than 1s. per quarter; and, if he does not soon dispose of the cargo, there will be warehouse rent, there will be waste while lying there, wages for turning over, and interest upon capital. Then there is the difference in quality. A respectable corn dealer and grinder, who is in favour of corn laws, tells me this will be from 3s. to 5s. per quarter. We will say 4s. Every wise and prudent corn merchant knows he cannot either move an inch or stand still without expense, if he has a cargo of grain upon hand, and he makes his calculations accordingly. Those who do not take all these things into calculation soon go bankrupt.

But, Mr. Thompson, I have not yet made my comparison between the Russian and Polish farmer and the English one complete. There is the expense of the Russian and Polish farmer in taking his grain to market, or port, from ten to perhaps fifty or sixty miles. We will say twenty miles over bad roads, perhaps to be carried on horseback, and his waiting at the port to sell and get paid. I seldom find people in a hurry in parting with money.

Well, Mr. Editor, I think I have very cleverly made the protection to the British farmer 20s. per quarter without any duty, and without considering the greater knowledge and the greater activity of our farmers and labourers over those of Russia and Poland, and without considering our climate, where we can work every month in the year. In my last letter I think I said from 16s. to 20s., so you see I have improved.

You must also recollect that most of these items of expense are not *ad valorem;* they are according to weight, and will of course be the same, whether corn be high or low in price. So that, if corn be low in England, never much will come from either Russia or Poland. If wheat averages say 50s. in the manufacturing districts of Britain, the Polish or Russian farmers will not get 30s. on an average. We have seen what havoc has been made lately amongst our corn merchants; it is therefore clear they had given too much, at the foreign ports, for their corn. But we will examine this point a little further.

We will take the low-priced years of 1834, 1835,

and 1836. The average price in England of those years was 44s. 8d. There was none imported those years, of course; there could be no demand from Russia or Poland for Britain. We may therefore suppose prices at their lowest ebb there. Well, the average price for those three years, in those countries, was 29s. 2d.—difference, 15s. 6d. In 1835, the average in England was 39s. 4d., and in Russia and Poland 28s.—difference only 11s. 4d. I take the three ports of Dantzic, Petersburg, and Odessa, which are the lowest continental markets. Now it is very clear there can be no importation from there when prices are below 50s. here, and pay the importer a fair profit and expenses, even without duty. When we have deficient harvest here, and prices rise, the sliding scale comes in and takes what is erroneously called our protection from us. I therefore say, let us have no sham protection, which always has, and ever will, deceive us. Having sufficiently proved my second position, I will now pull to pieces another of Mr. Thompson's "simple facts."

He says at page 415, in your Magazine for June, when wheat sells for only 47s. per quarter in Britain, there will be no rent for the landowner. Now, what does C. T. Tower, Esq., of Weald Hall, say, in a letter to the Duke of Richmond, published in your Magazine of this month at page 33? Why, he let a farm in Herts, of 479 acres, 21 years ago, upon a corn rent. The CENTRE (mind this) was 68s., fixed upon the principle of the corn law then in force. With wheat at 68s. the farm was considered to be worth 600*l.* per annum. Mr. Tower says, "The tenant was to be allowed 5 per cent. for every 4s. per quarter that the average price of wheat, as published in the 'London Gazette,' fell below 64s.; but, on the other hand, the tenant was subject to an advance in the same proportion, if the averages rose above 72s., which latter never occurred."

Well, for 14 years, ending 1834, the rent varied from 540*l.* to 600*l.*—average 558*l.* 9s. So that the tenant had saved 41*l.* 11s. per annum, or 581*l.* 14s. in the whole, by being placed upon a corn rent. At the end of these 14 years it was found the rent had been fixed too high at the first, and also the pivot. In short, the corn law had deceived them. It was now agreed the rent should be 500*l.*, and the pivot fixed at 58s., subject to the rise and fall as the average was above 60s. or below 56s. For the last 8 years the rent has varied from 400*l.* to 587*l.* 10s.

Now, my friend Thompson says, there will be no rent when the price of wheat is at, or below, 47s. Now, in 1835, the average price was 39s. 4d., or 7s. 8d. per quarter below Thompson's no rent mark. The rent of the above farm was 400*l.* that year; the year following it was 412*l.* 10s., with wheat at 48s. 6d., only 1s. 6d. above his no rent mark. At the present time, according to Mr. Thompson's theory, there will be little rent for the landlord, although we are under his (Mr. Thompson's) beautiful sliding scale. However, what does Mr. Tower say?—"The farm is in a high state of tillage, and although the lease will terminate at Michaelmas next, the tenant is well satisfied to continue on the same principle, for he will, according to the present price of corn, and its prospects, have a proportionate reduction in his rent, not uncertain and subject to the avarice or caprice of his landlord or his agents, but fixed and known. It," he says, "is not the least agreeable part of this arrangement, that it inspires confidence in the occupier which causes him not to withdraw his capital when the times are unfavourable to him. As landlord I derive every advantage which falls to my share, as the sleeping partner of that machine—the land; which is worked and rendered profitable by the capital, ingenuity, and exertions of that corn manufacturer—the tenant."

In your next number I intend, Mr. Editor, to give my opinion on what I consider the proper principle of corn rents, their advantages and disadvantages; because the principle adopted here by Mr. Tower, is, in my opinion, not the most correct one. However, it has saved his tenant from ruin. Notwithstanding this I am going to prove that this tenant was actually robbed of 868*l.* by the corn laws,

The contract was entered into in 1822; wheat averaged that year, 41s. 7d. Now, why was the pivot fixed at 68s. and the rent at 600*l.*? The corn law then in force should have given the farmers 80s. for wheat, but it was found this law did not do this; and that year a new law was proposed, and 70s. was to be the average price by it. This law passed the year following. Now, it is very evident these contractors (Mr. Tower and his tenant) had this 70*l.* or the new law in their heads when they made the pivot 68s. and the rent 600*l.* However, by the rent being ruled according to prices, the tenant did save 582*l.* in the first 14 years, besides some interest. His rent averaged 558*l.* a year. But if he had been put upon the proper scale and pivot at first, his rent would have averaged 496*l.* The difference in 14 years would have been 868*l.*, which, I say, he was robbed of by the corn laws, besides interest. Supposing his rent at first had been fixed at 600*l.*, he would have been robbed by the corn laws in 14 years of 1450*l.* besides interest; and in 21 years of 2184*l.*, besides interest; including interest, near 3,000*l.* So much for the benefit of corn laws to the tenant farmer.

Mr. Thompson says, tenants, landowners, and valuers, never look at the corn laws in making their contracts. It is not true. The above is a proof that they do. But ask every farmer the question—Whether they would have offered the same rents they have done had there been no corn laws? I have asked this question a hundred times, and have always received an answer in the negative. The landowners and their agents are continually telling their tenants that the corn laws will be upheld. For what purpose is this? I do not mean to say they intend to deceive their tenants; far from it. They are themselves deceived by these laws. I say, and I maintain, without fear of contradiction by any one who has had anything to do with letting land for the last 30 years, that if there had been no corn laws, there would not have been the same demand for farms at the rents asked. What is it that makes farmers grumble, and numbers ruined by low prices; and also that we frequently hear of landlords returning a part of the rent? Why, most certainly, because the rent has been fixed too high, and had not been fixed according to the real average price of corn, but according to what it was supposed it would average. It is Mr. Thompson who "strangely contradicts facts to serve his own mistaken purposes," and not me. He says, "the price of wheat has been falling ever since the year 1800, whilst the rent of land has been rising during the same period." Was Mr. Thompson, jun., born in the year 1800 or since? A little before he makes the above assertion he says, rent is regu-

lated by the price of wheat. Then rent rises, does it, as the price of grain falls? However, let us look at these "simple facts" of his. 1st.—The price of wheat, he says, has been falling ever since 1800. Now, the real fact is, in 1803 Wheat averaged 58s. 10d., and continued to rise till 1812, when it averaged 126s. 6d. Since then it has risen and fallen, like the waves of the sea, and as it ever has done, and ever will do, as long as the sun shines, in spite of any corn law In 1812, as above stated, the average price was 126s. 6d.; in 1815, 65s. 7d.; in 1817, 96s. 11d.; in 1822, 44s. 7d.; in 1829, 66s. 3d.; in 1835, 39s. 4d.; in 1839, 70s. 8d.; it is now about 50s.

2nd.—He says, "the rent of land has been rising ever since 1800," From 1800 to 1813 rents advanced rapidly. In that year I engaged a farm at a certain rent. Since then it has been reduced, first 30 per cent., and then raised 10 per cent., where it has remained. The whole of this township has been reduced since 1815, 30 per cent. I have the rent books now before me. So much for these two "simple facts" of Mr. Thompson's. Oh! but I see Mr. Thompson is going to take leave of me; but, before he does so, he will expose "my most striking inconsistencies." Now, I beg of him not to expose me. He says it is not "wonderful my essay should have failed to obtain one of the prizes offered by the League." I can tell him why. In the first place, I never entered my horse for the race. In the second place, I and the League differ upon many points. I can tell him another thing—I have very good reasons to suppose that my paper had been read by the author of one of the prize essays before he wrote that essay. The League and I never had any connection; but, notwithstanding this, I wish to see the corn laws repealed. In advocating a repeal, I have always taken different ground to the League till lately, for now I see they are, upon some points, beginning to take the same view of them which I have always done.

In a great number of instances Mr. Thompson evidently does not understand what he is writing about.

At page 415 of your magazine for June, speaking of sliding scales, he says, "Is it not obvious to the simplest understanding, that if the effects of the corn laws have been to maintain high prices in seasons of scarcity, that they must have been more beneficial to the farmer than a free trade; under the operation of which, such a quantity of corn would be at all times imported as would perpetuate low prices? When is it the British farmer can afford to sell corn at the cheapest rate? Of course in seasons of plenty. But is it rational that he should be compelled to sell it at the same low price in seasons of scarcity?" Now, one would not suppose that an advocate for sliding scales would write such nonsense as this. If corn laws are any protection to the British farmer, is not that protection taken away when the duty is taken off? and is it not by the sliding scale always taken off at the very time when even Mr. Thompson admits they are most in want of protection; namely, after a deficient harvest? "Is not this obvious to the simplest understanding?" You will recollect I say if the corn laws are any protection, &c. I say they are not. Mr. Thompson says they are, and if so, then the protection is taken from us by the sliding scale when we most want protection.

Mr. Thompson says, "corn laws are not made with an intention to keep up rents." Now what do our landowners say in the British parliament? Why, that they cannot pay their mortgages and marriage settlements if they are repealed. Here is the real truth given by the landowners themselves, and what they have never denied in private conversation. Now, if corn laws fail to keep the price of corn up to the mark intended, is not it "obvious to the simplest understanding" that they are worse than useless to the British farmer, because he is, in that case, deceived by them?

I will just state a few "simple facts" to prove that these laws have been worse than useless to the British farmer; and that they have not produced the effects intended, that of keeping prices on an average up to the standard which the framers of those laws expected.

We have now a corn law. We have had corn laws for forty years to my knowledge. We have now a sliding scale. We have had one for 15 years, and yet the farmers say they are upon the brink of ruin, although we have only had one year of low prices. Does this say much in favour of corn laws? Would men who had been prosperous for 40 years be ruined by one year of bad trade? To prove that, at various periods under these laws, within the last 30 years, thousands of farmers have been entirely ruined, and thousands brought to the brink of ruin, so as to be incapable of doing justice to their farms, I will refer Mr. Thompson to the evidence given before the different committees, chosen by the House of Commons, at different periods within the last 30 years. All these committees were chosen for the sole purpose of inquiring into the causes of the depressed state of agriculture at those times, although we had then, at each period, corn laws, which had been passed for the sole purpose of preventing this state of things. But we will see what these corn laws have done.

Well, that passed, at the point of the bayonet, in 1815, was intended to keep the price of wheat, on an average, about 80s. per quarter. That law remained in force 8 years, and the average of those 8 years was 62s., or 18s. less than expected, and we had three bad harvests within the time. The farmers got poor under this law.

The law passed in 1823 was expected to keep prices about 70s. for wheat. That law remained in force five years, and the average price of those five years was 58s. 5d., or 11s. 7d. less than the law should have given, and we had one deficient crop. Thousands of farmers ruined, and thousands of labourers starving. A general reduction of rent took place when this destruction of property had taken place, and which came too late for thousands of farmers.

The first sliding scale became law in 1828. This was expected to keep the price of wheat beautifully level at 64s. The average for ten years, under that law, was 56s., or 8s. below mid tide. The average of one of those ten years was 39s. 4d., or 24s. 8d. below this beautiful level mark. Since this we have had four deficient harvests (1838, 1839, 1840, and 1841). The average of these four years is 66s. 3d., only 2s. 3d. above the expected average. Mr. Thompson says the sliding scale gives high prices after deficient harvests.

The present law, or Sir Robert Peel's sliding scale, should keep the average about 60s. The real average has been about 50s. since; and the farmers are on the brink of ruin.

Taking the corn law of 1815, and all the others passed since, the average price of wheat, for the

whole 27 years, should have been 72s. per quarter. The real average has been 60s. 1d., or 11s. 11d. below the price expected by the farmers and landowners These facts prove the inutility of corn laws in keeping prices up to any fixed standard, and, of course, worse than useless to the British farmer. Let us suppose a case to show how the farmers are deceived by the corn laws.

Supposing in 1815, the law had been made to prohibit foreign, when the price had been below 72s., and that that law must have remained in force 27 years. Now, supposing two farmers had each taken a farm at that period of equal value for 27 years, one at a standing rent at 100*l.* a year, and the other at a corn rent: but supposing this farm also worth 100*l.* a year, with wheat at 72s.; well, according to the average price of wheat, during that term, the latter would have paid 450*l.* less to his landlord than the former at the end of their leases; and if we must reckon interest upon the saving, as it accrued, it would perhaps have been near 700*l.*, or near seven years' rent of his neighbour's farm. The very fact of farmers now being on the brink of ruin—the very fact of hundreds of liberal minded landlords, at various periods during the last 30 years, having made returns of part of the rent, is sufficient proof that the farmers have offered too much rent, and there is not the least doubt but the corn laws have induced them to do so; in short, I know it is a fact that this has been the case in a very great number of instances.

If corn laws are proved to be a mere dead letter—that is, they neither do good nor harm to any class—they ought to be repealed, that agitation may be put an end to, and that every man may properly understand what he is about. But if they can be proved to be an injury to the great majority of the people, and particularly to the farmers, who have their capital locked up in the land, and which I contend can be proved, and is proved, it is then of the highest importance that they should be repealed. A low fixed duty would be a far lesser evil than the present sliding humbug.

"In taking leave of Mr. Thompson, I will briefly expose a few of his most striking inconsistencies; of which he has so many, that it is by no means wonderful his essay should have failed to obtain a prize from, or even noticed by the Royal English Agricultural Society."

1st. That the granaries of the Russian and Polish farmers are filled to overflowing with corn, which our corn laws prevent them pouring into the English market; that every year, lately, the duty has been down to 1s. per quarter, and has given them free access to our markets. "Therefore the sliding scale should not be repealed."

2nd. That, although the Russian and Polish farmers have failed to produce an overflow in the British market, with the duty at 1s. per quarter, yet, with a free trade, the "rush" would be so great as to swamp the British farmer, and to "subjugate the empire. Therefore the corn laws should not be repealed."

3rd. That the best mode of subjugating a great empire is to overflow it with food, and not to overrun it with soldiers, to burn and destroy lives and property. "Therefore the corn laws should not be repealed."

4th. "That the Russian and Polish serfs are not half fed," although corn is rotting in the granaries there for want of eating. "Therefore the corn laws should not be repealed," for fear they should be surfeited after all the corn has been taken out of the country.

5th. That rent, in Britain, is regulated by the price of corn. That corn has been falling in price and rents rising for the last 43 years. "Therefore, the corn laws should not be repealed, for fear the reverse should be the case, and by this bring ruin to the British farmer."

6th. "That, with a repeal of the corn laws, corn would be higher in price, on an average, than with these laws: of course they should not be repealed for fear of ruining the British farmer."

7th. That the corn laws are made with a view to keep the average price of corn at, or near, a certain fixed sum. That these laws have failed to do so for the last 43 years. "Therefore, the corn laws should not be repealed."

8th. "That with wheat at 47s. per quarter, the British farmer would be unable to pay any rent. That with a repeal of the corn laws, the price would be considerably higher than this on an average. Therefore the corn laws should not be repealed," lest the landowner should get no rent.

9th. That the British farmers are not much in need of corn laws, when they have full average crops. "Therefore the corn laws should not be repealed."

10th. "That the British farmers are most in need of protection when they have failing crops. That he (Mr. Thompson) is quite sure that the best protection at such times is, to take the duty off foreign corn. Therefore, corn laws, on the sliding scale, should not be repealed."

11th. That the late sliding scale was intended to keep the price of wheat beautifully level at 64s. That, during the time it remained in force (14 years) the price ranged between 36s. and 80s. "Therefore that law should not have been repealed."

12th. "That the present sliding scale was made with a view of preventing the price of wheat coming below 60s. That since it became law it has averaged about 50s. "Therefore the present corn law should not be repealed."

13th. That, with corn laws, two generations of farmers have been ruined since 1814; that another generation are upon the brink of ruin. "Therefore the corn laws should not be repealed."

"Finally, that, as a nation, we have gained nothing by our corn laws, seeing the havoc which they have made and are making with the farmers and labourers, those who they were intended to benefit. Therefore it would be unsafe to repeal the corn laws."

"I trust I have not exhausted the patience of the reader in thus wading through this labyrinth of incongruities; I trust, morever, that I have not failed to render conspicuous the utter contrariety of the arguments adduced; and reposing calmly in this my confident position, I once more come to a conclusion."

Now, Mr. Editor, I find no fault whatever with the landowners for getting what rent they can for their farms. They only make one half of the bargain. Land, like other things, is a marketable commodity, and they have a right to a fair market price. But I do say this, that it is not strict justice to hold out delusive hopes to the farmers of artificially bolstering up the prices of grain above their own natural level, and particularly when it is proved that all attempts to do so have failed. I do not say the landowners do this with an intention to do wrong to their tenants; for I am firmly persuaded they, themselves, are deceived in the working of the corn laws. We do know that false pretences have been made use of to raise or depress the funds, and also of various articles of

merchandise, of corn by the corn merchants, &c. But are they honest men who do this? No, they are not. They are no better than "he who steals my purse." But these men have not always laws enacted to assist them in their evil deeds; nor can they long continue it.

With respect to the selfishness of the landowners, I, from my own experience, deny that they are more guilty of it than any other class. As a body, I should say, they are more free from it than the trading classes. But they happen to have the power to make laws which they imagine are a benefit to themselves, their tenants, and farm labourers; but which I am most seriously, and most decidedly of opinion have very much injured the two latter.

In no country where there is sufficient scope, and where there is the will, the power, and the freedom, for exertion, can any law be made to artificially raise the price of the staple produce of that country for any considerable number of years. Nothing can accomplish this but a direct tax upon that produce, or an express law forbidding the cultivator to raise it, or cramp him in the quantity to be cultivated. It is different with produce which can only be raised in foreign countries.

Mr. Thompson says, "that England's greatness has been produced by her corn laws." This is n t true. If it had been so the farmers would have been wealthy, and their labourers happy and well fed. Are they so? It is the energy, the enterprize, the ingenuity, and the industry of the people, that has produced her greatness if she be so. But is she so? It is not in the extent of an empire; it is not in the affluence of a part of the people; it is not in the style of her architecture, or the number of her palaces and public buildings; it is not in the exellency, or in the extent, of her fine arts, or in the numerical force of her army and navy, which constitute the true greatness of a nation. It is in the happiness of the majority of the people.

The overgrown wealth of a few seldom contributes to the happiness of the many, or even of those few.

Mr. Thompson says, "that the downfall of the Roman Empire was brought about by a free trade in corn." What nonsense! it was produced by the tyranny of her rulers; the effeminacy of her people, produced by their excessive extravagance and luxury, fed by the extent of the wealth which had been acquired in the robbery of other nations conquered by them. This produced her weakness and downfall. The same causes will produce the same effect in any country.

When a young spendthrift comes in possession of a large property, he, while spending it, makes everything appear to flourish around him, and he is said, by superficial thinkers, to be doing great good to others, although he may be injuring himself. Tradesmen, servants, labourers, &c., all join in the pleasure, and bask in the sunshine which, for the time, gladdens all around them. But the end comes, and what is the result? The transient gleams of sunshine are at an end. The sun becomes over clouded, and storms, and darkness arise.

While England was mortgaging her country, and spending the proceeds, she was said to be flourishing and happy. For a while she was so, and to a few she is still; but I am afraid she is coming to that state of things produced by a spendthrift who has spent his estate. We can now with difficulty pay the interest of the mortgage; as it appears that that point of taxation has arrived when by another turn of the screw no effect is produced. Neither corn laws, nor any other laws, which cramp the energies of the people, can now save us. Nothing but a free scope given to every energy, every enterprize, and to the industry of the people of Great Britain can now save her from arriving at that wreck which befell the Roman Empire.

Let the farmer and tradesman buy and sell at the best market. Let there be no monopoly either at home or abroad. Let the West Indian planter, and every other class interest, sink or swim with the British farmer and tradesman. If this will not save us nothing will.

For the British farmer I only ask fair play and a fair field, and I do not fear the result. When I say fair play and a fair field, I not only mean that every restrictive law should be removed, but that every contract or agreement between landlord and tenant should be made on just and equitable principles for both parties.

"England expects every man to do his duty."

I am, sir,

Winwick, Yours, &c.,

July 28th, 1843. W. ROTHWELL.

P.S. August 18th.—In Mr. Thompson's paper No. 4, in your *Magazine* for the present month, he completely changes his ground. By this paper he proves that the currency has more to do with the price of corn than the corn laws. If he had coupled the seasons with it he would have been perfectly right. It is very clear to any one who has traced the state of the currency and the seasons together, since the commencement of this century, that they, combined, have far more to do with the prices of corn than the corn laws have had. But there is nothing new in this paper No. 4. The same has been said over and over again more than twenty years ago. At the passing of Peel's bill, in 1819, it was foretold what would take place in prices. In this paper No. 4 there are some misstatements of facts as to prices, and one paragraph of complete nonsense; but omitting these, it is the most sensible paper of the four. It is very clear that if we must have artificial high prices it must be done by an extended paper currency. But what would be the result? Why the same effects would be produced in the end as is produced in the physical powers of the human frame after a long course of spirit drinking. Let us keep our spirits even, and our tempers serene.

W. R.

TUSSER'S "POINTES OF HUSBANDRIE."

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The examination of the works of the early authors on rural affairs, in all countries, is a task not only amusing, but refreshing and instructive. For the result of such a research cannot but assure the modern farmer, when he reads of the rude systems of cultivation which centuries since prevailed even in England, that industry and the progress of knowledge have done much for the advancement of agriculture since Judge Fitzherbert, about 1532, produced his "Boke of Husbandrie," the earliest English work on rural affairs; and Thomas Tusser,

only about twenty-five years afterwards, wrote in verse his "One Hundrede Pointes of Goode Husbandrie." Such works too, by many incidental notices dispersed through their pages, will convince even the most zealous champions of a system of small farms, and of cultivators in the condition of serfs, that such tenures as these, which once existed in England, neither conduced to the advantage of the farmer, or to the national prosperity. From the days of Tusser in fact to the present time, one constant advance has been steadily making in the better cultivation of the soil; more knowledge has been diffused amongst its holders; prejudices of all kinds have, as a natural consequence, been gradually dispelled; more labour, greater capitals, have been bestowed on the land; and the same stream is still flowing on, there are no symptoms apparent of the great march of agricultural improvement having ceased to advance. But then that great, that noble progress of English agriculture, and of the farmers of England, has been mainly owing to the wise forethought and the careful, the anxious solicitude which the landowners and the legislators of our country have long displayed to avoid the horrors of the universal small holding, and as a natural consequence highly rented system, and the experimental tinkering farming, of those who know little of any other plants, except the tea, the tobacco, and the cotton. We hear indeed, sometimes, much of primitive national systems of tillage, and of the blessings it produces in other lands, where, it is true, that there are no large farmers. But then we equally search in vain, in such places, for every trace of an effort at improvement; not the slightest symptoms of rural comfort are anywhere visible there. Thus when William Howitt is describing the large mass of little wretched German farmers, he tells us very truly, that in that country the perpetual subdivision of property amongst children, has in many parts brought so much poverty on all, that it has been found necessary to check the effect of this, by making the land, in some states, descend to the eldest son, in others to the youngest, by a law of what is called the majorat or the minorat—of majority or minority. The general possession of the soil by the peasantry has moreover driven the higher and more refined classes almost entirely into the towns, and thus that beautiful mixture of society which prevails in the country in England is here altogether lost. Those varied houses and estates which embellish the whole landscape in England are here unknown. That wealth and taste and intelligence which the residence of all classes in the country diffuse over the whole of rural life, are here withdrawn, and the peasantry are left to their unmixed native rudeness and ignorance. All example and stimulus, which spring from a more educated and refined class, are removed from the observation of the vast country population. They must for ever remain pretty much what they are, in every sense—plodding labourers. (*Rural Life of Germany*, p. 43.) Such is yet the miserable tenure of the cultivators of many other nations of Continental Europe, and such was pretty generally the condition of the English landholder before, and even long after, the days when Tusser wrote his "Pointes of Husbandrie," and his "Boke of Huswifry." I have already, in another place (Quar. Jour. Agr. v. 12, p. 69.) given all the information with regard to Tusser, and his works then in my possession, some of which I shall repeat here. His will has since been discovered, and a copy of it is in the possession of Mr. Charles Clarke, of Totham Hall, in Essex, who intends to print it at his own private press for the amusement of the farmer. From this it appears, that at the time of his decease, Tusser resided at Chesterton, near Cambridge, in which parish he possessed some little landed property. His will is dated April 25, 1580, and begins, "I Thomas Tusser, of Chesterton, in the county of Cambridge." It was proved August 8, 1580, and one of the witnesses to the will was one Thomas Shackleton, "parson of St. Mildreds" in London, where a monument was erected to his memory. Tusser had, it seems, at the time of his decease, a brother named William, and three sons and a daughter; the sons' names being Thomas (the elder), John, and Edmund.

Thomas Tusser was born about the year 1515, at Rivenhall, a village on the high road between the towns of Witham and Kelvedon, in Essex, of a family allied by marriage to the higher ranks of society. He says of himself,—

"It came to pass that born I was,
Of lineage good, of gentle blood,
In Essex layer, in village fair,
That Rivenhall hight;

Which village lye'd by Banktree side.
There spend did I mine infancy;
There then my name in honest fame
Remained in sight."

He was, it appears, considerably against his inclination, educated for, and became a chorister at the collegiate chapel of Wallingford, in Berkshire. His voice, it seems, was excellent; and, in consequence, he was pressed, as the despotic custom then permitted, for the choir of St. Paul's cathedral. He speaks feelingly of a chorister's miseries:

"Oh painful time, for every crime
What towzed ears, like baited bears;
What bobbed lips, what jerks, what nips,
What hellish toys!

What robes how bare, what college fare,
What bread how stale, what penny ale,—
Then Wallinford, how wert thou abhorred
Of seely boys!

From London he proceeded to Eton, and became a student there, under Udall, about 1534, whose severity of discipline he has recorded. He then proceeded to Trinity Hall, Cambridge; but leaving it on account of ill health, he was dissuaded from returning by William Lord Paget, who kept him about the court, as one of his retainers (most likely as a chorister), for ten years: he left that nobleman, however, without any improvement of his fortune. Retiring to Katwade (Catiwade), in Suffolk, he took a farm, and it was here that he composed his *Book of Husbandry*. He says of himself:

"When court 'gan frown, and strife in town,
And lords and knights saw heavy sights;
Then took I wife, and led my life
In Suffolk soil.

There was I fain myself to train,—
To learn too long the farmer's song,
For hope of pelf—like worldly elf—
To moit and toil!"

The ill state of his wife's health induced him, after some years, to quit his farm, and reside at Ipswich, where she died. He was then married a

second time, to a Miss Amy Moon, and settled at East Dereham, in Norfolk—

"A place for wood that trimly stood;
With flesh and fish, as heart could wish."

But the temper of his youthful wife, and the harshness of his landlord, induced him to move to Norwich, where, under the patronage of Dean Salisbury, he appears once more to have become a chorister. He thus alludes to his second marriage, and its expenses:

"For lo! for guile, what haps the while,
Through Venus toys, in hopes of joys,
I chanced soon to find a moon
Of cheerful hue.

Behold of truth, with wife in youth,
For joy at large, what daily charge
Through children's hap; what opened gap
To move begun.

The child at nurse, to rob the purse,
The same to wed, to trouble head,—
For pleasure rare, such endless care
Hath husband won."

Ill health induced him again to remove; and he then took the glebe land of Fairstead in Essex, near his native village. Fearing the death of the clergyman, he moved to London; but hastened thence, in 1574, to Trinity College, Cambridge, that he might be beyond the influence of the plague. The time he spent at Fairstead was evidently far from agreeable to Tusser, for he says:—

"From thence so sent, away I went,
With sickness worn, as one forlorn,
To house my head at Fairstead,
Where whiles I dwelt.
The titheing life, the titheing strife,
Through titheing ill of Jack and Gill,
The daily pays, the miry ways—
Too long I felt.

When charges grew still new and new,
And that I spy'd, if parson dy'd,
(All hope in vain) to hope for gain,
I might go dance.
Once rid my hand of parsonage land,
Thence, by and by, away went I
To London straight, to hope and wait
For better chance."

He returned, however, to the metropolis, and afterwards lived at Chesterford, in Cambridgeshire, and died about 1580, certainly before 1585, as is proved by the title-page of the edition of his work published that year.

He was buried in the church of St. Mildred in the Poultry, according to Stowe, with this epitaph:

"Here Thomas Tusser clad in earth doth lie,
That sometime made the *Pointes of Husbandrie;*
By him then learn thou maist; here learn we must,
When all is done, we sleep, and turn to dust;
And yet through Christ to heaven we hope to goe;
Who reads his hooks, shall find his faith was so."

This is an outline of all that is known of this extraordinary man. In whatever capacity he at various times lived he acted with ability, yet never so as to benefit his fortune. That he excelled as a singer is certain; for none but those of more than ordinary powers are admitted into the royal choir. As a courtier he was unfrowned upon till the disgrace of his patron. As a farmer it is evident that he possessed a correct knowledge, from his work upon the subject. The same book testifies that, as an author and a poet, he was far above mediocrity. Fuller, in his *Worthies of Essex*, describes him, in his usual quaint manner, as "a musician, schoolmaster, servingman, husbandman, grazier, poet; more skilful in all than thriving in any vocation. He spread," he adds, "his bread with all sorts of butter, but none would stick thereon." The testimony of Fuller to the excellent private character of Tusser is valuable as coming from one who must have been the contemporary of many persons who well remembered our author. "I hear," says Fuller, "no man to charge him with any vicious extravagancy or visible carelessness." The true reason of his ill success in life is to be found, perhaps, in the verses of a poet almost his contemporary. Peacham, in his *Minerva*, a book of emblems, published in 1612, has a device of a whetstone and a scythe, with this beneath:—

"They tell me, Tusser, when thou wert alive,
And hadst for profit turned every stone,
Where'er thou camest thou couldst never thrive,
Though hereto best couldst councill every one;
As it may in thy *Husbandry* appear,
Wherein afresh thou liv'st among us here.
So, like thyself, a number more are wont
To sharpen others with advice of wit,
When they themselves are like the whetstone blunt."

With the remarks of Dr. Mavor on the ill fortune of Tusser, I will conclude this rapid sketch of his life:—"The precepts of Tusser, indeed, are so excellent, that few can read them without profit and improvement; but between the cool collected good sense that sometimes appear in an author's works, and his conduct as influenced by the temptations and perplexities of life, the discordance is often extreme. Some men are the shuttlecocks of fortune, and, with the best intentions, are always wrong; with the most serious resolutions of consistency and propriety, are easily driven from their course when they come in contact with the world. Between a courtier and a practical farmer the contrast is so great, and especially between a poet and a plodding man of business, that we need not be surprised our author was unsuccessful in the management of rural affairs. Yet he appears to have possessed such a degree of pious resignation to the will of God, of Christian charity, and of good humour under all his miscarriages, that his character rises high in our esteem, independent of his merits as a writer."

Tusser's work first appeared in 1557, entitled, *A Hundreth Good Pointes of Husbandrie.*

"A hundreth good points of husbandry
Maintaineth good household, with huswifery.
Housekeeping and husbandry, if it be good,
Must love one another like cousinnes in blood.
The wife, too, must husband as well as the man,
Or farewell thy husbandry, do what thou can."

"Imprinted in London, in Flete Strete, within Temple Barre, at the sygne of the Hand and Starre, by Richard Totell, the third day of February, An. 1557. *Cum privilegio ad imprimendum solum.*"

A copy of this edition, which Dr. Mavor considers to be unique, is in the British Museum. It consists of only thirteen quarto leaves. The *Book of Huswifry*, it is supposed, was at first printed by itself; it was afterwards added to the editions of the *Husbandry.*

Tusser dedicated his book first to Lord William Paget, in an acrostic, and after his death to "the Lord Paget, of Beaudesert," his son and heir. From this we find that Tusser shared an author's very common fate, for he tells us—

"By practice and ill-spending,
These lessons had their breeding,
And not by hearsay or reading,
As some abroad have blown.
Who will not thus believe me,
So much the more they grieve me,
Because they grudge to give me
What is of right mine own."

Its price, when first published, as described in his prefatory address to the reader, was only 4d. or 8d. He says—

"What is a groat
Or twain to note,
Once in the life,
For man or wife?"

The style in which Tusser wrote his book is plain, and sometimes rather hobbling; but, at the same time, it is a metre easily remembered; and verse is well adapted to impress upon the memory the mass of useful truths and rural directions contained in the work. In the rhyming preface, "to the buyer of this book" (for Tusser seemed to do everything in verse), he says:—

"What look ye, I pray you shew what?
Terms pointed with rhetorick fine?
Good husbandry seeketh not that,
Nor is't any meaning of mine."

He omitted no opportunity to give occasion for seasonable reflections:

"As bud, by appearing, betok'neth the spring,
And leaf, by her falling, the contrary thing;
So youth bids us labour to get as we can,
For age is a burthern to labouring man."

He commends the system of moderate corn rents, and was evidently no enemy to the sports of the field.

"To hunters and hawkers take heed what ye say,
Mild answer with courtesy drives them away;
So where a man's better will open a gap,
Resist not with rudeness, for fear of mishap."

He begins his monthly husbandry with September, for that was then the period, as now, when arable land was commonly entered upon by the farmer. He says, in his opening stanza—

"At Michaelmas lightly new farmer comes in,
New husbandry forceth him new to begin;
Old farmer, still taking the time to him given,
Makes August to last to Michaelmas even."

In furtherance of his object, that of giving some very minute directions to the incoming tenant, he even gives a catalogue of farming implements in verse, in which he manages with some adroitness to include several apparently impracticable names, such as—

"A handbarrow, wheelbarrow, shovel, and spade,
A curry-comb, mane-comb, and whip for a jade."

It was the approved practice in Tusser's days to "sow timely thy white wheat, sow rye in the dust." They were used also to put rye-meal into their wheat-flour:—

"But sow it not mixed to grow so on land,
Lest rye tarry wheat till it shed as it stand."

Thick and thin sowing had even then their respective advocates:—

"Though beans be in sowing but scatterred in,
Yet wheat, rye, and peason, I love not too thin:
Sow barley and dredge with a plentiful hand,
Lest weed, stead of seed, overgroweth thy land."

It is evident that in those days the farmers were not able to grow their corn on many soils where the modern holders find no obstacles. Thus he speaks of the difficulty they found in producing barley in the parish of Brantham, in Essex, where he farmed some land; and, again, he tells us, what will surprise the modern skilful Suffolk farmers,—

"In Suffolk, again, whereas wheat never grew,
Good husbandry used, good wheat land I knew."

And he adds,—

"As gravel and sand is for rye, and not wheat."

He mentions several varieties of wheat then grown by the farmers of the reign of good Queen Bess, such as white and read rivet, white and red pollard, Turkey and grey. But of this last he says,—

"Oats, rye, or else barley, and wheat that is grey,
Brings land out of comfort, and soon to decay."

The land, however, was evidently farmed with little skill:

"Two crops of a fallow enricheth the plough,
Though t'one be of pease, it is land good enough.
One crop and a fallow some soil will abide,
Where if you go further lay profit aside."

He warns the farmers to beware of corn stealers, and to keep their soil in good heart; to manure their land with the earth from headlands and old banks: he commends the use of night-soil for gardens; and recommends the manure of the farm-yard to be laid up "round on a hill." And he had the wisdom to perceive the advantages of shed-feeding live-stock.

"The houseing of cattle, while winter doth hold,
Is good for all such as are feeble and old;
It saveth much compass and many a sleep,
And spareth the pasture for walk of thy sheep."

For faint cattle he recommends the use of bay-salt; and in his February's husbandry gives some directions for the management of their dung, which betrays a deplorable want of knowledge in its economy.

"Who layeth on dung ere he layeth on plow,
Such husbandry useth as thrift doth allow;
One month ere ye spread it so still let it stand,
Ere ever to plough it ye take it in hand.
Place dung-heap alow by the furrow along,
Where water all winter-time did it such wrong;
So make ye the land to be lusty and fat,
And corn thereon sown to be better for that."

His directions to the farmer with regard to the treatment of his harvest men and the poor gleaners, and his warm hopes for the farmer's success, betray the excellent benevolent spirit with which he was actuated. He says,—

"Corn carried, let such as be poor go and glean,
And after thy cattle to mouth it up clean;
Then spare it for rowen till Michel be past,
To lengthen thy dairy no better thou hast.
In harvest time harvest folk, servants, and all,
Should make altogether good cheer in the hall,
And fill out the black bowl of blythe to their song,
And let them be merry all harvest-time long.

Once ended thy harvest, let none be beguil'd ;
Please such as did help thee, man woman, and child.
Now look up to Godward, let tongue never cease
In thanking of Him for his mighty increase.
Accept my good will,—for a proof go and try ;
The better thou thrivest, the gladder am I."

The labours of Tusser were not without their advantages to the farming of England ; his rude versification served to inculcate, and to diffuse many good tillage axioms. From his time, improvements in farming (although very slowly at first) began to appear. In his days every agricultural practice was rude in the extreme. Thus they killed in the autumn, most of their fat cattle, and had only salted meat for their winter's food. They were driven to this, from being entirely devoid of green food for their live stock during the winter months. Turnips were then unknown; they had only one mode of cultivating their arable lands, and that was by one crop and a fallow. Tusser, although he practised the system of the day, yet made apparently few attempts to improve it; he was merely the historian of farming, describing its processes, but offering hardly a single suggestion for its advancement. That noble effort was reserved for a greater man than Tusser—for the celebrated Jethro Tull, who, living a century after the author of "the hundrede pointes," became the improver of old, and the inventor of new systems of agriculture, which are yet successfully followed by the enlightened modern farmers of our country.

MR. COLMAN'S AGRICULTURAL CIRCULAR.

Mr. Henry Colman, an eminent agricultural writer, who our readers are aware is on a tour of inspection in this country, and specially deputed to report on the state of British agriculture by several societies of the United States, has addressed the following circular letter to the leading farmers and others throughout the country. Appreciating to the full the importance of the inquiry and investigation which Mr. Colman is pursuing, we trust his queries, which are exceedingly valuable and well arranged, will be very generally answered. We much fear, however, that our farmers will not reply to the queries so fully and generally as could be desired; for the credit of British agriculture, however, we trust they will lend their aid in diffusing a knowledge of our system and practice. We are, unfortunately (and it is a disgrace to us as a nation), lamentably deficient in statistical information on agriculture. The United States every year, when the census is taken, institutes the most searching inquiry into the number of live stock, relative produce of the soil, extent of land under cultivation in different crops, &c. Besides these media, agricultural commissioners are appointed for each of the States, to report specially to the government upon the condition and progress of agriculture, and of these commissioners Mr. Colman was one of the most indefatigable The statistics of agriculture—of our common crops, of our live stock, of our meteorological phenomena, &c., are all of essential interest to the statist and the agricultural writer. It is from these data, from an investigation of facts, that he is able to form a comparative judgment or opinion as to the progress of a country, and whether its native resources have been improved. Beyond the few papers in the agricultural journals of the day, we have no statistics or agricultural reports of modern date; the County Reports of the Board of Agriculture being nearly half a century old. The example of Mr. Colman should incite our great national societies to similar efforts to amass a fund of facts, which may be useful to present and future generations.

REPORT of the Farm of
In 184

Extent.	No. of Acres.	Soil.	Write Yes or No.	Climate or Aspect.
Arable.....		Loamy ?		Mean heat in summer, by Fahrenheit .....
Artificial grass....		Clayey ?		
Clover, ryegrass, &c.		Sandy ?		
Natural grasses..		Gravelly?		Mean co'd in winter .....
Mowing ground .		Lime ?		
Feeding ground..		Wet?		Depth of frost in the earth in the coldest season .
Water meadow..		Dry ?		
Total		Hilly ?		Quantity of rain or vapour usually falling in any month, or in the year .....
		Level?		

Price of Labour.	£ s. d.		£ s. d.
Man's labour, per year		Amount of sales in 184	
" " week..		Value of produce used or on hand	
Woman's field labour, per week.		Cost of labour in the year	
" house labour, per year		Incidental expenses	
		All Taxes	
		Rent	

Live Stock in 184 .	Number.	Manures bought; and kinds used.
Horses		
Mules		
Oxen		
Cows		Manure made.
Sheep		
Colts		
Young neat stock		Amounts applied per acre, and how and when applied.
Swine		

Crops on ground in 184 .	No. of Acres.	Ordinary yield per Acre.	Crops on ground in 184 .	No. of Acres.	Ordinary yield per Acre.
Artificial hay.. .		tons	Beets		bus.
Meadow hay			Parsnips		
Millet			Swedish turnips ...		
Wheat		bus.	Turnips		
Rye			Rape for Seed . ..		
Barley			Rape for green feed		tons.
Oats			Flax		
Buckwheat			Hemp		
Pease			Hops		lbs.
Beans			Grass for seed		
Potatoes			Straw		tons
Carrots					

What is the expense of cultivating one acre of Wheat, Oats, Barley, Rye, Buckwheat, Potatoes, Swedes, common Turnips, Beets, or other field crop, including ploughing and preparing ground, manure, seed, planting, after-cultivation, saving fodder or straw, gathering and securing crop, threshing and preparing for use or sale? Estimate the price of a man's labour at and of one yoke of oxen, or one pair of horses at per day.

	Expense per acre.	Expense of harvesting per acre of
Wheat		Wheat?
Oats		Oats?
Barley		Barley?
Rye		
Buckwheat		
Potatoes		
Swedish turnips		What quantity of Grass seed sown per acre, and what kinds?
Common ditto		
Beets		
Carrots		
Flax		

	Number.	£ s. d.
Lambs sold		
average price		
Sheep sold		
average price		
Neat Stock		
average price of		
Yearlings		
Two years old		
Three years old		

Average number of Lambs raised yearly to 50 ewes

Leicester No.
South Down No.
Other breeds No.

Animals fatted in 184

Beasts No.
On what, and at what age?

Sheep No.
On what, and at what age?

Swine No.
On what, and at what age?

Average yield of a Cow per annum, and breed of Cows.

Of milk gallons of 4 quarts each
Of Butter lbs., avoirdupois
Of new milk cheese lbs.

Average yield of well-washed wool to a Sheep per year.

Leicester lbs.
South Down "
Other breeds, name them "

Average weight of a hog fatted at 18 months old.
Name the kind

lbs.

Average dead weight in Smithfield market of a
Three year old Steer
Durham
Devon
Hereford
Scots
Smithfield stone of 8lbs., and say weight of the four quarters.

QUERIES.

1. What is the average size of farms in your neighbourhood?
2. What is the rent of land, and the time for which it is usually taken?
3. What is the customary rotation of crops in your farm, or in your neighbourhood?
4. What are the burdens upon your farm in the form of poor-rates, tithes, taxes, or of any kind?
5. What is the time of sowing, and quantity of seed to the acre, and how is the seed prepared of Wheat Barley Oats Rye Peas and Beans Other crops ?
6. What insects, vermin, or game trouble or injure your crops, and what remedies or preventives against them?
7. What improved and valuable implements for cultivation or farm-use have been introduced on your farm or neighbourhood?
8. What is the mode of draining and sub-soiling practised or most approved by yourself, and what is its cost per acre? Please name the different items of expense?
9. What is the general management of your dairy; and what is peculiar in your mode of managing your milk or in the making of butter or cheese?
10. What improvments have you made in building; in cultivation; in draining; in irrigation; in clearing land; in live-stock; in feeding animals; in forwarding seeds; in raising forest trees; or in any other matter?
11. What breed of neat cattle, or horses, or sheep, or pigs do you raise? What breed do you prefer for labour, fattening, or dairy?
12. What experiments have you made in the application of manures? What are the effects on your farm of Lime, Gypsum, Marl, Ashes, Bone Manure, Guano, Nitrate of Soda, Poudrette, or any other manure, and how used or applied?
13. What large or extraordinary crops of any kind have you raised; and how cultivated?
14. What remarkable beasts or milch cows have you owned, or known in your neighbourhood? Please to give some account of them.
15. What agricultural experiments of any kind have you made, the knowledge of which, whether successful or unsuccessful, would be useful?
16. What do you deem the most profitable articles of cultivation?
17. What is the general disposition of the products of your farm?
18. What is the moral condition of your rural population, particularly in respect to education, temperance, economy in laying up wages, attention to religious worship, and the prevalence or non-prevalence of crime?
19. Do Benefit Societies exist among your people; what are the usual terms of subscription to them; and what is your opinion of their expediency or utility?
20. What is your opinion of agricultural Libra-

ries, agricultural Societies, and Shows and Farmers' Clubs?

21. What alterations or improvements in the condition of Farming or Farmers are in your opinion most needed?

GUANO.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Observing in your present month's publication a letter copied from the "Mark-lane Express," purporting to be written by a "Middlesex Farmer," wherein the author—to the best of his ability I doubt not—endeavours to show that Guano, as a fertiliser, does not possess the power of producing such effects as by the most accurate and conclusive experiments it has been proved to have; or, at any rate, that its fertilising properties are equalled—if not surpassed—by bones and Carbon, and that the accounts published respecting it are exaggerated and imperfect. I beg, with your permission, to submit a few remarks in reply.

In the first place, your correspondent—so I must term him, since you have adopted his letter—commences with the information that he has recently perused two treaties on guano; and that, after having considered them with more than ordinary attention, he has arrived at the opinion that the effects produced by it are "quite magical," and that the "extravagant praises" which have been bestowed upon it should be received with caution. True indeed, Mr. Editor, all "extravagant praises"—whether bestowed upon guano, carbon, or bones—should be received with equal caution, and a due allowance made in order to arrive at truth, and to ascertain the actual capabilities of each. But beyond making the mere assertion, than which nothing is easier, "A Middlesex Farmer" has not advanced anything, I apprehend, to prove that the praises bestowed upon guano are extravagant, or such as it does not merit. Neither has he attempted to show by any fair argument that the statements exhibited of its "magical effects" contain anything in them inconsistent with truth, or in the slightest degree at variance with the effects which have been positively produced by means of its application in all parts of the kingdom, and in various seasons. Certainly he talks about the comparative value and effects of guano and carbon, but in no way does he attempt to demonstrate that the latter is superior, or even equal to the former.

After assuming the evidence before him to be extravagant, your correspondent next proceeds to take an objection to cases of failure, or of comparative merit, being omitted, as inconsistent with the "obvious intention" of the works—which, with the liberality of "an independent observer, having no anxiety but to promote the introduction of any commodity which may benefit the agricultural community, and thereby the public"—he hints is "rather to force a profitable sale than to establish truth." At the same time, he admits that guano is not without valuable properties, but doubts that its purity, its pre-eminence, and effects are impartially and intelligibly set forth in the treatises he has read; and then suggests that when a large expense is incurred by the gratuitous distribution of immense quantities of them—prepared for the especial purpose of mere literary men—some suspicion will naturally arise, more particularly if the accounts bear appearance of imperfect trials. Truly this is admirable! "A Middlesex Farmer"—having no anxiety but to promote the benefit of the agricultural community—condemns as suspicious, unintelligible, and partial, any treatise which, in his opinion, may be set forth prepared for the especial purpose of "mere" literary men!—imagining, I presume, that all works on agriculture, as well as on other sciences, should be chiefly, if not altogether, adapted to the crude intellects of the illiterate and ignorant—of those who cannot read, or, if they can, are void of understanding. Such a work would, in my humble opinion, be far more unique than the acre of land which could produce 39 bushels of wheat without manuring. Assuming, however, for the sake of argument, the position maintained by your correspondent, that the various treatises which have been published at great labour and expense respecting guano are obviously intended to force a profitable sale rather than to establish truth—that cases of failure have been carefully suppressed; and that most, if not all the accounts, which have been set forth bear every appearance of imperfect trials—under these circumstances, the question respecting the purity and pre-eminency of guano becomes merged and resolved into this:—Whether the treatises exhibiting statements of the effects produced by guano (that is, of the effects produced by the *genuine* and *unadulterated* article) are, or are not worthy of credence? and upon this the whole matter at issue rests. If, then, these treatises are not worthy of credit, or if, at best, they are to be received with caution, and looked upon with suspicion, how in the world can either "A Middlesex Farmer," or any other man endowed with the least particle of common sense, undertake to determine respecting an article when he is not possessed of a scintilla of evidence either favourable or adverse to it which can with any degree of confidence be relied upon? Yet into this predicament has your Middlesex correspondent unwittingly plunged himself. He first denies the evidence offered to him, notwithstanding that he is enable to refute it, complains that there is no evidence of cases of failure; and then on the unstable grounds of conjecture and hypothesis raises a question of purity and pre-eminent efficacy; in opposition to which I maintain, without fear of successful contradiction, that the accounts published of the effects produced by means of *genuine* guano are neither inconsistent, extravagant, nor partial; and in proof of this my assertion there is no necessity to have recourse to the supposition that "the age of miracles has returned;" for I need only observe that the reports of experiments have been made in almost every instance by men of the highest rank and respectability in the country, and whose zeal for the benefit of the agricultural community is in no degree inferior to that of "A Middlesex Farmer," by men possessing a thorough knowledge of agriculture in all its branches, and who for "the obvious intention" hinted at by your correspondent, would scorn to fabricate or invent any statement which had not been borne out and supported by previous facts and observation; their only object in making those statements being the advancement of agriculture by the recommendation of a tillage which, by practical experience, they have proved to be one of the most permanent and powerful ever introduced to the notice of the British farmer. Having thus, I trust, placed the

point I was contending for beyond the reach of controversy, it follows, as a necessary sequence, that if guano has the power to produce such effects as by the clearest and most unquestionable testimony it has been proved to be capable of, it must, to all intents and purposes, possess properties which neither carbon nor bones can ever equal. And, moreover, when we find the reports of practical experiments confirmed by the admirable writings and researches of a Liebig and a Johnston, I am somewhat apprehensive that the agricultural community, notwithstanding the anxiety he professes for their welfare, will be inclined to pay but little regard to the cautions, suspicions, hints, and suggestions of an unknown "Middlesex Farmer."

In conclusion, I observe that your correspondent states—"it is further said that the effects in a succeeding year were *undiminished*, without any fresh application. If so, away with the aids of chemical knowledge in farming; for if all the virtues of a manure remain after the growth of a crop, it would have absorbed nothing." Here, Sir, we have another unique piece of sophistry, the author of which must be either desirous of hoodwinking the understanding of his readers by a *suppressio veri*, or he must be grossly ignorant of the fact, that vegetation only requires a certain amount of sustenance annually; and although guano affords to the growing crop all the elements essential to its perfect growth and development for one year, it does not therefore follow that all the virtue of the tillage is exhausted during that period, so as to render it incapable of yielding to the crop of the succeeding year equally as much nutrition as to the former one. Neither does it follow that because guano, or any other tillage, produces effects a second year equal to the effects of the first year, without a repetition of the application, that therefore the first crop can have absorbed nothing. For though, during the former period, the crop may have been supplied with all that was requisite to bring it to an earlier state of maturity, and in greater abundance than from any other manure, yet sufficient virtue may be retained capable of producing second effects quite as magical as the first; and that guano does possess this potency—and that too in a degree superlatively greater than any other fertiliser—is sufficiently evident from the testimony already alluded to, the veracity and correctness of which I flatter myself I have established beyond the power of "A Middlesex Farmer" to gainsay. If further proof of the pre-eminent utility of guano be needed, I can assure your correspondent that a gentleman residing near to Buxton has this year produced two crops of grass from the same field by means of its application, which have never been equalled in that part of the country. Nor is this an isolated case; and in a few weeks your correspondent may again expect to have his suspicions excited by accounts of effects still more "magical," but which, by a singular coincidence, will only tend to establish those already given.

Knowing you, Mr. Editor, to be an advocate for candour and honesty, I trust you will as impartially give insertion in your next number to these, my statements, as you have done to those of "A Middlesex Farmer"; in doing which, for the trouble you may be occasioned, I beg to apologise,

And am, Sir, yours very respectfully,

AN EYE-WITNESS TO THE EFFECTS OF GUANO.

August 19, 1843.

CULTIVATION OF MANGEL WURZEL, &c.

I have just read a statement in your magazine, by Professor Henslow, (Letter 14—April 5 1843) relative to the growth of mangel wurzel by Mr. R. Rand of Hadleigh, and the propriety of pulling off the leaves during the growth of the plant, which is clearly in favour of letting the plant remain with the leaves upon it; the greatest quantity grown is stated to be under nineteen tons. In the month of May 1842, I sowed a piece of land, three-and-a-half acres, belonging to, and in the occupation of Henry Nevile, Esq., of Walcot-hall; the land adjoins the parish of Barnack, and was wheat the year previous. As soon as the crop was cut, the land was ploughed over and cleaned, and part manured, and then laid up for the winter to mellow. One piece was sown the latter end of the year with tares, which were mown green for the horses, a very good crop; afterwards ploughed up, and drilled with white globe turnips, boned at the rate of ten strike to the acre, and grew a very nice crop, and was eaten off by sheep. The next piece was the mangel wurzel; the land was ridged at twenty-seven inches apart, and then manured with mixed manure and mud, at the rate of twelve loads to the acre; the ridges were split, and the manure well covered in, having been broken and spread regularly with forks. The seed was dibbled by two men, with dibbles making five holes at a time, about one inch deep and six inches apart on the average; the seed was put in by four women, and afterwards rolled with a light roller. The land was in a good state, the soil a reddish loam, inclined to set, upon a gravel and sand subsoil in part, and part stone. The whole was got in within a day or two, with the exception of about three roods, which remained nearly a fortnight, for want of seed to complete the sowing. With the exception of these, the whole did well up to the time of getting; the three roods being small plants when the others had attained the diameter of three and four inches. The early ones were all thinned to eighteen or twenty inches apart (not quite regular,) and three or four rows had been left without thinning. These I transplanted with garden trowels, and the season afterwards coming on rainy, they got on wonderfully, and although they did not reach the bulk of the rest, the whole presented one uniform appearance in August. I took out half a dozen from the earliest, which were sent to the Stamford Show in September, 1842; these were not the largest, but they weighed seven, eight, or nine pounds each. The result of the crop from the three-and-a-half acres was ninety-seven tons, or an average of thirty tons to the acre. The leaves were carted into the yards, to the stock, and consumed, the yards being supplied with them about a month. I cannot say how many loads, but I think as many as there were tons of wurzel, no regular account being kept of them. I am clearly of opinion if the whole had been equal, and sown at the same time, there would have been thirty-five tons to the acre.

In cleaning the mangel wurzel, care should be taken that those who do it should not cut them close to the top, nor yet chop them on the sides; they should leave about half an inch on the top, and cut the tail off straight; as I find that those too much cut are apt to turn black and fuzzy, and do not keep so well. The milch cows, six in

number, were kept upon them, with hay, the whole of the winter, and there was then sufficient for 140 ewes from the commencement of the lambing season until May-day.

They should be carted for storing when quite dry. The method I adopted was putting down four lengths of drawn flakes, (or flakes made with hazels) in a line with four more opposite, about seven feet apart, and about three feet 6 inches high, so as to back the carts into them, and then putting down posts outside to strengthen them; the whole was then filled up and ridged at the top, the end being made up with another flake, and then thatched down with stubble. A space is left between for the drip, and another placed alongside. These flakes allow of the air passing through them, and also keep out the snow and rain.

The adjoining or middle part of the field between the tares and mangel wurzel was, without the headlands, about seven acres; this was ridged and drilled at 27 inches with the Northumberland drill, with 10st. of bones and a quantity of mixed ashes and pigeon manure to the acre. The result of the crop was 267 two-horse cart loads, or an average of thirty-three tons to the acre, the carts averaging about seventeen hundred weight each.

HENRY HUTCHINSON.

Walcot, August 12, 1843.

P.S. The seed of the mangel wurzel was the red globe, and was from Messrs. Gibbs, of Half Moon Street; and the turnip seed was from Mr. Spencer, of Stamford, of a very excellent quality, and who generally keeps some very good seed.

MELILOT.

It was by accident that I observed a communication to the Royal Agricultural Society some time ago, recommending the growth of this plant for cattle, by a Mr. Taylor, and described as Cutan mellilot, which from its description is no stranger in this country. It is really extraordinary to hear of the growth and cultivation of various roots and vegetables, and the recommendations and opinions expressed by parties as to the value and quantity that may be grown. For the information of those who know nothing of the growth of mellilot, I beg leave to give the following. There is in Northamptonshire a village called Southorpe, about five miles S.E. of Stamford, till within the last year unenclosed, and where this plant has been and is grown to perfection, the land being subject to it. The plant is a perennial, not seeding until the second year; therefore if you can kill it the first year, you get rid of it, but here there has always been some left in the land for another year, in consequence of its not being got clean. The stock are all fond of it, particularly sheep, and eat it with avidity. But what is the result? If it seeds among your wheat, when the land comes wheat in its proper course, it not only gives the wheat a powerful smell (and no blowing or brushing will remove it) but also the flour, after it is ground, and from this the bread. It is worth five shillings per quarter less than the market price, and there are many who dislike the flavour, however trifling, so that they will not eat it, and therefore the miller must mix it well with some other, and send it to a distance in order to get rid of it. Thus the growth of it here is a nuisance, and if it was grown as recommended for a crop of hay, it must be cut early in order to fallow the land before taking a crop of grain. The few foregoing remarks upon this plant will, I hope, have the effect of causing further inquiry before any farmer proceeds to grow it for herbage.

Walcot, near Stamford. H. H.

P.S. The land varies in quality: in some places it is heath land; in others, sand and loam upon a cutch or stone subsoil; and again, a reddish loam upon a clay and stone subsoil.

PRESENTATION OF PLATE TO J. C. NOTT, ESQ.

Pursuant to public notice, a dinner took place on August 1, at the Crown Hotel, Broad-street, on the occasion of presenting a piece of plate to the worthy and most indefatigable secretary of the Worcestershire Agricultural Society, J. C. Nott, Esq., of Hallow. The chair was taken by Sir Thomas Edward Winnington, Bart., M.P., president of the society for the present year, and the vice chair was ably filled by P. V. Onslow, Esq. On the right of the chair were J. C. Nott and A. Skey, Esqs., and the Rev. J. Pearson; and on the left, R. Spooner and W. Dent, Esqs. The vice chairman was supported by J. G. Watkins, J. W. Isaac, J. D. Onley, and C. A. Helm, Esqs.; in addition to whom we noticed J. W. Lea, J. Ailcroft, T. Hyde, T. Hughes, and J. Stallard, Esqs., Captain Gabriel, Messrs. J. Herbert, T. H. Davis, J. Walker, Woodward, J. Winnall, Turley, Hood, Lingham, &c., &c. The room was decorated with laurels, and a small crown tastefully composed of flowers was placed over the chair, having the words, "To the honour of J. C. Nott, Esq." suspended from it.

The testimonial consisted of a massive silver salver, about 26 inches in diameter, and weighing nearly 200oz. It had a very elaborately-chased border, on which were delineated representations of the four elements—fire, air, earth, and water. Nearly the whole face of the salver was covered with raised and richly-chased representations of the various operations of agriculture—reapers in a corn field; shepherd and flocks; plough and team, with ploughman and boy; and dairymaid, with cows, pigs, &c.; and interspersed are three important productions of the county—apples, pears, and hops. In the centre was the following inscription, elegantly engraved:—

"This salver was presented to John Crane Nott, Esq., by the subscribers of the Worcestershire Agricultural Association, and other friends, as a memorial of the esteem and regard they personally bear towards him, for his high worth and integrity, and for his valuable and zealous exertions in having so efficiently and successfully filled the office of Honorary Secretary to that Society. Aug. 1, 1843."

At the back of the salver, in the centre, are the names of the noblemen who have subscribed to the testimonial, and round the outer edge the names of the other subscribers, in alphabetical order, the whole amounting to upwards of 200. The salver was entirely got up by Mr. Manning, silversmith, Cross, Worcester, and does great credit to his establishment.

We are authorised to state, that Viscount Torrington has given permission for his name to be added to the list of Honorary Directors of the "Farmer's Fire and Life Insurance Institution."

AGRICULTURAL TOUR IN DENMARK, SWEDEN, AND RUSSIA.

BY JAMES F. W. JOHNSTON, F.R.S.

(From the Journal of the Royal Agricultural Society.)

SWEDEN.

On passing from Denmark into Sweden, new conditions of soil and climate present themselves, which render necessary important modifications in the agricultural practice. This is especially the case if the traveller crosses at once from North Jutland to Gothenburg. He leaves the poor sandy plains above described, skirted by a low and sandy coast, and he reaches a shore of naked granitic rocks, on which not a blade of grass, nor even a lichen, appears to grow. As he ascends the Gotha, these rocks begin at last to draw back here and there from the river, leaving a fringe of low or sloping land, on which scattered cabins and partial tillage appear; and when he reaches Gothenburg this fringe widens on the left bank into a broad tract of marshy land, on the edge of which the city is built. Of such swampy land as this there are numerous narrow tracts in Sweden, on the shores of its rivers and many lakes, and in some parts of the country the only bright spots that meet the eye in a long day's ride are the green stripes of verdure which girdle in the lakes that are passed. In many localities also, especially in the neighbourhood of the larger lakes, these fringes of green and tillable land are connected with tracts of flat and reedy swamps of larger extent, more or less susceptible of a perfect drainage. The conversion of these and similar swampy spots into available land forms one of the most important undertakings to which the improving agriculture of Sweden has given rise.

On leaving the vale of the Gotha the naked rocks become covered with a thin herbage. In the hollows the soil deepens, and is often of better quality; but where extensive flats occur on the higher ground, they are either covered by woods of pine, or form a more or less inhospitable tract of moor. In some parts of Sweden these flats extend almost continuously over many hundreds of square miles. Covered with a clayey soil to the depth of from two to twelve inches, they bear those still and dreary forests of pine through which the traveller, in crossing the country from Christiania to Stockholm, may pass for fifty miles at a stretch without hearing a sound but that caused by his own carriage, or seeing a living thing except in the neighbourhood of the post-houses. On these flats limited crops of corn are here or there raised. A few acres of the wood along the road are burned down, the ashes are strewed over the land, rye is sown and harrowed in, and after one or two crops the spot is again left to nature. Birch-trees first spring up; these are gradually supplanted by the pine, and all traces of cultivation are gradually obliterated. Another of the obvious improvements which Swedish agriculture is now undergoing is the permanent cutting down of the forest *where the soil is deep*, and, by a more skilful and less exhausting system of culture, the conversion of the more accessible spots into regular tillage or grazing farms. But in Sweden there is a limit beyond which this extirpation of the forest cannot be carried, even where the soil is good. The climate is severe, the winters are long, and much fuel is required; here and there peat occurs, but in Sweden generally the chief dependence is upon wood. The fences also are almost universally formed of wood, and hence the price of a farm, or the rent it will bring, is in this country regulated in a very great degree by the quantity of woodland which it contains.*

Among the facts which strike the agricultural stranger on his arrival in one of the rocky districts of Sweden, is the readiness with which the young pines take root on the apparently naked sides of the rocks, and gradually clothe it with an almost uninterrupted forest. I had an opportunity of becoming satisfied of this fact during a short visit in the neighbourhood of Gothenburg. My friend had built a house in a pretty situation, with some good low land attached to it. The lower swellings of the granitic rocks he had converted into green hills by covering them with a sprinkling of soil, while the grey sides of the higher and steeper rocks he had concealed by planting, wherever a crevice occurred, young pine plants obtained from the neighbouring forests. In these crevices the roots fix themselves, and assist the gradual degradation of the rock, from which a soil is formed; and though the first or second generation does not attain a height of more than fifteen or twenty feet, yet every new race finds more support from beneath, till even on steep and hanging spots lofty pine trees are finally seen to flourish.

The comparative condition of agriculture in Denmark and Sweden offers an instructive lesson to the observing traveller. In the former country the capabilities of the land are in general better understood and more fully developed than in the latter. But the causes of this are obvious. In Denmark, as we have seen, light and sandy soils prevail; in Sweden, five-sixths of the land hitherto considered capable of cultivation consist of clay. The former are easily worked, and at little expense; the latter require greater labour, capital, and skill. Again, the climate of Sweden is more severe, which adds a further difficulty to the cultivation of clay soils; and, lastly, shut out as Sweden has hitherto been by its geographical position and its language from that constant intercourse with other countries which Denmark enjoys, knowledge has spread more slowly from abroad, and the stimulus to improvement has been in proportion less. Soils like those of Denmark prevail over much of Northern Germany, and, connected as Denmark is with the latter country by its German provinces of Holstein and Sleswick, the improvements in German agriculture are more readily diffused among the general Danish population.

In our own country we have occasion to regret the slow diffusion of agricultural information, and the prejudices which among our rural population oppose themselves to the introduction of important improvements in agricultural practice. But if the diffusion of knowledge be slow in our country, where cheap literature of every kind abounds, and where the demands of thirty millions of people, speaking the same language, are sufficient to induce both publishers and authors to bring out books upon almost every subject in regard to which information can be required, how

* One-half wood is the proportion which brings the largest price.

much slower must it be in a country like Sweden, where a population of two or three millions only is to be supplied—where few books will pay even the cost of printing—where no scientific journals exist—where scarcely a magazine of light literature can live beyond a few short months—where the national literature is consequently limited—where there exists no cheap penny reading for the people—and where the instructed must obtain much of their information through the medium of foreign languages! Conjoin with this the real difficulties which the climate and stubborn soil of Sweden present, and the obstacles arising from surface-water now in course of removal by a general drainage, and we shall have no reason for surprise that a country so near to Denmark should yet be considerably behind it in agricultural improvement.

The government of Sweden has done much during the last thirty years to stimulate the landholders of the country, and at the national cost, to promote the introduction of a better and more lucrative agricultural practice. And so far the growers of food now fully discharge their first great duty to the state. They raise more food than the population can consume, and are obliged therefore to seek a foreign market for their excess of produce.

When the agriculture of a country reaches this point, it may thenceforth follow either of two lines of extension and improvement. It may grow corn and wool, and other products for exportation, if a foreign market can be found; or it may turn its attention to the cultivation of the luxuries or less necessary articles of consumption, which are usually imported from abroad. In Sweden both directions have been followed. Besides exporting provisions to a considerable extent, the breeding of sheep, for the growth of wool, has been successfully promoted, and attempts are now making to cultivate the beet for the manufacture of sugar, the madia (*madia sativa*) for the extraction of oil, and even to raise plantations of mulberry for the rearing of the silkworm. The spirit of improvement is not dormant in a country which, finding itself to possess a power of production beyond the wants of its population in reference to the necessaries of life, is found to be attempting, by well considered and skilfully conducted experiments, to relieve itself, more or less completely, from its dependence upon other countries at once for sugar and for oil, for wool and for silk. Sweden is still a very thinly peopled country, and the real capabilities of her strong clay soils are yet but little understood; a large increase of her population, therefore, must take place, unless improvement stand still, before she again become dependent upon foreign countries for the first necessaries of life.

Among the individuals to whom Sweden is most indebted for the promotion of agricultural improvement during the present century are to be reckoned Charles John, the present king. Ever since he entered the kingdom as crown-prince he has directed his attention to the development of the agricultural capabilities of his adopted country. Of the instruments he has employed for this purpose, the Royal Academy of Agriculture has been the most important. This academy was established in 1813, with branches more or less active in every province. The presidents of these branch societies report annually to the academy the kind and extent of the improvements which have been effected, which are in progress, or which they recommend as capable of being brought about by the direct influence or aid of the academy or of the government. At the yearly meeting of the academy the president presents his *general* report, embracing whatever has been doing at home, and exhibiting also a sketch of the most important advances which agriculture has made in foreign countries. By these means the want of a cheap agricultural literature—greater by far in that country than in ours—has been, in some small degree, supplied. Agricultural information and the spirit of improvement have been gradually diffused among at least the most influential classes, and the way has been prepared for the last and greatest step yet taken in that country—one in which the peasantry or small holders of land, the great landholders, and the government have all joined—*the establishment and endowment of agricultural schools.*

In a country like ours, in which great improvement has already been made, and especially at the present time, when all are so anxious to see agriculture advancing still more rapidly, it cannot be uninteresting to mark the several steps which a people of kindred origin with ourselves, and having kindred institutions, situated only in a still more unfavourable climate, have taken, or are now taking, for the purpose of attaining the same great national end to which we look forward. I shall here, therefore, insert a few extracts from the annual report of the president of the academy (Poppius) for the year 1840, the latest report which had been published when I left Stockholm in August last:—

"New canals and roads have of late years facilitated communication, so important to agricultural improvement.* Extensive tracts, by the drainage of surface-water, have been converted into fruitful fields. The division of common lands and the consolidation of farms have been promoted, and money has been lent for the purpose of bringing new lands into cultivation. Measures have been taken for introducing improved breeds of horses, cattle, and sheep. The cultivation of flax has been encouraged by premiums. Schools have been established for imparting instruction in the veterinary art, in the management of forests, and in husbandry; and pains have not been spared for diffusing useful knowledge in regard to agriculture and to domestic economy, both by original native treatises and by translations from the most celebrated foreign writers. The result of all this has been, not only that Sweden, which at the beginning of the century was obliged to import food even in good years, can now export a portion of her produce even in moderately favourable seasons, but that a sense of the importance of agriculture has been gradually growing in the minds of all classes, so that applications have been made to the government from various provinces for the establishment of additional schools, in which the various branches of knowledge now deemed of importance to the practical farmer may be made more generally accessible. The tilling of the soil is no longer considered as an occupa-

* "Wherever a new road is constructed, flourishing farms at once spring up, and the carts of the countrymen press on the heels of the road-makers as the work advances."—*Second Report of the Commissioners for the Extension and Improvement of Public Works in Ireland.*

tion with which none ought to concern themselves but those who live by their daily toil, but as *a field rather in which the man of science, the landowner, and the practical farmer may labour together*, and from the hidden treasures of which the union of science, experience, and skill may extract an ample reward for the labour of each. A new career is thus opened up for the landowner, in the prosecution of which old opinions and prejudices, and the *fear of loss from the adoption of new methods, will gradually die away; for it is certain that, the more agriculture can call to her aid the stores of existing knowledge and experience, the more rapid must be the progress of her future development.*"

He then proceeds to state that, for purposes connected with the draining of marshes, the division of commons, and the consolidation of holdings, the government had expended in 1838 the sum of 174,000 dollars, and in 1839 178,000 dollars (about 10,000*l.* sterling). I select a few other particulars upon which the national money was expended in each year :—

1838.	Dolls.
For improving the breed of horses	4000
In aid of the Agricultural Institution at Degeberg	5000
For lowering the lake Åsnen, in Southern Sweden	2333
Special aid of the Degeberg school	1000
To Assessor Plageman for instructing the common people in North and West Bothnia in subsidiary occupations suited to their climate	1000
To the English (Scottish) agriculturist, Stephens, for travelling through the country and giving instructions in various departments of practical agriculture	1200
1839.	
Assessor Plageman's salary	1000
For improving the breed of horses	4000
In aid of the Agricultural School at Degeberg	5000
Special aid to same school	1000
Salary of the English agriculturist Stephens	1200
Premium for an improved method of drying unthrashed seed-corn	5000
Premium for a method of drying thrashed grain	3000
For experiments in preparing sugar from the white beet	880
For lowering the lake Åsnen	2000

The few items above selected show clearly enough the kind of objects which the Swedish government consider worthy of encouragement, and the enlightened and comprehensive views they entertain in regard to the improvement of the national agriculture. Much larger sums were voted at the last parliament for the establishment of agricultural schools, as I shall mention hereafter more particularly.

The manufacture of iron forms in Sweden an important branch of national industry, and for many years public attention has been drawn to the yearly diminishing or more difficultly attainable supply of the wood by which it is smelted. The injudicious and indiscriminate use of the axe has left many wide tracts bare which are unfit for arable culture, and which ought therefore to be the sites of the perpetual forests of the country. This has led to the establishment of a school of foresters, the pupils of which, more numerous from year to year, are spreading themselves all over the country; and, by directing the future cuttings, and by planting the sites of the ancient woods, have given reason to expect that in a few years the supply will be as ample as ever. Another result of this establishment has been, that numerous trials have been made in acclimatising other trees, and selecting sites favourable for their growth. Lands have been purchased which were found to be propitious to the oak, and millions of trees have already been planted for the use of the navy. The larch also has been found to thrive in the Swedish soil and climate, and has likewise been extensively planted.

In adverting to the proceedings of the provincial branches of the Academy, President Poppius states, among other objects to which their attention has been directed, that they have disseminated tracts upon practical agriculture specially adapted to the circumstances and customs of their several provinces—that in some districts small clubs had been formed under the name of *parish committees*, in connection with the provincial societies, by which committees those points are especially discussed and promoted which bear upon the existing condition of the several parishes, often of great extent—and that many of the provincial societies, some of them singly, others by uniting the strength of two or more provinces, had already taken measures for the establishment of district agricultural schools.

Agricultural Schools.—Since this report was published, the subject of agricultural schools has been more generally taken up in Sweden, and provision has even been made by the diet for promoting, encouraging, and endowing with a yearly revenue every such school—not exceeding one in each province*—which shall hereafter be established. I am not aware of the exact terms of the resolution or grant made for this purpose, but I believe one of its provisions is to the effect that an annual endowment will be given by the state, equal to the interest, at five or six per cent., of the money subscribed and expended upon the institution by the proprietors and other inhabitants of the province, so long as the institution is maintained. In addition to this, however, they have already given special grants of money to those previously in existence, and of portions of the national domains as sites for the intended schools and school-farms, where these domains happen to be conveniently situated for the purpose within the several provinces.

The first school was established by Mr. Nonnen at Degeberg, on the south-eastern shores of the Lake Wener, not far from the town of Lidköping, and its success, both in attracting pupils and in imparting obviously useful information, has been such as to give rise to the numerous efforts, already alluded to, for the establishment of similar schools in other parts of the country. It includes two classes of pupils, one consisting of proprietors, sons of proprietors, or such as are likely to farm or to superintend larger tracts of land; another of intended overseers, or of small proprietors, who, though possessing land of their own, must till it, in part at least, with their own hands. To the former class higher branches of learning

* In Sweden there are twenty-four departments (Läro), and about twenty schools are talked of.

are taught; to the latter special instruction is given in those various departments of handicraft which, in a country so thinly peopled, are likely to be useful to the labouring farmer. In the present state of Sweden this distinction of the pupils into classes is of obvious utility, and is copied most probably from the Swiss schools of De Fellenberg; it may be a question with some how far it would be admissible in any schools of the kind which may hereafter be established in our own islands. The total annual expense of a pupil of the higher class in the Degeberg school amounts to 30*l.* or 40*l.*, equal, I should think, to twice the sum in England; I am not aware of the amount of expenses incurred by pupils of the second class. This Degeberg school is indebted for its existence almost solely to the exertions of its director, Mr. Nonnen. It has been aided from time to time by grants from government; free pupils have all along been maintained at it both by government and by the provincial societies, and it is regarded as the model upon which all the others are to be constituted. A school-farm is attached to it, on which new instruments and new modes of culture are tried. Among others, the growth of turnips and other green crops hitherto almost unknown in Sweden has been successfully attempted. The sheep in Sweden are in winter fed much upon potatoes, but in various provinces trials are now making on the growth both of turnips and of clover.

An agricultural school has already been some years in operation for the united provinces of Christianstad and Malmö, in the south of Sweden; one farther north, for the province of Nökoping, is under the direction of Mr. Nathärst, the secretary of the Academy of Agriculture; and others are more or less advanced. To the Agricultural Society at Upsala the state has been very liberal. At the last parliament it was decided that the royal domain of Ultuna, in the neighbourhood of Upsala, should be made over to this society for the establishment of an agricultural institution. The property was then let on lease at a grain rent of 600 tons, or 6,000 dollars (330*l.*) a-year. Until the expiry of the lease this rent is to be laid out at interest, to accumulate for the purpose of providing a fund for erecting the necessary buildings; after which the rent of that portion of the estate which is not required for the purposes of the school-farm will form a permanent endowment. The domain is capable of great improvement, and, besides 200 tonner of arable land (240 acres), contains a large tract of rich pasture land on the borders of the Fyrisa, the stream that passes Upsala and empties itself into the Macher a few miles below that city. A committee of the larger landed proprietors has been appointed to carry the intentions of the legislature into effect, at the head of whom is Baron Rrömer, the governor of the province, who has interested himself the most in securing the adoption of the measure. Besides the benefit which this institution is likely to effect in introducing better modes of the culture among the numerous small proprietors who abound in this province, its proximity to Upsala will enable it to benefit the whole of Sweden. Upsala has been styled the Oxford of Sweden. To its university the sons of the nobility and of the large proprietors almost exclusively resort; it cannot therefore be unattended with advantage to place under the eyes of such young men the example at once of a well-cultivated farm and the means of instruction as to the mode of equally improving their own possessions. This consideration no doubt had its weight with the legislature in inducing them more largely to endow the Upsala school.

We shall obtain a still more instructive insight both into the state of agriculture and into the working of the spirit of improvement in Sweden, if we glance slightly at some of the special exertions which have been made in the several provinces, as recorded in the president's report.

In *Christianstad* and *Malmö* three beet-sugar manufactories had been established; and on all the large properties horses and cattle had been introduced for improving the breeds. A royal medal had been given to Isaac Segerstrom for improving and planting drift-lands. He prepared the land for this purpose by sowing the land first with *Epilobium angustifolium* (rose-bay willow-herb), which throve well and helped to fasten the land. It is added, from experiments made at the Technological Institute, that this plant may be advantageously employed for tanning leather, so that, besides sowing to fix drift lands, it may be used economically in the arts.

In *Holland*, at the expense of the provincial society, Mr. Stephens had visited the province for the purpose of giving advice as to the improvement of the local agriculture, and especially as to the means of draining certain extensive marshy tracts. Among other results, it is stated that by lowering the lake Ramejön, at a cost of 14,000 dollars (800*l.*), 4000 tonner of land would be converted into good arable fields. *Durham shorthorns* had also been introduced into this province, and prizes had been given to the best ploughmen.

In *Calmar* the alternate husbandry and improved rotations had been introduced with such benefit as to increase the produce on the home-farms of some of the proprietors to two or three times the amount of what could previously be depended upon. The plough was beginning gradually to supersede the Ard,* even among the peasantry. The cultivation of the white beet, for sugar, was extending; and an extensive manufactory of syrup from potatoes has been established. At the request of the Provincial Society, Mr. Stephens had also visited the district, and given much useful advice and agricultural instruction to the farmers.

In the island of *Gothland* improvement is extending by the gradual reclaiming of the wide tracts of moor and marsh which there exist, and by the partial introduction of a rotation of crops. Rape, clover, and root crops have been cultivated with advantage. Pupils who have returned from Degeberg, after completing their education, have brought with them the knowledge of improved methods of culture, have shown that they are locally applicable, and are gradually producing the conviction of their superiority over the modes usually followed. Experiments have been made in the cultivation of the beet and in the manufacture of sugar, and *a bone-mill* has been established.†

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* Ard, or Ardret, is the clumsy and inefficient native plough.

† In a paper upon the use of bone-dust as a manure, contained in the "Transactions of the Swedish Academy of Agriculture," complaint is made that bones could not be procured for crushing, in conse-

Sixteen hundred young mulberry-trees, sent from Stockholm, have been planted near Wisby (the capital of the island), and are thriving well.

In *Kronoberg* the surface of the land is covered with boulders and other stones to a vast extent—the cost of removal amounting commonly to 100 dollars a tunne land (about $1\frac{1}{5}$ English acres). This difficulty in the way of arable culture, the industry of the inhabitants is gradually overcoming,* and the use of the plough is becoming more general. In 1835 the local society engaged Mr. Johnson, I believe a Scottish agriculturist, to remain in the province for five years, for the purpose of giving advice chiefly as to the draining and after-culture of marshy lands. By his assistance it has been ascertained that large tracts may be brought into a productive state; and already, by the draining of lakes chiefly, about 2,000 tonners of fertile land have been gained in this province.

In *Jonköping*, public trials of different ploughs and other agricultural implements had been made, and their merits explained. Arrangements also had been made by the society for supplying them to the local farmers, of the best construction and at the cheapest rate.

In *East Gothland*, the alternate husbandry was becoming more common, and especially the cultivation of potatoes was extending, as a winter food for stock, and for the manufacture of brandy.

In *Elfsburg*, the society had endeavoured, by the distribution of well-known books, to diffuse information on those subjects to which it is of importance that the attention of the farmer who is striving to improve his condition should be first directed; the raising of green crops was also extending. The society continued to maintain a pupil at Dageberg.

In *Orebro*, attention has been chiefly directed to the introduction of a better management of cattle within the farm-buildings, as one of the methods by which the local agriculture can be most certainly promoted. For this purpose prizes have been offered to the persons who, under certain circumstances, can show the best reared and fed cattle of their own breeding. By these premiums not only is a better farm-management encouraged, but also a larger growth of green food for the cattle.

In *Wermland*, the agriculturist, Mr. Johnson, had for several years been engaged to spend two months yearly in the province, to give advice and instruction as to the draining of marshes and lowering of lakes—and the applications from different proprietors had been so numerous, that they could scarcely all be complied with within the time. Prizes had also been given for the best ploughing. As a proof of the extension of the cultivation of artificial fodder, it is stated that though the society had in one year supplied the farmers of the district with 7,000lbs. of clover and Timothy grass seed, it was far from being sufficient to meet the demand.

It is added that this society had also brought from the province of Kronoberg a skilful wooden-shoemaker, being anxious to supply the demand for such shoes, both on account of their economy and of their preserving the feet of the peasantry from wet, to which in that province they are much exposed.

In *Westmanland*, it is said that the natural meadows, in former times fertile, having become less productive, the method had been adopted of ploughing them out, and after a few crops laying them again down to grass. The gradual wearing out of old pasture lands is here also observed, as it is so extensively in Cheshire. In this province the growth of flax, of white beet, and of clover was also extending; marl had been discovered, which was already employed in the preparation of composts; and a considerable extent of meadow land had been laid under irrigation, for which the Hjélmar canal afforded great facilities. Here also attempts were making to introduce the wooden shoe.

In *Giflebory*, the agriculturist, Mr. Stephens, had been called in, and had advised the inhabitants of the province in regard to available methods by which the local agriculture might be promoted. The manufacture of potash introduced by the society a few years ago continued to extend.

In *Nyköping*, the desire of improvement was restrained among the body of the people by the want of capital. Among the large proprietors the alternate husbandry was extending. Some new land had been brought into cultivation, some of the old worn-out pastures had been ploughed up, to be afterwards laid down again with seeds, and some extent of oak plantation had been formed in the province.

In *Upsala*, the cultivation of clover and the artificial grasses was extending; prizes had been given to the smaller farmers for sheep and cattle reared from native stock, and forty-five head of bulls and cows had been imported from foreign countries by the larger landowners. Operations were also in progress, after a plan of Mr. Stephens's, for bringing into an arable state 2,000 tons of naturally fertile land. Many English drill and turn-wrest ploughs had lately been introduced, a bone-mill had been erected, and the society had caused that part of "Professor Lowe's Practical Agriculture" which relates to turnips, potatoes, and other roots, to be translated for distribution in the province. The use of wooden shoes had also been encouraged.*

In *Fahland*, the alternate husbandry, the use of bone-dust, the preparation of composts, and the sowing of winter corn, are becoming more prevalent.

In the more northern provinces, where corn ripens badly, the chief encouragement has been given to the draining of wet carrs and marshy lands, of which there are a great extent in this part of Sweden. By the multiplication of a hardy

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quence of the high price given for them *for exportation to England*. "And," he adds, "since we cannot give the price for manures which can be well afforded in a country where wheat brings three times the price it does with us, the sale of bones must decrease unless the Government *lay a duty upon the export of the article*."

* In ploughing up some of the old grass-fields in Northumberland, between North and South Tyne, I am informed that it has sometimes been necessary to remove as much as 100 tons of stones from a single field, at a cost of 6*l*. to 8*l*. per acre. These stones are chiefly boulders of trap or whinstone, sometimes of large size.

* I have quoted these exertions for the introduction of wooden shoes to be worn over the leather boot, not only in evidence of the kind of interest taken by the societies in the welfare of the peasantry, but also of the extent to which surface water still rests upon the land in many of the Swedish provinces.

race of stock, and by the introduction of subsidiary occupations, the value of these provinces to the state and the comfort of its inhabitants will, it is conceived, be most essentially promoted. Prizes, therefore, have been given for surface-draining and improving such waste lands; the society at Umea had maintained a pupil at the *Herd-school* in Smaland; and the manufacture of potash and saltpetre* had been greatly extended.

In *Jemtland*, one of the western districts of this northern region, a parish committee had been formed in every parish, from which the most beneficial results had followed. The central society, by these means, had been able to collect information in regard to the most remote parts of their wide province, while the members of each parish committee obtained in return advice, instruction, and assistance in reference to their own most pressing wants.

It is in these remote provinces, where long winters reign, and where even the summer season does not bring with it the same full and constant employment which in arable districts the practical farmer meets with, that subsidiary employments, independent of the seasons, become of most importance; hence the anxiety to promote the manufacture of potash and saltpetre, articles of export for which a ready sale can be found, and in exchange for which other useful commodities may be readily obtained. From the northern provinces of Sweden the finest and most highly prized linen of home manufacture is brought. This manufacture affords a certain amount of occupation for the long winters. The mission of Assessor Plageman, for which, as I have already mentioned, an annual grant has been given by government, has been chiefly for the purpose of instructing the inhabitants of East and West Bothnia in the extraction of turpentine, and in the preparation of tar, pitch, and other products which their native forests are capable of yielding. This, it will be seen, is another important method of increasing the comfort and wealth of a growing population.†

It is far more usual in continental countries than among us for the larger farmers to follow some branch of agricultural manufacture, if I may so call it, by which part of the raw produce of the land is converted into an article of more ready sale, and perhaps of larger profit. A distillery is the most common appendage to the farm. By the manufacture of brandy large quantities of potatoes are worked up into an easily transported article, while the refuse helps to feed the stock. More rarely a brewery is attached; but they require more skill, the produce is more bulky, and the raw material itself, from which the liquor is prepared, is of as easy transport, and generally meets as ready a sale. The manufacture of sugar from beet is pronounced in France to be the most advantageous and one of the most *natural* adjuncts to the ordinary routine of the farmer; and in every part of Sweden where the beet flourishes efforts are now making to introduce it as a subsidiary occupation on the larger properties. A method has been discovered of preserving the beet during the long winter without alteration of the sugar in its sap, and thus a sufficient stock being laid in, a new means of employment for the people during the snowy months is likely to be in certain districts obtained.

The above sketch of the march of improvement in Sweden, and of the line it is taking in the several provinces, will not I trust, have proved fatiguing to my reader. To myself the more detailed account contained in the President's report has proved very interesting. Each statement of what has been done tells also of much that yet remains to be done. The different steps adopted in each province show how much circumstances must modify the course of the most zealous and enlightened improvers, and how impossible it is to lay down any general plan by which the greatest amount of good can in *every locality* be effected at the least cost of money and of time. Here better instruments should be first introduced—there a better rotation; here agricultural tracts ought to be first disseminated—there a skilful agriculturist, by personal counsel and persuasion, will effect the most; here exhausted pasture should be ploughed up—there old tillage land laid down to grass; here one piece of land is robbed to enrich another—there manures are altogether wasted; here better breeds of cattle are the first thing required—there an efficient system of drainage would most largely increase the produce.

It cannot be doubted, however, that the mode adopted in Sweden of publishing officially and diffusing through all the provinces a knowledge of what is doing in each, must be productive of much good. The improver in each district will benefit by the exertions made in other parts of the country. He will say, can this not be done here? will beet, or clover, or turnips, not grow upon some of our land? would not a visit from the agriculturist be of great use here also? would our small farmers not be benefited by some little tracts upon improved modes of husbandry, of rearing cattle, or of domestic economy?

I may be permitted perhaps to ask, if some of our large county societies might not imitate with advantage some of the proceedings of those in Sweden? It is the nature of all human institutions to re-act upon one another. Sweden looks up to British agriculture as the model for imitation. Her agricultural societies look with admiration to the proceedings of ours. They have selected what is good in our procedure, so far as it was adapted to their different circumstances; and, by the suggestions of their own judgment, they have added some things which nearly all our societies may find it beneficial to imitate.

I have no doubt that, had we any general statement of all that is now doing by all the agricultural societies in our own islands, we should find that there was not only no practical idea which

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* The manufacture of saltpetre is an old occupation in Sweden. In certain provinces the occupier of each farm (hemman) was bound to deliver so much saltpetre annually to the Government. In some districts this is now commuted into a money payment, but it is still called the saltpetre skaft—the saltpetre tax.

† The natives of the northern provinces, both men and women, frequent the more southern districts in quest of employment. Every one who has been in Stockholm has observed the numerous Dalecarlians who, in their native costume, labour in the streets of that city. They are generally preferred, where assiduous labour is wanted, to the natives of the district. In the neighbourhood of Upsala, I was informed, that of the females employed in agricultural labour, the native received 20, and the Dalecarlian woman 27 skillings a-day (6d. to 8d. sterling). The Dalecarlians live upon 10, and send the rest home.

as a nation, we have to borrow from other countries—none that in one corner of the empire or another is not known, and more or less extensively acted upon—but we have no such record. The leaders of most societies are only partially aware of what is elsewhere going on, and thus the idea not occurring to them, the opportunity for promoting this or that good purpose is permitted to pass away. It might be a laborious task for the presidents of our national societies to give an annual report of what has been recently effected in our several counties; but it would be highly useful, not only as a record of past exertions, but as an index at once and a stimulus to new improvements.

I shall make only one or two further observations in regard to Swedish agriculture. Five-sixths of the surface are said to consist of clay. This clay is often of a pale colour, runs together, and in dry weather becomes very hard. It is at all times difficult and expensive to work, but it is pronounced by good English judges to be well adapted to the growth of wheat. At present the only drainage practised is by open surface drains; even with this good crops are frequently obtained. The idea prevails among the leading improvers that covered drains (our furrow-drain system) are not adapted to their climate—that they would be destroyed, or rendered more or less inefficient, by the severe frosts. Experience, I think, will show that this apprehension is unfounded, and that the construction of the drains may be so modified as to secure their permanence. When, therefore, Swedish agriculture has gone through the first stage, along which it is now travelling—when the surface water is carried off from the lowlands and marshes, there will remain for it still a greater and more expensive undertaking—the furrow-draining of the stiff clay lands. This is the task which English agriculture has now undertaken, by the accomplishment of which she has almost certain hope of doubling the produce of her yet undrained clay soils, but in which, with all her great resources of capital and labour, she can make only a slow advance.

But another important step must in Sweden precede the outlay of such sums as a general drainage of this kind would require. Notwithstanding the exertions now making, and the improvements actually in progress, it is said that nearly one-half of the arable land of the kingdom is still year by year in naked fallow. A crop of corn, and a naked fallow alternately, is the old system of Swedish cultivation. Improved rotations have assumed first the form of naked fallow, rye, barley, or wheat; and after this, in some cases, three years of grass. The extension of green cropping, by rescuing a large portion of this naked fallow from unnecessary idleness, will alone add largely to the national produce. A better drainage will more naturally follow or flow from the accumulated capital to which this more productive rotation may be expected to give rise.

Durham, 1st Feb., 1843.

INCOMBUSTIBLE THATCH.—It has been proved by repeated experiments that straw, saturated with a solution of lime, or common whitewash, is incombustible. This fact is of great importance to the rural population; especially as thatch is not only rendered fire-proof, but more durable. A solution of alum has been tried, but being soluble, the rain destroys its virtues.

TO THE HON. SIR EDWARD HALL ALDERSON,

BARON OF THE EXCHEQUER.

MY LORD,—At the late assizes held at Buckingham, where your lordship presided at Nisi Prius, a cause was in part heard, which your lordship will probably recollect—Robinson *versus* King. It was an action by a landlord against his late tenant, principally for not leaving, upon quitting his farm, 70 acres of naked fallow, and for carrying off from the farm the hay made in the last year; the landlord setting up, by the first count in the declaration, an agreement called a lease, made before the tenant was born, and with a landlord which the tenant never knew. Your lordship very properly told the jury (special) that the agreement, so called, had nothing whatever to do with the defendant, and the jury found accordingly. The second count was so framed, as that, if the experiment in the first count failed, the defendant might be put upon his trial a second time for not having quitted according to the custom of the county. No sooner had the second count been opened, than the attorney and counsel on both sides appeared desirous of referring the matter of that count to arbitration, in which your lordship concurred, but upon, as it appeared to me, no sufficient grounds; and that is what the defendant complains of, and which his friends complain of, and which I am sure your lordship will admit is not without reason, after reading the following statement:—

The defendant succeeded his father in the farm in question several years since, and continued to hold it as tenant from year to year, until Michaelmas, 1842; there was no agreement in writing between the parties, as was proved in discussing the first count. In March, 1842, the plaintiff bought the farm, which was stated in the printed particulars of sale to be about 300 acres, and all of it arable land. On the 23rd day of the same month the plaintiff gave the defendant notice to quit at the Michaelmas following; a treaty then commenced between the plaintiff and defendant for a new take, but not agreeing the defendant quitted at Michaelmas, agreeably to the notice; the landlord in the meantime letting the farm to a Mr. Stow, at, as he informed me himself, a considerable advance of rent. Mr. Stow, as in-coming tenant, paid to the defendant, as away-going tenant, for the grass seeds sowed with the spring corn and for the roots of the sainfoin, but made no claim for deficiency of naked fallow, or for hay carried off from the farm, nor did the defendant at that time make any claim for chalking of the land, for new fences, for laying down land to grass, or for grass or clover leys, manure, or other improvements on the estate, never dreaming that the plaintiff intended to claim damages against him for not leaving 50 acres of naked fallow, and for a portion of the hay made in the last year carried away; but in that, it appears, he has been deceived. The estate, my lord, is in the highest condition, and altogether one of the best managed farms I ever saw. Instead of leaving 50 acres in naked fallow, the defendant has actually left 119 acres in green and fallow crops, in old grass-ley laid down by himself, clover-ley and sainfoin-ley, all in the very best possible condition, and worth to the in-coming tenant several hundred pounds. That this condition of the farm must have had considerable influence on Mr. Stow and his advisers when he agreed to take it at a rent far exceed-

ing that previously paid by the defendant, cannot be doubted—given too, be it remembered, subsequently to the passing of the new corn and tariff laws, which, beyond all controversy, have reduced the yearly value of almost every farm in the kingdom ten per cent. at the least. A fallow, if necessary to clear the land from perennial weeds, as couch grass, to be effective should receive the first ploughing shortly after the severance of the crops of the previous year, and would require to be ploughed at least three times, drag-harrowed, and otherwise cleansed before the following Lady-day; in this case it was impossible to do so. The plaintiff bought the farm, is before stated, in March, and on the 23rd of the same month gave the defendant six months' notice to quit; how then, I beg to ask, was it possible for him to make a fallow, even if the land had required it, which it did not. He could then have done no more than what the new tenant, Stow, has since done, namely, plough up a porton of the ley grounds for turnips, and dress the land with the dung then in the farm-yards; but would that have served either the landlord or the in-coming tenant? Quite the contrary. The new tenant had no ploughings or tillings to pay for on entering; he had sixty acres of sainfoin to lay up for hay. He has made the hay, the produce of which is now in his stack-yard, well saved and thatched in three ricks, not less than a hundred and ten tons, worth at least 350*l.*; all which sainfoin ley the away-going tenant might, had there been time, have broken up for fallow, and for the ploughing and labour of which the landlord or the in-coming tenant must have paid the defendant a considerable sum. It may, however, possibly be enquired how it happened that the new tenant did not enter upon the ley ground soon after the plaintiff had given the defendant notice to quit. The answer is, that the farm was not let for a considerable time after the notice had been given, and that the new tenant did not attempt to enter until a week before Michaelmas, when he began to cart out the dung, and when an amicable arrangement was come to, to suit the convenience of both the away-going and in-coming tenants, but with which the landlord had nothing whatever to do. This, my lord, is a true statement of the case in question—a case, in my judgment of unparalleled hardship—one, I am glad to say, seldom heard of in the dealings of the ancient aristocracy with their tenants. Earl S——, the Dukes of R——, and B——, and hundreds of other such landlords, would scorn to have their names mixed up with transactions such as the one complained of. It is only the mean and mercenary, griping, grasping landlords, who, having made money in their dealings with the aristocracy, buy their estates and become the veriest tyrants of the soil. And now, my lord, I come to the object for which I have ventured to address your lordship. It is quite notorious that the attornies and counsel on both sides, after all the costs of going to trial have been incurred, and the counsel paid their fees, but too frequently cut the matter short, and send the case to a reference, purely to make further costs. In matters of long out-standing accounts I do not object to that course, because their investigation in court would be a waste of the public time; but in cases like the one in question, having only two counts in the declaration, and one of those counts gone into and decided by the jury, the only other count being whether any custom existed to bind the defendant as to the mode of quitting the farm, and if so, what that custom was, which enquiry could not, at the utmost, have occupied more than two hours in the hearing. I do think that your lordship ought to have told both the attorneys and counsel that it was cruel to torture the parties with a reference in that state of the enquiry, which could not fail to double the costs, wherever the burden might fall. The witnesses on both sides were in court—a great number I admit, perhaps twenty or thirty, but their testimony would have been confined to two questions only, viz., had the estate been ill or well farmed; and what was the custom as to the taking away of the hay grown in the last year by the away-going tenant? Unfortunately the question of naked fallows had, before the trial, been disposed of by a payment of money into court; that, to say the least, was a great mistake, and will I fear go far to perpetuate one of the greatest evils this country knows—an evil which, in my conscience, I believe prevents the growth of food for cattle and the production of corn equal to, or exceeding the whole amount of corn and cattle imported into this from foreign countries, besides occasioning the loss of two years' rent, rates, labour, profit and capital to the farmer in the production of one crop of wheat. I do not stop to inquire which of the parties it is probable the referee may visit with the costs of the reference, or where the reference is to be held, but assuming that it will be held at Great Marlow, the market town nearest to the estate, and that the reference will occupy two days, there will be first the referee, a barrister, to be paid, then a counsel on each side, then the lawyers, with a clerk each, all from London; then the professional witnesses as surveyors, each travelling a distance probably of 20 miles, a host of farmers travelling upon an average probably ten miles, altogether at a cost of probably not less than £200, and all for what? Why to settle a question involving at the utmost a sum less than one hundred pounds—a sum which if it fall on the poor tenant to pay, will with the costs, if it do not quite ruin, will cripple him in his circumstances for years to come. That mine is not an isolated opinion on the inexpediency of *naked fallows*, unless under the circumstances hereinafter named, will appear from the following extracts from works of undoubted authority:—

Xenophon, in his "Æconomics," relates a conversation between Socrates and Ischomachus on the science of husbandry (page 99), recommending fallowing, but only for the purpose of killing the weeds—cultivated green crops for agricultural purposes were not then known. All the other ancient writers, Varro, Cato, Pliny, and Collumella, down to the times of Markham, Lord Verulam, Evelyn, Ray, Grew, Boyle, Mortimer, Hartlib, and Jethro Tull treated fallowing as a means of destroying weeds and roots prejudicial to agriculture. Tull first introduced green crops and hoeing upon an extended scale, and a profitable and better mode of destroying weeds than fallows. (The hoe used by Tull is now in the museum of the Royal Agricultural Society of England, in Hanover-square.)

Jethro Tull, in his "Essay of Vegetation and Tillage," (1731, page 38), says, "The reason why land is enriched by lying long unploughed is, that so very few vegetables are carried off it, very little being produced, the exhaustion is less than what is added by the atmosphere, cattle, &c. But when 'tis ploughed a vastly greater quantity of vegetables is produced and carried off, more than by the old husbandry is returned to it."

Holland, in his "Survey of Cheshire," says (page 128), "The more frequent substitution of a green crop for a summer fallow, constitutes indeed one of

the most material improvements in modern agriculture."

In the "Modern Land Steward," (1801, edited by Lawrence (page 79), it is stated, "I am fully convinced by long observation, that the old obligation to *fallow* ought to be omitted in every lease; for in *fallowing* counties the farmers are sufficiently attached to it from prejudice; but as a reason of more weight it is not possible to keep the needful quantity of live stock upon a farm under the following system; in other words, it is the grand bar to improvement." And again, at page 210, "I premise a hoeing crop, as that is in a considerable degree a fallow, indeed a much more effectual than most of the common fallows."

Sir Humphrey Davy, in his "Elements of Agricultural Chemistry," says (page 20), "The chemical theory of fallowing is very simple. Fallowing affords no new source of riches to the soil, it merely tends to produce an accumulation of decomposing matters, which, in the common course of crops, would be employed as it is formed; and it is scarcely possible to imagine a single instance of a cultivated soil which can be supposed to remain fallow for a year with advantage to the farmer. The only cases where the practice is beneficial, seems to be in the destruction of weeds and for cleansing foul soils. The benefits arising from fallows have been much over-rated. A summer fallow or a clean fallow may be sometimes necessary in lands overgrown with weeds, but is certainly unprofitable as part of a general system in husbandry. It has been supposed by some persons that certain principles necessary to fertility are derived from the atmosphere, which are exhausted by a succession of crops, and that those are again supplied during the repose of the land, and the exposure of the pulverized soil to the influence of the air, but this, in truth, is not the case. When weeds are buried in the soil, by their gradual decomposition they furnish a certain quantity of soluble matter; but it may be doubted whether there is as much useful manure in the land at the end of a clean fallow as at the time the vegetables clothing the surface were first ploughed in. Land, when it is not employed in preparing food for animals, should be applied to the purpose of the preparation of manure for plants; and this is effected by means of green crops, in consequence of the absorption of carbonaceous matter in the carbonic acid of the atmosphere."

Naismith in his "Elements of Agriculture," (1807, page 372) thus treats the subject:—"As the repeated turnings of summer fallow are not adapted to make any permanent improvement in the soil, so neither does it appear that any additional fertilizing principles are thereby attracted from the atmosphere."

The Earl of Dundonald in his "Agricultural Chemistry" affirms, "that by exposing the soil on all sides to the action of the air in the course of summer fallowing, the carbonaceous matters it contains are oxygenated, and thus become insoluble," can only be restored by the application of alkali. "I have hazarded a conjecture," says Naismith, "that nitrogen or its compounds, combining with the soil, makes changes in it favourable to fertility. Whatever amelioration, therefore, nitrogen may operate on the soil, summer fallow can have no share in it. But if summer fallow do not derive benefit from the principles of the atmosphere, it may occasion prejudice; the soil frequently contains metallic oxides, and that the farther those oxides are removed from the reguline or metallic state, they are the more offensive to vegetation. Now as metallic substances are oxidated by combination with oxygen or carbonic acid, so far as summer fallowing exposes these substances more to the influence of the gases, so far is the soil prejudiced by summer fallowing."

Middleton in his "Survey of Middlesex" (1813) says, "I have good reason to think that the idea of giving rest to land is now exploded in every part of the country, except in a few instances; and even in these, I have not any doubt but the superior crops and evidently higher profit of their neighbours will soon convince them, that the raising of clean smothering green crops, and feeding stock with them on the land, is not only much more profitable, as far as relates to the value of the crops substituted in lieu of fallows, but is also a more effectual method of procuring large crops of wheat or any other corn which may succeed the green crop."

"Before the introduction of green and root crops, fallowing was universal, and it was then in a great measure indispensably necessary for the purpose of cleansing the land. By fallowing, not only one year's rent, taxes, assessments and labour are expended, but likewise the vegetable matter contained in the soil is rendered less fit to promote the growth of the subsequent crops; its only use is occasionally destroying root-weeds and insects. These cases which are supposed to render fallowing necessary never happen to a good farmer; they only take place with the sloven, the ignoramus, and when a knave is about to quit his farm! The smothering and hoeing crops which cover the ground entirely and cause a stagnation of air, preserve the moisture of the ground and promote the putrefaction or decomposition of vegetable matter, is infinitely more likely to prove economical and beneficial than any system of fallowing."

In the "Cyclopedia of Practical Husbandry" lately published, edited in part by the Rev. Wm. Rham, the writer glances at what may be supposed to be the arguments of those who cling to the old practice of summer fallows, and then proceeds to show the superiority of the alternate system, adding, "surely then a mode of husbandry which without sensibly diminishing the supply of corn greatly increases that of butcher's meat, of dairy produce, and which at the same time improves the land to the utmost, has this advantage—in proportion to the progress of green-crop culture will be the relinquishment of the system of entire summer fallowing, which, after a farm has once been got into proper order and with a regular rotation of ameliorating and cleansing crops alternating with green crops, is quite unnecessary."

In a pamphlet entitled "Remarks on the present state of Agriculture" (1836) by the Rt. Hon. C. S. Lefevre, Esq., M.P., now speaker of the House of Commons, among many very judicious remarks (at page 8) is the following:—"The abundant crops of wheat of the last three years may, in some measure, have made up for the deficiency in price, but wherever that has been the case the consequence to the cultivator of heavy soils, where it is the custom to grow wheat after a fallow, and where the fixed charges upon the land, such as rent, rates, &c., for *two years*, are thrown upon that crop, must be ruinous. It is not, therefore, a matter of astonishment that those farmers who are unfortunately placed under these circumstances should be loud in their complaints of agricultural distress, and it is only to be regretted that they have been taught to look to parliament for that relief which can only be

obtained by a reliance on their own resources, and by an improved system of cultivation."

Liebig, in his "Agricultural Chemistry" (1842, page 171), treating of the effects of various manures on land, says—"A certain portion of the phosphates must be lost every year, being removed from the land with the corn and cattle. The loss thus suffered must be compensated for, in a well-managed farm, and this is partly done by allowing the fields to lie in grass (page 140). Fallow is the term applied to land left at rest for further disintegration. It is the greatest possible mistake to suppose that the temporary diminution of fertility in a soil is owing to the loss of humus; it is the mere consequence of the exhaustion of the alkalies." And at page 147, under the head of "fallow crops," he adds—"The fallow-time is that period of culture during which land is exposed to a progressive disintegration by means of the influence of the atmosphere, for the purpose of rendering a certain quantity of alkalies capable of being appropriated by plants. Now it is evident that the careful tilling of fallow land must increase and accelerate this disintegration. For the purpose of agriculture, it is quite indifferent whether the land is covered with weeds or with a plant, which does not abstract the potash enclosed in it. Hence beans, peas, lentils, vetches, lucerne, broad leaved clover, sainfoin, and the other green crops which are termed fallow crops, and the cause wherefore they do not exercise any injurious influence on corn which is cultivated immediately after them, is, that they do not extract the alkalies of the soil, and only a very small quantity of the phosphates."

(Page 151). "Agriculture has hitherto never sought aid from chemical principles based on the knowledge of those substances which plants extract from the soil on which they grow, and of those restored to the soil by means of manure. The discovery of such principles will be the task of a future generation; for what can be expected from the present, which recoils with seeming distrust and aversion from all the means of assistance offered it by chemistry, and which does not understand the art of making a rational application of chemical discoveries? A future generation, however, will derive incalculable advantage from these means of help."

This would indeed be a sad reflection upon the age in which we live, but I confess I cannot think so unworthily of the agriculturists of this great country. Many are, I know, at this time quietly and judiciously experimenting on their soils and crops, and are adapting composts and manures to these crops on the principles laid down by Sir Humphrey Davy, the immortal author of the "Agricultural Chemistry," of whom Liebig says—"Since his time no chemist has occupied himself in studying the application of chemical principles to the growth of vegetables and to organic processes." I have endeavoured to follow the path marked out by Sir Humphrey Davy, who based his conclusions only on that which was capable of enquiry and proof. This is the path of true philosophical enquiry, which promises to lead us to truth—the proper object of our research.

Dr. Daubeny, professor of rural economy in the university of Oxford, in his second lecture on agriculture (1841, page 32), states that—"In the Hebrew law every seventh year was set apart as a period of entire rest, with a view of preventing the soil from being worn out by continual tillage." That which in the Mosaic dispensation had been enjoined as a religious duty, was adopted also in the early times of Greece and Rome from motives of expediency.

Even so late as the time of Virgil it seems to have been the practice to allow the arable land to lie fallow every alternate year; hence it was not then fully understood that a judicious rotation of crops would stand in the place of fallowing.

In the age of Virgil some progress seems to have been made towards that which constitutes perhaps the grand improvement of modern times—the rotation of crops; for the Roman poet, after recommending the arable land to lie fallow every alternate year, adds "that the substitution of pulse, or other leguminous plants, will refresh the soil as well as the practice of fallowing;" for thus, too, says he, "by a change of crop the ground is made to rest." He, however, did not seem to know that a rotation might be introduced which should entirely supersede the necessity of fallowing in many soils, and render its recurrence much less frequent in all.

Whatever, therefore, may be the comparative merits of the ancient and modern systems of husbandry in other respects, it would seem that, in this one at least, a vast step has been gained since the days of Virgil and Collumella.

It is clear then from the foregoing extracts, that every writer on agriculture and agricultural chemistry which has been quoted since the days of Jethro Tull to the present day, agrees that naked fallows are in no respect profitable to the farmer; on the contrary, that they occasion loss of rent, of rates, taxes and labour, profits and capital, from which he derives no benefit whatever, whilst the community is deprived of large quantities of both corn and cattle, and the other benefits which abundance always produce.

An instance of the leaning of a judge in favour of fallow crops over naked fallows may be inferred from the following case:—Happening to be at Oxford during the assizes, where the late Baron Vaughan presided at Nisi Prius, among other causes to be tried was an action brought by an occupier of land in an open field (Ewelm, I think), for damage done to a crop of vetches by the cattle of another occupier, turned out to depasture on the head-lands, road-ways and baulks, the remainder of the field being naked fallow. The plea of the defendant was, that the plaintiff's land, according to the custom, ought to have been naked fallow, and not so cropped; and that therefore he, the defendant, was not liable, as alleged, in damages to the plaintiff. I was not subpœned by either party, but happening to sit in court by the attorney for the plaintiff, I suggested that *fallow and fallow crops were synonymous terms*, which being communicated to the plaintiff's counsel, he mentioned the suggestion to the court. Taunton, K. C., objected to the interference, but the judge over-ruled the objection, when it was agreed that his lordship, only, should examine me. The result was, the judge summed up in favour of the plaintiff, observing, that "in these days it was surprising that any one should be found desirous of perpetuating a practice so injurious to himself and to the common weal as that of naked fallows. He agreed with the witness, that fallow and fallow crops meant the same thing, but that fallow crops were a superior mode of fallowing, and that therefore nominal damages would meet the justice of the case, because probably the first that had been decided, embracing the liberal and not the literal interpretation of the term 'fallow.'" The verdict of the jury was, damages one shilling. This took place about fourteen or sixteen years since.

A great many other authorities might be quoted in favour of the alternating leguminous with farinaceous crops, or, as Dr. Daubeny expresses it, "restoratives with exhausting ones, but unfortunately, as it appears, without probable benefit to the defendant in the action in question; still I will hope that under the terms suggested by your lordship that the reference should include "all matters in difference between the parties," the defendant may yet have a recompense for the immense improvements which he has made upon this estate.

I have the honour to be, my lord,
Your lordship's very obedient
and humble servant,
Tottenham, July 25, 1843. JAMES DEAN,

(A land-surveyor of fifty years' standing, and for four years last past a Member of the Council of the Royal Agricultural Society of England).

THE MOST EFFICIENT AND SPEEDY MODE OF IMPROVING PRACTICAL AGRICULTURE.

Yet there is a remedy, very obvious indeed, and quite within the reach of every considerable landholder, which would operate an immediate, a greater, and more rapid change on British practical agriculture—on the condition of the tenantry—on the steady and sustained return of income to be expected by the landholders from their estates—than all the plans detailed above together could for many years accomplish. This remedy would, in fact, act as a pioneer, and clear away prejudices, and promote a taste for still higher and more scientific instruction. The best recommendation too of this plan is, that its benefits and advantages may be obtained without any additional outlay whatever.

We would then most earnestly impress on the landlords of Britain, if they expect that the tenants can continue to pay, in the face of the late depreciation of their property and produce, their present rents, or an amount of rent as nearly approaching the present as possible, to adopt a very cheap, easy, and obvious means of instructing the tenantry practically in enlightened economy of management and a beneficial application of the discoveries of science to their every day avocations.

But we anticipate this question from the landlords—how are we so easily to accomplish this? Why the answer is very plain. Instead of employing solicitors, and law agents, and superannuated valets, and incapable dependants of any description as chamberlains, land agents, and resident stewards, you must secure the services of men of sound, practical, as well as scientific knowledge—men capable of affording, and willing to afford, every necessary information and instruction, as well as merely to collect rents, and support, very inadequately, the well understood local influence and dignity of the family, in all matters in any way left to their discretionary arrangement, so far as in them lies, and so far as this can be accomplished with a due regard to the real and substantial interests of their employers, and at all accordant with the judicious fulfilment of the highly responsible duties of their office—men whose example will render it unnecessary for the poor tenants, with their necessarily imperfect knowledge, to attempt experimenting away their capital in futile and bootless efforts at improvement, thus yearly narrowing their available means of discharging their contracted obligations to the proprietor; and thus being induced also, the miserable dupes of imperfect scientific knowledge, when blindly experimenting for themselves, like the dog in the fable, to quit the substance for the shadow—inevitably ending in certain insolvency and ruin, to their own irretrievable disgrace and discomfiture—though under a kind landlord, if matters are not very bad, this may be but temporary—and to the landlords' certain eventual loss; instead, we say, of this unfortunate result for both, how easy it is for every considerable proprietor, without one penny of additional outlay, to do as follows, and insure for himself and his tenantry the great blessing and security to be derived from superior practical and scientific knowledge and experience.

There are few landholders of any extent who do not employ an agent of some description charged with the collection of rents, and occasionally enjoying considerable private confidence, and entrusted to some small extent with the superintendence of the local, private, and political interests of the family. Why not then select an individual for these highly responsible duties, who has a perfect and thorough knowledge of agriculture and agricultural improvements, and the enlightened management of agricultural property generally, as well as a thorough acquaintance with the management of all necessary cash transactions? Why is not such an individual selected, and a farm of good land on the estate, of moderate extent, put into his hands, on regular lease, at a fair rent like any other tenant? which would be no sacrifice to the proprietor; and this, with a moderate and suitable salary, would secure the services of a man of education, knowledge, and undoubted respectability. Where is the experienced banker, manufacturer, or merchant, who would entrust the superintendence of his business—the abundant source of his worldly independence and prosperity—to an individual who was utterly and undeniably ignorant of the first principles of banking, commerce, or manufacture, and who had no correct, defined, or systematized ideas of practice whatever; but who could boast instead of nothing better than partial, confused, vague, uncertain, and often contradictory general notions, caught up without method and at random—just quite enough to communicate, establish, and confirm all the overweening self-conceit and offensive self-sufficiency usually attendant on incompetent crudity and obstinate ignorance—quite enough to embolden a self-enshrined oracle, swathed in all the vulgar and pretending confidence of assumed superiority and infallible wisdom, to turn a deaf ear to every suggestion of enlightened improvement—knowing well that the bare acknowledgment of his *possible* fallibility might open the eyes of his confiding and admiring votaries—might lead his *constituents even* to question his perfect fitness for his office in the present advanced and advancing state of practice; the benefits arising from which had been too long denied to his suffering votaries and his good natured and hitherto unsuspecting employers—and prudently considering, that by such an admission on his part his craft would be in danger: verily, he might then well exclaim Ichabod!

Would a proprietor not have a little more satisfaction, we ask, in paying a salary to a competent, instructed, and enlightened individual—a man whose

farm would be *in reality a model farm* to the whole tenantry, *without any new expence to them or their landlord*—to an individual whose economical and improved system, practised on that farm, and carefully adapted to the locality in all respects, would teach the tenantry to labour cheaply—to extract an increased and increasing produce from their farms—and thus convince them of the practicability of paying a fair rent for their land, *with real profit to themselves?* Would not a proprietor have more real satisfaction in paying a reasonable remuneration to such an individual, than to a mere rent collector, and, in other respects, only fairly to be described as a cumberer of the ground, a retarder of healthful, safe, and judicious improvement, a mere pensioner, or superannuated dependant? It is amiable and highly commendable, and indeed it would be *impossible* to praise too highly the remembrance of such objects of bounty; but it becomes an incalculable and injustifiable loss to entrust such important interests to incapable hands. A landlord in this way neither attends to his own interest, nor does justice to his tenantry; and in these days of depreciation of agricultural produce, rents *must follow speedily*, unless some such effectual measure as we are recommending is immediately adopted.

It will never do to stick blindly to the usages of our forefathers, and turn a deaf ear to all the whisperings of judicious improvement. It is clear that in these days, rents cannot be nearly maintained by continuing to employ incapable chamberlains, land agents, and stewards. The loss incurred by following such a course it is almost impossible to conceive or particularize. Enlightened and judicious improvement is delayed and indefinitely retarded—dangerous, and too often ruinous experiment is encouraged in the tenantry—rents and proprietors' incomes must fall, or the tenantry must be ruined to maintain them at their present rate. Employ competent agents, as we have humbly recommended, and how different will be the picture. You let these agents the first vacant farms, as you do to any other tenants—pay them a reasonable and respectable remuneration, by which you will secure the services of educated, intelligent, and competent instructors—their *farms* will be *models* of cultivation for the imitation of your tenantry—the tenantry will naturally follow the improved and more productive systems, and imitate the economical labour exhibited upon these farms—and this too *for their own interest*, which is likewise *yours*—and will be thus enabled to pay a fair rent, and reserve a sufficiency for themselves and their families. *You*, the landlords, will be hailed as public benefactors, and all this is obtained *at no new special cost, and with the sacrifice of no more general expenditure than our support at present.*

If you must and will continue your charitable benefactions to superannuated dependants—and who would not honour such amiable munificence?—it would be far better to pay *many* such salaries or pensions, *not to talk of one*, and make them *all sinecures*, than to cramp the energies of your tenantry, and retard the judicious improvement of your estates, and finally, either to have to reduce your rentals to a ruinous amount, or, one by one, eject your tenants to keep them at their present figure, under the *incubus* of such suicidal management.

It is quite as absurd to employ the majority of solicitors or law agents as chamberlains, land agents, or stewards. What can they possibly know by education or experience,—unless we except very rare instances indeed,—of agricultural improvements or the management of landed property? It would be quite as rational to appoint a journeyman tailor to the dignity and duties of an admiral of the red, or an admiral of the red to the principal superintendence of a manufactory of shirt buttons, as a law agent to the direction of agricultural improvements and the beneficial practical management of the varied operations that are of constant and daily occurrence on landed property, and which require all the skill, and intelligence, and undivided attention of an individual whose education and experience in such management have been directed and conducted with the sole object of rendering him fit for such a responsible employment—equally as the lawyer's legal studies have had for their object to fit him for the special duties of his own profession.

Lawyers and medical men are, very properly, required by the legislature to give satisfactory proof of their skill before they are permitted to practise their professions or prescribe for the persons or properties of the people of this civilized country. But the *vital* interests of agriculture, which are of universal consent, and admittedly and unquestionably paramount, are, in too many instances, unhesitatingly entrusted to the tender keeping and enlightened administration of men, who have no correct notion whatever of their duties—derived from a regular course of *special* preparatory training—following upon adequate and scientific and practical professional knowledge previously acquired, and the whole based upon a liberal, and necessarily superior elementary education.

We find the *Times* newspaper, in a late number, remarking, talking of leases, on the well known incapacity of such men as managers of landed property. "In England landlords have been even more remiss (than in Scotland,) and in consequence, a lawyer having copied into his precedent book a set of cropping clauses from a Norfolk lease, which he had heard eulogised by a scientific farmer from that county, employs them indiscriminately in the leases which he has to draw for Kent or Wiltshire, Sussex or Bucks. And what else can a landlord expect, who delegates the performance of so important a duty as the regulating of a course of husbandry to a man whose life is spent almost exclusively in the Temple or Lincoln's Inn, and who, beyond a few notions of practical farming which he may glean from the stubble fields or coppices, while enjoying a few days partridge or pheasant shooting on his *long* vacation, gathers most of his ideas on the subject from watching the hay-making which is occasionally performed in the gardens of his inn of court?"

The ideas here expressed are *literally* and undeniably correct; and it is needless to multiply authorities on a subject on which all, whether practical or theoretical, are invariably and without exception, as one. Suffice it to say that the best agricultural writers of Europe—Chateauvieux, Thaer, Thouin, Mathieu de Dombasle, Sigismondi, Jovellanos, Young, Marshall, Brown, Coventry, Loudon, &c. &c., all concur in declaring, *that these men from their rigid adherence to precedent in the clauses of leases, have contributed most materially to retard the progress of agricultural improvement.* It would be positively *culpable* to blink the question, when such overwhelming interests are at stake. There will be no want, even now, of competent agents of all grades, if sufficient encouragement is only held out to them.

The remedy we have humbly recommended for the serious consideration of the landlords is so very

obvious and evidently efficient, that the only surprise is that it should not have been all along invariably acted upon. It is well known, however, that in too many cases, as well as that under consideration, we unaccountably neglect easy and obvious remedies, at all times within our reach, and wander anxiously through the thickets of speculation in search of artificial remedies, which must, we flatter ourselves, be more efficient,—and, one would really suppose from what we so often see, more efficient too in exact proportion to the difficulty of their attainment and the impracticability of their application! Did the landlords of Britain consider for a moment the incalculable pecuniary loss they incur,—the neglect of duty to their tenantry, eventually and surely resulting in increasing and incalculable loss to themselves, rendered doubly severe and certain from the recent changes in the provision laws,—the necessary sacrifice of influence and popularity consequent thereon,—the constant annoyance and anxiety experienced by themselves, personally, from the incessant appeals for direction in the veriest trifles—the never ceasing alarm they must live under, from the irresistible conviction that incapable agents may, perhaps unknowingly to their constituents or themselves, be sacrificing the best interests of their employers, contented so that rents come in tolerably well only, and a decent appearance of common sense management is preserved:—or, what is much worse, where incapacity and low cunning exist together in the same agent, rather than betray his ignorance in matters small or great, coolly acting on his own imperfect knowledge and judgment, and concealing to the best of his power the too certain consequences of his unprincipled rashness and proved incapacity. —Did the landlords of Britain reflect on this, and consider that, from the local influence and little authority of their agents, *all this and more* may be, and, unfortunately, too often is, effectually concealed from their eyes, and can never reach their ears; and that unless they themselves be very competent judges indeed of practice, and take unusual pains to investigate, *this may go on for a lifetime without detection*—for who would dare to inform against the chamberlain, land agent, or steward? Why, if such an adventurous man were to sound a warning in the ears of a landlord, and if such warning were to pass unheeded,—which is most likely to happen, dearly would the informer pay for his audacity and presumption! Did the landlords of Britain reflect, we say, on all this, they would take instant warning, and at once admit to themselves and proceed to act on that admission, viz., that no individual is qualified for the office, either of chamberlain, land agent, or resident steward, unless he has received a superior education, unless he bring undoubted evidence of respectability and integrity—his temper and general character being of essential importance—but above all, he should be able to produce satisfactory evidence of his practical knowledge of the improvement and general management of land,—of his acquaintance with all the present established scientific knowledge applicable thereto in practice—of his being a man whose general tastes and habits give satisfactory assurance that he will continue to add to and keep up this knowledge as discoveries and improvements are made known to the world, like an active-minded man in any other profession, and be ever willing to instruct and advise the tenantry in all their difficulties, to explain the improved systems pursued on his own farm,—and of course there, for his own interest, he will be well advised as to the soundness of these systems;—besides all this, he should invariably possess an adequate knowledge of accounts and the general management of money matters.

Such, and such alone, is the character and description of the individual who can henceforth be safely entrusted with the management of landed property in England, Scotland, or Ireland. The landlords should be wise in time.

This is, undoubtedly, the only easy, cheap, effectual, permanent and immediate remedy.

We have the pleasure to be,
Your true friends, and
Hampstead, March, 1843. COUNTRY COUSINS.

PARTICULARS OF THE BREEDING STOCK,

LATE THE PROPERTY OF MR. ROBERT FOWLER, OF LITTLE ROLLRIGHT, IN THE COUNTY OF OXFORD, DECEASED,

WHICH WAS SOLD ON THE PREMISES, THE 29TH, 30TH, AND 31ST DAYS OF MARCH, 1791, BY R. PARRY, OF SHIPSTON-UPON-STOWER, AUCTIONEER.

(*Concluded.*)

SHEEP STOCK.

54. Ram, No. 1, purchased by Mr. Wm. Smith, Norton, Gloucestershire, 44*l.* 2s.
55. Do., No. 2, purchased by Mr. Kimmer, North Cerney, Gloucestershire, 45*l.* 3s.
56. Do., No. 3, purchased by Mr. John Davis, Rollright, Oxon, 31*l.* 10s.
57. Do., No. 4, purchased by Mr. Smith, Ford, Gloucestershire, 35*l.* 14s.
58. Do., No. 5, purchased by Mr. Howes, Winson, Gloucestershire, 30*l.* 9s.
59. Do., No. 6, purchased by Mr. Wm. Davis, Chastleton Hills, Oxon, 16*l.* 16s.
60. Do., No., 7, purchased by Mr. Richard Leythall, Radford, Warwickshire (purchased for Mr. Fowler), 21*l.*
61. Do., No. 8, purchased by Mr. Saml. Huckfield, Choice Hill, Oxon, 11*l.* 11s.
62. Do., No. 9, purchased by Mr. John Phillips, Dorn, Worcestershire, 25*l.* 4s.
63. Do., No. 10, purchased by Mr. Oliver, Nanton, Gloucestershire, 10*l.* 10s.
64. Do., No. 11, purchased by Mr. Thomas Smith, Admington, Gloucestershire (purchased for Mr. Fowler), 10*l.* 10s.
65. Do., No. 12, purchased by Mr. Thomas Birch, Elmscote, Warwickshire, 16*l.* 16s.
66. Do., No. 13, purchased by Mr. N. Kench, Enstone, Oxon, 16*l.* 16s.
67. Do., No. 14, purchased by Mr. Thomas Smith, Admington, Gloucestershire (purchased for Mr. Fowler), 16*l.* 16s.
68. Do., No. 15s., purchased by Mr. N. Kench, Enstone, Oxon, 17*l.* 17*s.*
69. Six ewes, spot on the head, purchased by Mr. Samuel Huckfield, Choice Hill, Oxon, 55*l.* 10s.
70. Do., spot on top of the shoulders, purchased by Mr. Wm. Freeman, Hitcott, Gloucestershire, 51*l.* 12s.

71. Do., spot on near side, purchased by Mr. Smith, Ford, Gloucestershire, 60*l.*
72. Do., spot on further side, purchased by Mr. Pratt, Banbury, Oxon, 47*l.* 11s.
73. Do., spot on near hip, purchased by Mr. Robinson, Wellingborough, Northamptonshire, 54*l.*
74. Do., spot on further hip, purchased by Mr. Gill, Cleve Peppard, Wiltshire, 63*l.*
75. Do., spot on the loin, purchased by Mr. Thos. Smith, Admington, Gloucestershire for Mr. Fowler, 44*l.* 2s.
76. Do., spot on top of the tail, purchased by Mr. Penrice, Salford, Warwickshire, 45*l.* 12s.
77. Do., spot on near shoulder, purchased by Mr. Smith, Ford, Gloucestershire, 44*l.* 2s.
78. Do., spot on further shoulder, purchased by Mr. Robinson, Wellingborough, Northamptonshire, 40*l.* 10s.
79. Do., stroke on near cheek, purchased by Mr. Joseph Baker, Enbury, Gloucestershire, 27*l.* 18s.
80. Do., stroke on further cheek, purchased by Mr. Thomas Smith, Admington, Gloucestershire, for Mr. Fowler, 31*l.* 10s.
81. Ram, No. 16, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 19*l.* 19s.
82. Do., No. 17, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 13*l.* 13s.
83. Do., No. 18, purchased by Mr. Baughan, Rollright, Oxon, 12*l.* 12s.
84. No. 19, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 12*l.* 12s.
85. No. 20, purchased by Mr. Pratt, Banbury, Oxon, 18*l.* 18s.
86. Do., No. 21, purchased by Mr. Wells, Nill, Hooknorton, Oxon, 8*l.* 18s. 6d.
87. Do., No. 22, purchased by G. Perrot, Esq., Fladbury, Worcestershire, 9*l.* 3s. 6d.
88. Do. No. 23, purchased by G. Perrot, Esq., Fladbury, Worcestershire, 10*l.* 10s.
89. Do., No. 24, purchased by Mr. Chandler, Kington, Warwickshire, 9*l.* 9s.
90. Do., No. 25., purchased by Mr. Haynes, Daglingworth, Gloucestershire, 14*l.* 14s.
91. Do., No. 26, purchased by Mr. Davis, Rollright, Oxon, 10*l.* 10s.
92. Ram, No. 27, purchased by Mr. N. Kench, Enstone, Oxon, 8*l.* 8s.
93. Do., No. 28, purchased by Mr. Davis, Rollright, Oxon, 8*l.* 18s. 6d.
94. Do., No. 29, purchased by Mr. Marshall, Snowshill Hill, Gloucestershire, 14*l.* 14s.
95. Do., No. 30, purchased by Mr. Chandler, Kington, Warwickshire, 17*l.* 16s. 6d.
96. Six theaves, spot on the head, purchased by Mr. Robinsou, Wellingborough, Northamptonshire, 56*l.* 14s.
97. Do., do. on near shoulder, purchased by G. Perrott, Esq., Fladbury, Worcestershire, 42*l.*
98. Do., do. on further shoulder, purchased by Mr. William Smith, Norton, Gloucestershire, 40*l.* 19s.
99. Do., do. on near side, purchased by Mr. Bosworth, Wellingborough, Northamptonshire, 37*l.* 16s.
100. Do., do. on further side, purchased by Mr. Robbinson, Wellingborough, Northamptonshire, 30*l.*
101. Eight do., do. on the loin, purchased by Mr. William Freeman, Hitcott, Gloucestershire, 33*l.* 12s.
102. Ram, No. 31, purchased by Mr. John Lyne, Little Compton, Gloucestershire, 10*l.* 10s.
103. Do., No. 32, purchased by Mr. Richard Lythall, Radford, Warwickshire, for Mr. Fowler, 15*l.* 15s.
104. Do., No. 33, purchased by Mr. Richard Lythall, Radford, Warwickshire, for Mr. Fowler, 10*l.*
105. Do., No. 34, purchased by Mr. Edward Smith, Charlbury, Oxon, 23*l.* 2s.
106. Do., No. 35, purchased by Mr. Thomas Brain, Long Compton, Warwickshire, 8*l.* 18s. 6d.
107. Do., No. 36, purchased by Mr. Thomas Curtis, Lower Worton, Oxon, 7*l.* 7s.
108. Do., No. 37, purchased by Mr. John Smith, Barcheston, Warwickshire, 8*l.* 18s. 6d.
109. Do., No. 38, purchased by Mr. John Vyse, Wesson on the Green, Oxon, 11*l.* 0s. 6d.
110. Do., No. 39, purchased by Mr. John Benton, Pebworth, Gloucestershire, 8*l.* 18s. 6d.
111. Do., No. 40, purchased by Mr. Robert Lyne, Wrencomb, Gloucestershire, 15*l.* 15s.
112. Do., No. 41, purchased by Mr. John Benton, Pebworth, Gloucestershire, 6*l.* 11s.
113. Do., No. 42, purchased by Mr. Hirons, Swerford, Oxon, 21*l.*
114. Do., No. 43, purchased by Mr. William Harbidge, Todingham, Gloucestershire, 13*l.* 13s.
115. Do., No. 44, purchased by Mr. Samuel Tagg, Kiddington, Oxon, 12*l.* 1s. 6d.
116. Do., No. 45, purchased by Mr. Bateman, Aston, Gloucestershire, 11*l.* 0s. 6d.
117. Do., No. 46, purchased by Mr. John Handy, Stowhill, Gloucestershire, 7*l.* 17s. 6d.
118. Do., No. 47, purchased by Mr. Thomas Curtis, Lower Worton, Oxon, 8*l.* 18s. 6d.
119. Do., No. 48, purchased by Mr. William Davis, Chastleton Hill, Oxon, 8*l.*
120. Do., No. 49, purchased by Mr. Davis, Rollright, Oxon, 8*l.* 8s.
121. Do., No. 50, purchased by Mr. William Davis, Chastleton Hill, Oxon, 8*l.* 8s.
122. Five barren ewes, spot on the head, purchased by Mr. John Timms, Chipping Norton, Oxon, 12*l.* 10s.
123. Do., do. on the near side, purchased by John Dark, Esq., Breedon, Gloucestershire, 15*l.*
124. Do., do. on the further side, purchased by Mr. Giles Hutchings, Over Norton, Oxon, 15*l.* 15s.
125. Do., do. on the loin, purchased by G. Perrott, Esq., Fladbury, Worcestershire, 14*l.* 7s. 6d.
126. Eight barren theaves, spot on the shoulder, purchased by G. Perrott, Esq., Fladbury, Worcestershire, 17*l.* 16s.
127. Seven do., do. on the loin, purchased by Mr. Russell, Sibford, Oxon, 11*l.* 18s.
128. Ten wether tegs, do. on the shoulder, purchased by G. Perrott, Esq., Fladbury, Worcestershire, 15*l.* 10s.
129. Eight do., do. on the loin, purchased by Mr. Edward Summer, Rollright, Oxon, 10*l.*
130. Five shearhogs, do. on the shoulder, purchased by Mr. Richard Walker, Salford, Oxon, 8*l.* 10s.
131. A Ram, No. 51, purchased by Mr. William Wheeler, Breedon, Gloucestershire, 5*l.* 5s.
132. Do., No. 52, purchased by Mr. John Smith, Barcheston, Warwickshire, 9*l.*
133. Do., No. 53, purchased by Mr. A. Lampett, Hook Norton, Oxon, 11*l.*
134. Do., No. 54, purchased by Mr. John Izod, Bucknell, near Bicester, Oxon, 6*l.* 10.
135. Do., No. 55, purchased by Mr. John Biddle, Walton, Warwickshire, 10*l.* 10s.

136. Do., No. 56, purchased by Mr. Francis Holland, Wickham Ford, Worcestershire, 9*l.* 9s.
137. Do., No. 57, purchased by Mr. Wells Churchill, Wickham Ford, Worcestershire, 5*l.* 10s.
138. Do., No. 58, purchased by Mr. Edward Sumner, Rollright, Oxon, 5*l.*
139. Do., No. 59,
140. Do., No. 60,
141. Do., No. 61,
142. Do., No. 62,
143. Do., No. 63,
144. Do., No. 64,
145. Do., No. 65,
146. Do., No. 66,
147. Do., No. 67,
148. Do., No. 68,
149. Do., No. 69,
150. Do., No. 70,

Unsold, not being in condition for sale.

151. Six ewe tegs, spot on the head, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 36*l.*
152. Do., do. on the shoulder, purchased by William Walker, Esq., near Grantham, Lincolnshire, 21*l.*
153. Do., do. on the near hip, purchased by Mr. William Freeman, Hittcott, Gloucestershire, 24*l.*
154. Do., do. on the further hip, purchased by William Walker, Esq., near Grantham, Lincolnshire, 18*l.*
155. Do., do. on the tail, purchased by William Walker, Esq., near Grantham, Lincolnshire, 12*l.* 12s.
156. Ten do., do. on the near side, purchased by Mr. Charles Chinor, Chalcomb Grounds, Northamptonshire, 21*l.*
157. Eight do., do. on the further side, unsold, not being in condition for sale.
158. A Ram hog, No. 71, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 53*l.* 11s.
159. Do., No. 72, purchased by Mr. Richard Wells, Nill, near Hook Norton, Oxon, 33*l.* 12s.
160. Do., No. 73, purchased by Mr. William Wilks, Cherington, Warwickshire, 27*l.* 6s.
161. Do., No. 74, purchased by Mr. Edward Haynes, Bagington, Gloucestershire, 14*l.* 14s.
162. Do., No. 75, purchased by Messrs. King and Creek, Blenheim Park, Oxon, 12*l.* 12s.
163. Do., No. 76, purchased by Mr. Samuel Huckfield, Choice Hill, Oxon, 12*l.* 12s.
164. Do., No. 77, purchased by Mr. Fairbrother, Blandford Park, Oxon, 17*l.* 17s.
165. Do., No. 78, purchased by Mr. Humphrey Fowler, Chipping Norton, Oxon, 22*l.* 1s.
166. Do., No. 79, purchased by Mr. John Smith, Barcheston, Warwickshire, 15*l.* 15s.
167. Do., No. 80, purchased by Mr. Thomas Braine, Long Compton, Warwickshire, 15*l.* 4s. 6d.
168. Do., No. 81, purchased by G. Perrott, Esq., Fladbury, Worcestershire, 36*l.* 15s.
169. Do., No. 82, purchased by Mr. Hickman, Slaughter, Gloucestershire, 10*l.* 10s.
170. Do., No. 83, purchased by Mr. Osbourne, Broadway, Worcestershire, 15*l.* 4s. 6d.
171. Do., No. 84, purchased by Mr. Lyne, Batsford, Gloucestershire, 12*l.* 12s.
172. Do., No. 85, purchased by Mr. William Davis, Chastleton Hill, Oxon, 10*l.* 10s.
173. Do., No. 86, purchased by Mr. Groves, Kingleat, Salop, 14*l.* 3s. 6d.
174. Do., No. 87, purchased by Mr. William Foster, Bucknell, Oxon, 10*l.* 10s.
175. Do., No. 88, purchased by Philip Grosley, Esq., Salwerp, Worcestershire, 13*l.* 2s. 6d.
176. Do., No. 89, purchased by Mr. John Smith, Barcheston, Warwickshire, 7*l.* 17s. 6d.
177. Do., No. 90, purchased by Mr. Gibbs, Whichford, Warwickshire, 5*l.* 15s. 6d.
178. Do., No. 91, purchased by Mr. John Smith, Barcheston, Warwickshire, 7*l.* 17s. 6d.
179. Do., No. 92, purchased by Mr. Beaman, Addlestrap, Gloucestershire, 8*l.* 18s. 6d.
180. Do., No. 93, purchased by Mr. Richard Gibbs, Ascott, Warwickshire, 6*l.* 16s. 6d.
181. Do., No. 94, purchased by Mr. William Foster, Bucknell, Oxon, 5*l.* 15s. 6d.
182. Do., No. 95, purchased by Mr. John Smith, Barcheston, Warwickshire, 6*l.* 6s.
183. Do., No. 96, purchased by Mr. John Izod, Bucknell, Oxon, 7*l.* 7s.
184. Do., No. 97, purchased by Mr. Stephen Rashaw, South Newington, Oxon, 5*l.* 5s.
185. Do., No. 98, dead.

THETFORD WOOL FAIR.

This fair was held at the Town Hall, in Thetford, on the 14th inst., and about 100 gentlemen sat down to dinner. Sir Wm. B. Folkes, Bart., presided.

The CHAIRMAN, in opening the business at the table, stated it to be his opinion that wool was worth more this year than last; and he would tell them why. He saw that the wool buyers had exhibited extreme anxiety to get wool; they had gone round the country more than usual, and had appeared anxious to pick up lots here and there. If they had not thought prices would be better, and that they could derive some profits from their purchases, they would not thus go from one farm to another making bargains. He believed that this might be accounted for by an exportation of wool to a certain extent having taken place between this country and France. After some further remarks he proposed "the health of the Duke of Norfolk," and called upon his lordship's steward to offer his wool.

Mr. MUSKETT returned thanks, and said he should offer the Duke's wool that day at, it might be considered, much below the price he ought to ask for it, when he knew that a great deal of wool had been already sold in this county, and shipped off to France. A gentleman in the room had just told him that in the Eastern Division of Suffolk all the principal flocks were sold, and a great part of them gone to France (*Cheers*). He would offer the Duke's wool to Mr. Head, or to his son-in-law, Mr. Everard, the quantities being about 760 hog fleeces, about 160 fat, and about 800 ewes, and he would fix a price at which Mr. Everard would no doubt jump—the hog at 32s., and the flock and fat at 26s.

Mr. EVERARD declined it, and said, as to the exportation of wool to France, he could assure Mr. Muskett that not one fleece of the Duke's flock would suit any market there. He offered 10d. per lb. for the ewe and fat sheep, and 1s. for the hog.

Mr. MUSKETT could not take it.

Mr. Caney sold Lord Leicester's wool to Mr. Middleton, 130 tod of hog and 90 tod of ewe, at 30s. and 26s.—Mr. Overman refused Mr. Sillett's offer at 32s. and 26s., a superior quality.—Sir Thomas Cullum sold his wool to Mr. Everard, at 1s. all round.—Col. Fitz Roy offered the Duke of Grafton's wool, about 10 score half-bred Down and Leicester hog, and about 12 score of Down ewe wool, to Mr. Sillett, at 30s. and 25s.—Mr. S. offered 28s. and 24s.—Col. Fitz Roy was inclined to accept Mr. Sillett's bid for the hog wool, and if he would spring a shilling for the ewe, he would sell.—Mr. S. refused to do so.

Sir CHARLES CLARKE, in the course of the proceed-

'ngs, recommended that filtering machines should be erected in the neighbourhood of pits in which sheep were washed: this might be done at an expence of 40*l.* or 50*l.*; then the wool would not be discoloured.

Mr. Middleton purchased the Chairman's wool at 24s. and 28s.

Very few sales were effected in the room, and the Chairman, before quitting, remarked that but little wool had been bought at the fair.

ON THE PROPOSED REMEDIES FOR THE PRESENT DEPRESSION IN THE AGRICULTURAL AND COMMERCIAL INTERESTS OF THIS COUNTRY.

PAPER V.

BY GEORGE THOMPSON, JUN.

Our last paper was devoted to the consideration of the present system of currency in this country, and of all systems based on a metallic standard of value, at a fixed price; it showed that any similar regulations must inevitably produce occasional embarrassment in the commercial transactions of a highly taxed nation. We intend now to enquire if any other plan is calculated to work more beneficially, and if an issue of national inconvertible paper money would obviate the difficulties of the present regulations.

All persons possessing common sense will know that trade between nation and nation must be carried on in the precious metals. If France or America should take more in value than they send, the difference must obviously be paid in some medium possessing the value it represents. We could not take their paper money, nor could they take ours; hence it is indispensable that there should be a circulation of precious metals. But it is equally certain that there is not the slightest existing necessity for these metals to remain at a fixed price, uninfluenced by their plenty or scarcity in other markets, and that there is no sound reason why they should be the only foundation of a currency.

The fact that no sufficient reason exists why the currency of the country should be based on a metallic standard of value, payable on demand, at a fixed price, for paper or other representatives, is most decidedly proved by the incontrovertible argument, that no country carrying on extensive commercial dealings ever did, or ever could, limit it to this confined degree. We have shown that this is correct, in our last paper, by quoting the returns of the Bank of England.

The bills of exchange in circulation in Great Britain and Ireland, in the year 1839, were estimated at 528,493,842*l.* We beg to enquire if it is indispensable to a sound currency that there should be a metallic standard of value, payable on demand, at a fixed price, why these bills of exchange should be circulated? That they are circulated to a very great extent, all persons acquainted with commercial transactions can bear witness. That they form a necessary part of our present mediums of exchange—that they are representatives of value, none will attempt to deny. Yet when could the standard of value be found, to a sufficient extent, to meet the demands of these bills? Supposing they are paid off in bank-notes, would it be possible to liquidate the demands made by the presentation of such notes, in the legal standard of value? Common sense replies, it would not. Then, once conceding this much—once admitting that, although gold can be legally demanded for paper money, still that it cannot exist in sufficient plenty to supply this demand, we are at once furnished, not only with the strongest possible proof that the present system can never be thoroughly carried out, advantageously to all, but that a circulation of paper money, convertible into gold at a market value, may be brought into operation.

Having proved the possibility of the establishment of a paper money currency, from the well known fact that no nation conducting extensive commercial affairs can dispense with a large circulation of virtually inconvertible paper money, we will now proceed to point out the advantages which must ensue from the adoption of such a system.

In conducting this series of papers, we of course confine ourselves strictly to plans that have been proposed. We do not suggest remedies for the present depression, but we inquire into the feasibility of those which have been suggested by others. Hence, when we bring arguments to prove the benefits of this or that system, law, or regulation, it must be understood that we are supporting or combating the propositions of other individuals.

It is now a matter of history that the chief portion of the present taxation was imposed during the circulation of inconvertible paper money, albeit it was one of the worst varieties of such a system. As a natural consequence, extensive issues were made, the effect of which was a depreciated currency and high prices—a depreciated currency arising from an undue circulation of paper, and high prices from a plenty of the circulating medium. But on the resumption of cash payments by the Bank of England, the circulation became contracted, and as a natural result prices fell; this occurred in conjunction with an increase in the value of the currency. Thus the producers of the country had not only less returns to pay an equal taxation, but they were compelled to liquidate that taxation in money which had increased in value. The effect of this has been strikingly exemplified in the panics of 1825 and 1839. Then, in the abstract and natural view of the question, the present system has been a gross injustice to the people; they have been made to pay taxes in a contracted metallic currency, which were instituted in a depreciated and unduly extended paper currency. Yet the system which we are about to show the advantages of would not in the slightest degree partake of the imperfections of that, under the operation of which the greater proportion of our present taxation was first levied. It would be a regulation possessing all the advantages of an adequate currency, without the faults and disadvantages of the paltry, unstatesmanlike, and merely time-serving expedient of 1797.

We intend to prove the benefits which may be expected to follow from, the adoption of the system we are considering, to the proprietors of fixed incomes—to agriculturists, and to manufacturers and commercialists.

It is a very common opinion that the present system is a beneficial one to the owner of a fixed

or certain amount of income, but very little consideration will suffice to convince the unprejudiced that this is an erroneous conclusion. It is frequently urged also, that by the adoption of a plan which would increase prices generally, the government, as the acting agent of the country in the transaction, would break faith with the fundholder, and that therefore the present system should be preserved; but this we shall show to be a very weak argument indeed. With respect to the proprietors of fixed incomes in general, they obtain their incomes from various sources, but few indeed, comparatively with the total number enjoying such fixed incomes from the funds exclusively; then those of this class who obtain their means from other sources than the funds must do so from land, buildings, trade, or some investment increasing in value as the country increases in prosperity. It cannot be argued that those who have a fixed receipt possess it generally in consequence of having made their principal a sinking fund; they invest the principal in the most profitable speculation they can discover, or they place it in the hands of other individuals who do the same, and thus, as the land, &c., becomes more valuable, that is, technically speaking, higher in price, so must the principal invested become more valuable also. Hence the high prices produce the means of paying high prices. But, it will be contended, this is not the case with the fundholder, or the capitalist who has engaged to lend the country a certain amount of money, on condition that he receives a certain amount of interest, and whose income is obtained solely from this source.

We flatter ourselves it is totally unnecessary that we should call attention to some essential principles of political economy which we have previously laid down—namely, that whatever benefits one class, to the injury of all others, must act injuriously to the nation at large, and eventually to those it professes to benefit. We might urge these principles, but that it is unnecessary, at the present day, to remind the public that exclusive legislation must be bad; we shall therefore take it for granted that none will dispute the dictates of justice, and that the present system will not be supported on the ground of the fundholders' interest, providing it can be shown that all other classes are injured by it.

Still, considering the fundholder apart from all other classes, and allowing him to be justly entitled to receive the full benefit of past, present, and future low prices, we must maintain that fundholders, as a body, are deeply interested in high prices: and why? Firstly, they can at any time withdraw their money, and invest it in more profitable undertakings. Secondly, the greater portion of those who possess wealth in the funds have also greater wealth in the land, buildings, or trade of the country, and must obviously be benefited by an increase in the money value of such property. Thirdly, whatever tends to increase the general wealth of the nation, must tend to increase the security of funded property. It may be observed that this is an unnecessary proposition, but those who make the observation can be but slightly versed in the real opinions of the country. How often do we hear the exclamation, "take a sponge, and wipe out the national debt." And when we reflect on the growing antipathy to wars, with a decided feeling that they are unjust—when we consider that the numbers of those are daily increasing, who do not think themselves justified in paying debts incurred in the prosecution of that they conceive to be wrong, we cannot be sure that the time may not come when the people may refuse to pay the interest of those debts. They will not, we think, refuse to do so, whilst the country prospers, but should the present depression continue, or even occasionally occur, in conjunction with the growing opinions above referred to, it would be madness to assert the impossibility of such an event. Then it assuredly is to the interest of the fundholder that the nation should prosper. It would be far more beneficial to him to receive a virtually diminished income, than that a law should be maintained which may, by its unhealthy influence, place it out of the power of the country to pay him his just right, and eventually produce a feeling of desperation, fostered by a too-prevalent mawkish sense of humanity, that may deprive him at one fell swoop of all his possessions. The possessor of a fixed income, then, is deeply interested in an expanded currency and its concomitant, high prices.

It is easily made manifest that the agriculturist must be benefited by an expansion of the currency. We will take the single article of wheat as a proof of it: in the year 1840 the average price was 66s. 6d. per quarter, but in 1843, up to the time at which we write, the average price has been 47s. 6d. per quarter. Now, in 1840, at one time there was but three millions and a half of gold in the Bank of England; at that time the Bank had 17,000,000*l.* of notes in circulation, whilst by the return dated July 7th, 1843, it appears that the bullion in the Bank of England amounted to 11,873,000*l.*, and the Bank had 18,411,000*l.* of notes in circulation. These last comparisons show a diminution in the amount of money in circulation, on the part of the Bank of England alone, of 6,962,000*l.* We have reason to suppose also that the circulation in other departments has diminished to an equal proportion. The diminution in the amount of money in circulation, caused by the injurious operation of our present currency regulations, is thus shown to have been attended by a corresponding diminution in the price of wheat; and the price of wheat has certainly not been influenced by the increased abundance of it, for the importation of it from abroad, which amounted to 1,995,453 quarters in 1840, had reached 2,722,305 quarters in 1842; thus indicating a greater scarcity, which must have increased the price, if the amount of money in circulation had not been so unfortunately contracted. Although the home supply of grain has been diminishing the whole time, the price has gradually fallen 19s. per quarter in three years and a half. Does not this alone show the unwholesome influence of the present currency regulations on the agriculturist? What besides could have caused such a fearful fall in the price of grain, in the face of increased consumption? We have proved that if the contraction of the currency has not been the sole cause of the reduction in the value of grain, it at least has had a most strange connection with it, and such a one as it would be extremely difficult to show was not the natural effect of a most unnatural cause. All this a permanently expanded currency would prevent. It is clearly unnecessary to attempt to give any further proof to the agriculturist of the ill effects of a contracted currency on his income, when it is seen that, whilst in 1840 he received no more than sufficient to afford him a decent profit, the effect of such contraction was

to reduce his income 28½ per cent. in three years and a half.

The manufacturer and commercialist receive their incomes from productions, and from the interchange of such productions.

The foundation of national wealth—the source from which any nation obtains the means to purchase manufactures, is the land. From the land, either the surface or the sub-surface, does all wealth proceed. If land and its produce is decreased in value, so, in the same proportion, must manufactures be decreased; and if manufactures with landed produce decrease in value, so also will commerce be depressed. We have shown that the produce of the land has diminished in value with the diminution in the amount of the circulating medium; but we will quote a few more instances to convince our readers that a contracted currency has invariably been attended by reduced prices, not only in the produce of the land, but in manufactures also, and that such low prices have produced general depression.

In the month of January, 1837, the amount of Bank of England and country notes in circulation, as advertised in the "London Gazette," was 29,433,697*l.*, and the bullion held by the Bank of England 4,287,000*l.*; but in the month of December, in the same year, the notes in circulation were diminished to 28,140,049*l.*, and the bullion in the Bank increased to 8,172,000*l.* Owing to this contraction of the amount of money in circulation, to the extent of more than five millions within twelve months, the price of wheat was reduced 11¼ per cent., and the prices of fifty manufactured articles, in London, fell 7¾ per cent. And, to illustrate the contrary effect of an expansion of the currency, in January, 1836, the bank-notes in circulation amounted to 28,396,414*l.*, and the bullion in the Bank of England, at the same time, to 7,076,000*l.*; but in December of the same year the circulation of notes was increased to 29,094,945*l.*, and the bullion in the Bank reduced to 4,545,000*l.*, causing an increased circulation of more than 3,300,000*l.* The consequence of this was an increase in the price of wheat amounting to 65 per cent., and in the value of fifty manufactured articles, amounting to nearly 3 per cent. Thus we observe that a contraction of the currency invariably lowers the value of manufactured and agricultural productions, and an expansion as invariably raises it; at least this is the case when the seasons or other causes do not interfere. Need we illustrate the injurious effect of a contracted, or the beneficial effect of an expanded, currency on the manufacturer and commercialist by a farther reference to facts and occurrences? Then we call attention to the difference in the price of iron at the present time, compared with January, 1837, and also between the relative amount of money in circulation at each period referred to, when it will be found that, independent of other causes, the currency must have had a considerable effect in reducing prices to their present low rate. And it is only natural that it should be so; it can all be explained clearly; in fact, it would be very strange if a contracted currency did not produce general depression. We will suppose a case, by way of more forcibly exemplifying this. If, in England, the amount of money in circulation, at a period of prosperity, was forty millions, and this amount was suddenly reduced to twenty millions, the country producing the same number of quarters of corn, the same number of tons of iron, and having the same number of people, but half the price can be given for either of the previously named articles. There being one-half the amount of money in circulation only, the business of the country must be transacted with such one-half. *The same quantity of productions must be sold for one-half the amount of money they hitherto sold for;* in other words, the producer must sell as much for ten shillings as he hitherto did for one pound. Yet, as we have previously shown, he must pay the same amount of taxes. Then how important to prevent all possible fluctuations in the amount of the circulating medium. It is important to all producers—the manufacturer and the agriculturist—since a contracted currency renders more onerous the national debt; it is important to the commercialist, since his welfare depends on that of the two former; it is important to the fundholder, since the security of his property depends on the welfare of all other classes.

At this particular juncture, it may be wished that an explanation should be given of the system which we have attempted to show would remedy the evils of the present arrangement, and tend materially to assist in restoring to, and preserving in prosperity the land we live in.

So many suggestions have been made—so many perfectly practical plans recommended—and so much entitled are each of them to our favourable and serious consideration, that it would ill become us to condemn either. Suffice it to say, that our object has been chiefly to show the necessity which exists for an alteration in the existing monetary system, and what the nature of that alteration should be. It is essential, in this great commercial, manufacturing, and highly-taxed nation, that there should be at all times a large amount of money in circulation, and that the gross amount should be subject to the smallest possible variation. It is moreover essential that all money possessing the value it represents should not be fixed in price, but should find its level, proportionate with other articles. Providing these necessary conditions are acted on, it is of slight importance, comparatively speaking, what plans are adopted. At all events, this is a question which the government of the country would be far more competent to decide than any individual member of society. Still, without arrogating to ourselves the least efficiency in advising, we may simply refer to that peculiar plan to which we, not having seen any better proposed, give the preference.

Firstly.—A national bank should be established, subject to the direction of a body of men, independent of the ruling party of the day, and only removable on proof of bad management.

Secondly.—The directors of this national bank should have the power to make such issues of paper money as should be considered necessary to conduct the various transactions of the country; and this paper money should represent so much real property.

Thirdly.—In conjunction with this circulation of paper, should be the circulation of metals, but subject to no fixed value, liable to rise and fall in price, as a marketable commodity.

Fourthly.—The national paper money should be receivable by the government in payment of taxes; and thus an undue circulation might at all times be prevented.

This is the system, briefly explained, which ap-

pears to us the most calculated to act beneficially for all classes of the community.

Having thus explained, as clearly as our humble capacities will allow, the question of the currency —having shown the evils of the present system, and suggested one, as we think, free from them, it only remains that we should express a hope that the government of this country will turn their attention to the subject. Possessing greater support than any previous ministry, backed by a larger majority than any pre-existing government, they have the power to effect any alteration in the laws that they may think necessary. And if, having the power, they use it not to the benefit of the nation, they do wrong. No previously expressed opinions—no prejudices—no self-interest —should be allowed to interfere in their administration. What an awful responsibility rests upon them! If they leave one stone unturned—if (although it may be contrary to their own views and inclinations) they fail to propose any measure calculated to remove the present distress—nay more, if they fail to institute strict inquiry, in every department, as to the causes of the present depression, and to legislate accordingly, they fail to do their duty. Then again we assert, how great their responsibility—a responsibility to their fellows and a responsibility to their God. We trust—we think —the present ministers will be daunted by no difficulties that may present themselves, and we venture to predict they will restore the country to prosperity; but, if they wish that prosperity to be lasting, they must remodel the laws regulating our currency. We do not deny that the depression may be temporarily removed without any interference in the currency; we do not think that an alteration would for ever prevent any return of distress: but we do think an expansion would prevent the same extreme degree of depression. For this reason, we hope the question of the currency will receive the serious attention of our present ministry.

Day after day do we hear reports of the increasing distress, and worst of all, its too common consequence—disaffection and almost revolution. Under such circumstances, there are not wanting those whose object is to increase the rebellious spirit. What will be the result, it is fearful to contemplate.

We are fully justified in declaring that, although much—very much—depends on the government, still more depends on society at large. Under these trying circumstances, we cannot too forcibly impress on the minds, not only of Britain's government, but of Britain's sons generally, the words of a celebrated naval commander. Like him and his sailors, we are on the eve of action; and as with them at that day, so with us at the present, "England expects every man to do his duty."

Lion-street, Kidderminster,
July 20th, 1843.

We are informed that the pig, for which a prize was awarded to J. W. Childers, Esq., M.P., at the Yorkshire Meeting, was of the improved Essex breed, from the stock of Mr. W. F. Hobbs, of Marks Hall.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

TRIAL OF IMPLEMENTS.

Abuses frequently obtain the most efficient redress, from their becoming so glaring as to render them the theme of public animadversion and ridicule; and it is fortunate when no more serious consequences result before the remedy is applied. It is now freely admitted by the best friends and supporters of the Royal Agricultural Society, that the trials of implements attempted at each of the country shows have wholly failed. Attempts were made by some members of the society, possessed of practical experience, to obtain the establishment of such rules and regulations as were calculated to lead to useful results; but others who took the lead, whilst they lauded practice, and seemed to distrust theory, still in their own course depended upon the latter, until at length experience has taught them a lesson which we would fain hope will be useful. The main causes of the failure of the trials of implements hitherto made, may be ascribed to the following causes:—

The want of sufficient time.

An insufficient division of labour; individual members being induced from an excess of zeal to undertake more than they could properly perform.

The want of practical men in every branch of management in this department.

We are much gratified in being enabled to state, from a perusal of the "General regulations for the next exhibition of implements," published in the report of the proceedings of the society, that a considerable improvement in those regulations has been adopted. We are free to confess our satisfaction that so much has been done, but we feel convinced that much has not been done which might and must be done before the result of the *trials* of implements can be satisfactory to any parties.

It is proposed to correct the evils arising from the heretofore short time allowed for the trials by extending the time from one day to three, in which time the judges must make their adjudication, and sign their award. It does not appear what sort of an award the judges will be required to make: if it be simply the number and description of the implement, and the amount of prize awarded, little time will be required; but if it be intended that any information in reference to the merits of the respective implements shall be given, little short of one day will be sufficient to carefully prepare such an award. It must be borne in mind that there are two sets of persons who attend these meetings interested in the satisfactory exposition of the merits of the implements, namely, the makers, and the purchasers or those who use them. The former may consist of twenty or thirty individuals, the latter number several thousands. It is to benefit the latter that the society was established, and it is therefore fitting, that when the judges have made their award, and have pronounced judgment in favour of one implement in comparison with another or perhaps several other implements, the points of superiority should be briefly indicated, so as to form a guide for the purchaser.

If, however, but half a day should be required for preparing the award, two days and a half only remain for a trial of the comparative merits of the implements.

The number of judges, heretofore three, is to be increased to six. It does not appear into how many sets they are to be divided, but we presume into two sets of three each, as it is necessary there should be an odd number. Assuming that to be the case, upon looking over the award made at the Derby meeting, we find that there were 114 new implements, besides a great number newly improved, amounting probably in the whole to two hundred. In some cases, doubtless, medals or bounties have been awarded for implements or articles where there was no competition, but in the case of others there must have been much competition. The number of implements to be tried and articles to be examined were about six hundred. Now, allowing eight hours for each day's work—quite as long as mind and body can be maintained in strength and vigour for so important a matter—and giving the judges the full benefit of the three days allowed, they will have twenty-four hours to test by comparative trial, and to examine six hundred implements and articles. Now we simply ask the question, does any implement maker, does any practical farmer, believe that such a trial and examination of the comparative merits of the ploughs, drills, scarifiers, thrashing-machines, and other implements exhibited in competition, as will enable judges to arrive at a sound conclusion, can be made in so short a space of time? We say decidedly not. It does not appear, from the regulations, from what class of persons the judges are to be selected; but seeing that there is to be a "mechanical referee" to be in attendance, we presume the judges will be practical men. This will certainly be an amendment. It is not stated whether the implements are to be classified, and the judges to be selected with reference to their supposed experience and knowledge of the use of particular implements or not. We are of opinion that the time allowed for the trial is far too short, and the number of judges still too few. We would divide the implements into three classes. First, those used in preparing the land for the seed—such as ploughs, scarifiers, rollers, heavy harrows, or as they are sometimes called, drags, &c. Secondly, such as are used in depositing the seed in the soil and cultivating the crop—as drills, dibbles, harrows, horse-hoes, &c., &c. And thirdly, implements used in harvesting and preparing the grain for market; or in preparing grain, pulse, roots, &c., for consumption; as hay-making machines, rakes, thrashing and winnowing machines, chaff and turnip cutters, mills, corn-crushers, &c. To each of these classes we would assign three judges, to be selected as much as possible with reference to their experience of the implements in each particular class, believing, as we do, that there are many persons competent to decide upon the merits of implements of the first class, who, from not having lived in a county where drills are generally used, would not be competent to adjudicate upon the second class. With this addition to the number of judges, we would give *at least* one day more for the trial, thus allowing three clear days for the trial and adjudication, and one day for drawing up the award, and clearing up any points preparatory to it which might not have been definitively settled. As regards the stewards of the implement yard and trial ground, we believe that much evil has arisen from the arrangement of this department—not as regards the zeal or energy of the gentlemen who have performed the laborious duties of the office, because we believe that no individuals could have exerted themselves more, or can be actuated with a more sincere desire to carry out the objects of the society, but because they do not possess the qualification of the Irishman's bird—that of being in two places at once. We hold that there should be separate stewards for the implement yard and for the trial ground. The duties of each office are perfectly distinct from the other—there is no connection between the superintendance of the implement yard and the trial of implements. Whilst the stewards of the yard are engaged in the trial field, the yard is left to take care of itself; and if their presence is not needed there on those days, it would almost be inferred that they are not needed at all; but this is not so. The satisfactory progress and successful result of all large undertakings may be traced to a well-arranged division of labour, and a judicious selection of persons competent to perform the duties in the respective departments. We have extended these remarks far beyond what we intended; but there are yet several other matters of detail to which we shall advert at the earliest opportunity.

We have made these observations from a sincere wish to see this most important department arranged in such a manner as to secure those great advantages which we feel persuaded may be made to result from it, if properly managed.

PROCEEDINGS OF THE COUNCIL.

At a weekly Council held at the Society's House in Hanover Square, on Wednesday, the 26th of July, present, the Right Hon. Lord Portman, Vice-President, in the chair, Marquis of Downshire, Lord Hatherton, Hon. R. H. Clive, M.P., John Raymond Barker, Esq., Colonel Challoner, F. C. Cherry, Esq., James Dean, Esq., E. S. Chandos Pole, Esq., Rev. W. L. Rham, Professor Sewell, and Thomas Tweed, Esq.

Communications were received from Mr. Trimmer, of Norwich, and referred to the Journal Committee.

The Hon. W. R. Rous, President of the North Walsham Agricultural Association, transmitted a statement of the comparative consumption and expense of fatting twelve bullocks, belonging to Mr. Postle, of Smallburgh, in Norfolk, half of which were fed on native produce (a "compound" of linseed, &c.), and half on foreign oil-cake. The results being in favour of the native produce, both in the price of the food itself and the dead weight of the animals.

The Rev. Daniel Gwilt, of Icklingham, Suffolk, informed the Council of the injury his lucerne and flax crops had sustained from the presence of a parasitical weed, of which he enclosed a specimen, and which the Council resolved should be transmitted to Mr. Paxton, of Chatsworth (forester and gardener to His Grace the Duke of Devonshire), for the favour of his opinion on its character and designation.

Mr. Clive communicated his recommendation of the classification to be adopted for the "Short-woolled

Sheep, not qualified to compete as Southdowns;" Mr. Baines, of Goosnargh, suggested an analysis of milk in the dairy districts; Mr. Harrison, of Devizes, recommended his manure powder to the notice of the Council; and Mr. Walsford stated his discovery of a mode of destroying animal life without the slightest injury to plants.

The Marquis of Downshire expressed, on the part of the Deputation from Ireland, the high satisfaction they had experienced in attending the Society's Meeting at Derby, and the favourable report they had made to the Royal Agricultural Improvement Society on their return to Dublin.

The Council then adjourned to Wednesday next, the 2nd of August.

At a Monthly Council, held at the Society's House, in Hanover Square, on Wednesday, the 2nd of August, present- William Miles, Esq., M.P., in the chair; Earl of Euston; Thomas Raymond Barker, Esq.; French Burke, Esq.; Henry Blanshard, Esq.; Colonel Challoner; F. C. Cherry, Esq.; Humphrey Gibbs, Esq.; B. Brandreth Gibbs, Esq.; W. Good-enough Hayter, Esq., M.P.; W. T. Morris, Esq.; E. S. Chandos Pole, Esq.; Professor Sewell; and Edward Solly, jun., Esq.

Finances.

Mr. Raymond Barker, Chairman of the Finance Committee, presented to the Council the Monthly Report of the accounts of the Society to the end of July; from which it appeared that independently of the sums of money deposited at Messrs. Crompton, Newton, and Co., the Society's bankers for the Derby Meeting, to discharge the liabilities of that occasion, there was on the 31st of July in the hands of Messrs. Drummond, of Charing Cross, a current cash balance of 2,052*l.* to meet the amount of prizes awarded by the judges at that meeting and payable out of the funds of the Society. Agreeably with the resolution of the Committee, the names of three Governors and 20 Members were ordered to be struck out of the list of the Society on account of their unpaid arrears of subscription.

Council Dinner.

Mr. Neale, the contractor for the Council Dinner in the County Hall, at Derby, attended the Council for the purpose of producing his tickets as vouchers for his claim of payment, as well as to explain the omissions complained of as having occurred at that dinner; and although the Council unanimously resolved that Mr. Neale had insufficiently executed his contract with the Society, they finally agreed to accept his offer for payment at a reduced rate on the original terms, in consideration of such omissions, and ordered a cheque to be drawn accordingly for the final settlement of that account.

Construction of Cottages.

The Rev. Copinger Hill, of Buxhall, near Stowmarket, Suffolk, was reported to the Council by the Journal Committee as the author of the successful essay on the construction of cottages, for which the Society had that year offered their Gold Medal; and Mr. Slaney, of Walford Manor, near Shrewsbury, an additional premium of ten sovereigns.

Parasitical Weeds.

The Rev. Daniel Gwilt, of Icklingham Rectory, near Bury St. Edmund's, Suffolk, having last year informed the Society that a species of grass he never recollected to have seen before, had taken possession of a field of first year lucerne, and was destroying it at that time very rapidly, working in a circle, and entirely destroying every plant as it spread; transmitted this year a fresh specimen of the weed in the hope that an account of its character might be furnished by some Member of the Society. The specimen was taken from the flax crop, and the two plants being left unseparated, the mode in which the weed attached itself to the flax or lucerne was apparent. The flax had been sold to Mr. Gwilt as the produce of Russia. The lucerne attacked last year perished entirely, but by raking and pulling up the weed, its progress this season was arrested so far that the piece though patchy was useful; some had, however, been discovered still remaining, and working considerable additional mischief.

The Council having at their last meeting referred this specimen to Mr. Paxton, received from that gentleman the following account:—

"*Chatsworth, Derbyshire, July* 28, 1843.

"The sub-parasitical plant, of which you have enclosed to me a specimen, growing upon flax, is the *Cuscuta Europæa*, or larger Europæan Dodder. It is a genus of exceedingly curious plants, comprising a good many species, some of which are found in India, China, and North and South America; and in Europe there is also another species called *Cuscuta Epithymum*, which has smaller flowers and less robust stems than the former. They are annual and perennial plants, multiplying abundantly by seed, which falls to the ground, vegetates, and soon runs over the adjacent plants, deriving their principal nourishment from their bark, by means of numerous little vesicles on the inner surface of the twining stems, thereby deteriorating very considerably the growth of the plants to which they attach themselves. But although they do vegetate in the soil, they would soon die, should there be no plant near enough for them to lay hold of in their young state and support their fragile stems, their own roots being of very little service after a short period, when their life depends upon their being sustained by another plant. They then become parasitical. I have seen hedges nearly smothered with these little weeds, in which places it is more difficult to destroy them than in cultivated fields. They grow upon any plant with soft, or herbaceous stems; and upon many kinds of shrubs, such as furze, thorns, brambles, &c.; as well as upon the more choice objects of their prey, such as hemp, tares, hops, lucerne, grass, flax, &c. I believe they do not possess any poisonous qualities, but are considered stimulating and aperient.

"Joseph Paxton."

The Council directed their best thanks to be returned to Mr. Paxton for the favour of this communication.

Lord Portman's name having been added to the General Southampton Committee, and a vote of thanks passed to Dr. Daubeny for the collection of phosphorite mineral and plants he had transmitted to the Society from Spain, the Council proceeded to the consideration of Mr. Baines's suggestions relative to analyses of milk, and referred Mr. Fulbrook's paper on meteorology to a weekly meeting.

The Council then adjourned.

Special Council.

On Friday the 4th of August, a Special Council was held for the purpose of taking into consideration the Report of the Judges of Implements and the arrangements for the Southampton Meeting; present, the Right Hon. Earl Spencer, President, in the chair, Duke of Richmond, Marquis of Downshire, Earl of Euston, Hon. Captain Spencer, Hon. R. H. Clive, M.P., Thomas Raymond Barker, Esq., French Burke, Esq., Colonel Challoner, F. C. Cherry, Esq., Humphrey Gibbs, Esq., B. B. Gibbs, Esq., W. Fisher Hobbs, Esq., John Kinder, Esq., W. Fielder King, Esq., William Miles, Esq., M.P., Philip Pusey, Esq., M.P., Rev. W. L. Rham, Professor Sewell, William Shaw, Esq., John Villiers Shelley, Esq., H. S. Thompson, Esq., and Colonel Wood, M.P.

The Minute of Council, containing the President's order for the Special Meeting, and the terms of summons issued by the Secretary accordingly to each member of the Council, were read.

Prizes for Implements.

The following award of Prizes by the Judges of Implements at Derby, and their Report of the grounds

on which any of the Prizes had been withheld, was read and adopted:—

AWARD OF PRIZES, BY THE JUDGES OF IMPLEMENTS, AT DERBY, 1843.

Ploughs.

1. To David Haikes, of Mere, near Knutsford, for his draining plough; his own invention—10*l*. 2. Hugh Carson, of Warminster, for his subsoil pulverizer; his own invention—10*l*. 3. The Earl of Ducie, of Tortworth, near Wootton-under-edge, for his subsoil pulverizer; invented by the Hon. M. W. B. Nugent, with additions by John Morton, of Chester Hill—silver medal. 4. John Bruce, of Teddington, near Stratford-on-Avon, for his plough with subsoil apparatus; his own invention—5*l*. 5. E. Hill, of Brierley Hill Iron Works, near Dudley, for an iron skim for paring stubbles; invented by J. A. Stokes, of Harvington, near Evesham—3*l*. 6. J. Meakin, of Spondon, near Derby, for a plough and drill combined; his own invention—2*l*. 7. J. Caborn, of Denton, near Grantham, for his boat plough, for clearing water furrows—silver medal.

Drills.

8. To Messrs. R. Garrett and Son, of Saxmundham, for their drill for general purposes; their own invention—30*l*. 9. R. Hornsby, of Spittlegate, near Grantham, for his twelve coulter drill; his own invention—10*l*. 10. R. Hornsby, for his thirty coulter small seeds drill; his own invention—silver medal. 11. R. Hornsby, for his manure cart, with drills attached, both for ridge and flat culture; his own invention—silver medal. 12. Thomas Hunter, of Ulceby, near Barrow-on-Humber, for his ridge turnip and manure drill; his own invention—5*l*. 13. James Smyth, of Peasenhall, near Yoxford, for his nine coulter corn drill, especially adapted for hilly land; his own invention—5*l*. 14. John Caborn, of Denton, near Grantham, for his corn and turnip drill; his own invention—silver medal. 15. W. Crosskill, of Beverley, for his patent grass land cultivator, with seed and manure drills; his own invention—silver medal. 16. Thomas Huckvale, of Over Norton, Oxon, for his liquid manure drill; his own invention—5*l*.

Chaff Cutters.

17. To the Earl of Ducie, of Tortworth, near Wootton-under-edge, for his patent chaff cutter, invented by himself, R. Clyburn, and E. Budding—10*l*. 18. James Smith, of Gloucester, for his chaff-machine; his own invention—3*l*.

Draining Tiles.

19. To the Tweeddale Patent Drain-tile and Brick Company, London, for their hand-tile machine; invented by the Marquis of Tweeddale—silver medal. 20. Messrs. J. R. and A. Ransome, of Ipswich, for their patent tile and brick machine, invented by R. Beart, with improvements by A. Hickney—silver medal. 21. F. W. Etheredge, of the Woodlands, near Southampton, for his draining-tiles, with covers, pipes, and wall-coping; his own invention—silver medal. 22. J. Read, of 35, Regent-circus, London, for his cylindric draining-tiles; his own invention—silver medal.

Harrows.

23. To J. Howard, of Bedford, for his patent four-beam iron harrows, invented by W. Armstrong—5*l*. 24. Messrs. Sanders and Williams, of Bedford, for their patent iron harrows; their own invention—5*l*. 25. R. Hobkin, of Hartington, near Ashbourne, for his circular revolving harrow; his own invention—5*l*. 26. William Abraham, of Barnetby-le-Wold, near Brigg, Lincolnshire, for his combined drag-harrow and scarifier; invented by Joseph Miller—silver medal. 27. Messrs. Cottam and Hallen, of London, for their chain harrow, with serrated rings; invented by James Smith, of Deanston, improved by G. Cottam—silver medal.

Agricultural Carriages.

28. To R. Stratton, of Bristol, for his spring waggon, on the equirotal cross-lock principle, with Thatcher's breaks attached; his own invention—20*l*. 29. R. Stratton, for his low tipping manure cart, with a liquid manure cistern body to fit; his own invention—silver medal. 30. Daniel Coombes, of Shipton, near Burford, Oxon, for his two carts convertible into a waggon; his own invention—5*l*. 31. A. White, of Old Sleaford, Lincolnshire, for his spring carriage, for delivering corn and other purposes; his own invention—10*l*. 32. W. Crosskill, of Beverley, for his cart wheels with cast iron naves, and turned axles; his own invention—silver medal.

Drill Pressers.

33. To John Caborn, of Denton, near Grantham, for his two-wheel land presser, with manure drill; his own invention—10*l*.

Churns.

34. To William Wood, of Knutsford, for his churn; invented by Thomas Wood—5*l*.

Root Steamers.

35. To Jas. Richmond, of Salford, near Manchester, for his apparatus for steaming roots, &c., his own invention—5*l*.

Couch Rakes.

36. To R. Stratton, of Bristol, for his revolving couch rake; his own invention—2*l*.

Horse Hoes.

37. To Messrs. R. Garrett and Son, of Saxmundham, for their improved patent horse-hoe; their own invention—silver medal. 38. Jos. C. Grant, of Stamford, for his patent lever steerage horse-hoe; his own invention—silver medal. 39. Jos. Scurrah, of Crakehall, near Bedale, Yorkshire, for his light horse-hoe, with rake attached, his own invention—3*l*.

Cheese Pressers.

40. To Jas. Smith, of Gloucester, for his single self-acting lever and screw press; his own invention—3*l*. 41. R. Stratton, of Bristol, for his double cheese press; invented by W. Jas. Gingell—3*l*.

Hay-making Machines.

42. To Thos. Wedlake, of Hornchurch, near Romford, Essex, for his improved haymaking machine; his own invention—silver medal.

Turnip Cutters.

43. To Thos. Wedlake, for his turn-plate turnip cutter; his own invention.—2*l*.

Corn & Cake Crushers.

44. To Jas. Spencer, of Hopton, near Wirksworth, Derbyshire, for his oat and bean mill; his own invention—5*l*. 45. R. Hornsby, of Spittlegate, near Grantham, for his cake-crusher; his own invention—5*l*. 46. The Earl of Ducie, of Tortworth, near Wootton-under-Edge, for his corn-crusher; invented by R. Clyburn—silver medal.

Corn Cleaners.

47. To B. Millington, of Asgarby, near Sleaford, Lincolnshire, for his corn chaffer and dresser; his own invention—5*l*. 48. Joshua Cooch, of Harleston, near Northampton, for his barley hummeller, attached to a winnowing machine; his own invention—3*l*. 49. Jno. Newham, of Kegworth, near Loughborough, for his double blast winnowing machine; his own invention—silver medal.

Dibbling Machines.

50. To Messrs. Cottam and Hallen, of London, for their two wheel double row hand dibbler; invented by G. Cottam—2*l*.

Steam Engines.

51. To Wm. Cambridge, of Market Lavington, near Devizes, for his portable steam engine—10*l*. 52. Alex. Dean, of Birmingham, for his portable steam engine—10*l*.

Weighing Machines.

53. To H. G. James, of 3, Great Tower Street, London, for his patent weighing machines, for cattle, sheep, corn, &c.; invented by M. George, of Paris—10*l.*

54. To C. R. Colvile, M.P., of Lullington, near Burton-on-Trent, for his wheelbarrow and apparatus for boiling and transporting gas-tar; his own invention—silver medal. 55. Jonathan Gillett, of Brailes, near Shipston-on Stour, for his patent rick ventilator; his own invention—silver medal. 56. The Earl of Ducie, of Tortworth, near Wootton under-Edge, for his self-registering corn-meter; invented by R. Clyburn—silver medal. 57. E. Hill, of Brierly Hill Iron Works, near Dudley, for his wrought iron cow crib and sheep rack; his own invention—silver medal. 58. E. Hill, for his wrought iron farmer's field gates and posts; his own invention—silver medal. 59. Geo. Parsons, of West Lambrook, near South Petherton, Somerset, for his stack roof or covering; his own invention—silver medal. 60. C. Thatcher, of Midsomer Norton, near Bath, for his patent self-acting and self-regulating breaks, for carriages, waggons, and carts; his own invention—silver medal. 61. Messrs. J. R. and A. Ransome, of Ipswich, for their patent iron trussed whippletrees and pomeltrees; their own invention—silver medal. 62. Alex. Dean, of Birmingham, for his cider mill; invented by Jas. Ashwid, of Bretforton, Worcestershire—silver medal. 63. Joseph Hall, of Cambridge, for his weed and brush extractor; his own invention—2*l.* 64. J. B. Denton, of Southampton, for his map in relief, of a district, shewing its undulations, water-courses, levels, &c.; his own invention—silver medal. 65. Wm. Hutchinson, of Derby, for his cast iron thrawl, or barrel tilter; his own invention—2*l.* 66. Andrew Notman, of Painswick, Gloucestershire, for his improved drainer's level; his own invention—silver medal. 67. Messrs. J. R. and A. Ransome, of Ipswich, for their general collection of implements, and superior workmanship—gold medal.

The Council having requested the Judges to report whether they have withheld any of the prizes offered by the Society, with their reasons for so doing, they beg to submit the following statement:—

PRIZES WITHHELD.

1. For the Plough best adapted to heavy Land.

This prize was not awarded, and for two reasons; firstly, because the land selected for the trials, though heavy, was not of uniform quality; neither was it properly laid out, nor in the condition fitted for a comparative trial and development of the many nice points of distinction, in the improved implements offered for competition. Secondly, because the time allotted to the trials was too short to permit of a fair decision on their merits.

2. For the Plough best adapted to light Land.

This prize was withheld, as the spot selected for the trials afforded no soil of the quality referred to, and necessary for a judgment.

Prizes or medals were awarded to several ploughs adapted to peculiar purposes, or having peculiar and useful combinations; and most of these were given after trial in the field.

The Judges here take occasion to observe on the importance of trials. Several implements which appeared to them in the yard to be fit objects of reward, proved defective on trial; others, on the contrary, developed in the field meritorious qualities, of which nothing less than a trial could have convinced them.

3. The Society's prize for the best scarifier was not adjudged, for want of rough couch ground to test and determine the respective qualities of the Uley cultivator, and of Ransome's improved Biddell's scarifier—the two best and most powerful implements of this class exhibited. The original Biddell received the prize at Oxford; the Uley cultivator at Liverpool; and the Judges recommend that the merits of these two important implements be put to the practical test of a season's work by a competent judge, and the result reported to the Council.

4. The prize for draining-tiles was not adjudged according to the terms in the Society's list, as the Judges were unable to collect sufficient evidence to determine the authenticity of the facts required and adduced. Medals were given to each of the four exhibitors of tiles, or of machines for producing them, as each possessed some peculiar merit.

5. The Society's prize for harrows was divided between two exhibitors; their implements being considered to be equally efficient for most practical purposes.

6. Since no contrivance was exhibited which could be considered as responding to the intention of the Society, in offering a prize of twenty sovereigns for the best and cheapest stack covering, to supersede thatching, that prize was withheld. The offer brought out an ingenious and simple method of raising and lowering a framed roof over a rick, for which a medal was awarded to the inventor, as meriting trial and encouragement.

7. Small or Portable Corn Mills.

Mr. Dean, of Birmingham, received a prize at Bristol for his metallic domestic corn mills. Since that time it has been represented to the judges that, from some cause, the bread made from flour thus ground is somewhat discoloured. The judges do not intend to convey by this remark that the bread is reported to be bad; merely, that there is a defect in the metallic as compared with stone mills, which requires remedy. The judges had not the opportunity of ascertaining whether this improvement had been accomplished.

On this occasion Mr. Dean exhibited a large stock of his machines, as well as portable stone mills. Metallic mills, differently arranged and of much apparent mechanical merit, were exhibited by Messrs. Ransome and others, on a plan of construction patented by Mr. Hebert. The judges submit to the Council that a metallic mill of each kind, and one of Mr. Dean's portable stone mills, should be effectually tested by use in a competent household, and reported on.

8. The wish of the Society for the exhibition of improved agricultural harness and gearing was so imperfectly responded to, that the judges found no sufficient reason to award a prize for the advancement of this object.

9. The miscellaneous department was very extensive.

Amongst the articles exhibited were some well made curd-breaking machines, on the respective merits of which the judges did not consider themselves competent to decide.

A dynamometer, on a new construction, and having pretensions to measure and record the force of draught more exactly than other instruments hitherto invented for this purpose, was exhibited by the inventor, Mr. Clyburn. The object of these instruments is so important, that the judges express a hope the Council will consider of some appropriate means for ascertaining the efficiency of the one in question.

10. New Implements.

The judges desire to invite the attention of the Council to a *definition* of what shall in future be considered as a new implement. Exhibitors use this term very freely, and in a very extensive sense.

The show-yard furnished a much greater number of new and valuable combinations of original ideas, and of novel modes of attaining a common object, than at any of the Society's previous meetings. These were, for the most part, considered and rewarded according to the perception of the judges. They do not, however, see reason to bring to the notice of the Society any particular implement which merited, in their opinion, a higher or more special reward than the funds placed at their disposal enabled them to bestow.

In consequence of the number of original inventions and of the variety and excellence of the collection, the judges felt compelled, in justice to the exhibitors, to

award the whole of the sum allotted by the Society for implement prizes.

JOSIAH PARKES.
R. S. GRABURN.
GEO. LEGARD.

SPECIFIC TRIALS OF IMPLEMENTS.

The Council then proceeded to take into their consideration the specific recommendations of the Judges in reference to the trial of particular implements, and agreed to the following resolutions:—

1. *Scarifiers.*—"That the Uley Cultivator of Lord Ducie, and the Biddell Scarifier as improved by Messrs. Ransome, be each placed for trial in the hands of Mr. Jaques, of Easeby Hall, near Richmond, Yorkshire, with a request that he would favour the Council with a report, by the first Wednesday in June next, as to which of these implements he considers to be the best. The comparative trial to be made with the consent of the implement makers, either of whom will have the option of refusing."
2. *Corn Mills.*—"That Mr. Graburn's offer to test the comparative merits of the metallic and stone Corn Mills by constant use in his own household, and to report to the Council the result, be accepted with thanks."
3. *Dynamometers*—"That the Dynamometers of Mr. Clyburn and Messrs. Cottam and Hallen be first tried as to their accuracy by Mr. Parkes, the consulting engineer of the Society; and that, this having been done, one of each be sent in rotation to the Duke of Richmond, Captain Spencer, and Mr. Jaques respectively, requesting them to report as to their respective merits when applied to the trial of the draught of agricultural implements."

The Council ordered the thirty Silver Medals, awarded as prizes for implements, to be struck from the Society's Dies at the Royal Mint, under the direction of Mr. Wyon, R. M. Chief Medallist at that establishment.

SOUTHAMPTON MEETING.

Colonel Challoner presented to the Council the Report of the Deputation of the Society, which visited Southampton on Monday the 17th of July last, for the purpose of inspecting the various sites offered to the Society gratuitously by the Corporation and Town of Southampton for the purposes of the meeting in that district next July. The Report having adverted to the cordial reception given to the Deputation by the Mayor, and the facilities he had placed at their disposal for the convenient inspection of the various localities to which they were successively conducted, proceeded to detail the situation and character of the sites proposed for the Show-Yard and Pavilion, the Rooms for the Council Dinner, and the Fields for the Trial of Implements; and to express on the part of the Mayor his willingness to undertake the establishment of a proper registration of lodgings, and to provide suitable persons for clerks, cheque-takers, and yard-men, as well as special constables, if required. The Deputation in their report strictly confined themselves to a detail of the circumstances of advantage or disadvantage possessed by the respective localities they had inspected, leaving it for the Council to decide in their choice of those considered by them to afford the greatest capabilities for each particular purpose.

This report having been read and adopted, the Council proceeded in the first place to take into consideration the most suitable locality for the SHOW YARD, and having referred to the official documents and plans in possession of the Society, containing the gratuitous offers of land for this purpose made to them by the Corporation and Town of Southampton, agreed unanimously to the following resolutions:—

Moved by the Hon. Captain Spencer and seconded by Mr. Gibbs, "That in the opinon of the Council, neither the fields called Hoglands, or Magdalens, or any field of recently-ploughed land, is fit for the Show Yard." Moved by the Duke of Richmond and seconded by Mr. Shelley, "That the Council select as the situation for the Show-Yard, a part of the Common of 365 acres, which in the original offer from the Corporation and Town of Southampton was stated to be at the disposal of the Society."

Ordered, That these resolutions be communicated by the Secretary to the Mayor of Southampton.

LOCAL COMMITTEE.

The Council having taken into consideration the question of a Local Committee for the annual Country Meeting of next year, unanimously decided, that there should be no Local Committee for that occasion.

TRIAL AND EXHIBITION OF IMPLEMENTS.

Mr. MILES, M.P., on the part of the Stewards of the implement department, stated the case of the implement-makers, who at Derby had appointed Messrs. Ransome and Cottam as their joint representatives in the communication of their wishes to the Stewards during the period of the meeting. Mr. Miles informed the Council that all the implement-makers present on that occasion were fully prepared for the full and satisfactory trial of the merits of their respective implements, and consequently were greatly disappointed at the result in the arrangements for effecting that trial; for, with the exception of the very satisfactory trial of the thrashing machines and chaff-cutters, there was not by any means sufficient time, even had there been proper land, to institute a due and effective trial of the numerous and important implements prepared for the competition. With regard to the regulations applying to the exhibition and trial of implements, there had existed no distinct collection, the conditions and instructions referring to them being mixed up with those affecting the general objects of the show. He had therefore drawn up, in conjunction with Mr. Shelley, the following code of regulations applying exclusively to implements, and embodying all that they conceived to be most suitable in the previous regulations, and most desirable from the experience already gained to be adopted and introduced as new.

GENERAL REGULATIONS FOR THE EXHIBITION OF IMPLEMENTS.

1. The necessary certificates of entry may be obtained of the Secretary, by those desiring to exhibit implements, at No. 12, Hanover Square, London, and must be returned to him, filled up in a complete form, by the 1st of May, 1844; after which day no certificate will be received.

2. No implements will be admitted for exhibition unless the necessary certificates, filled in on the printed form prescribed, complete, and signed by the exhibitor (or his agent), in the manner directed, have been delivered to the Secretary, or sent (postage free), directed to him so as to reach No. 12, Hanover Square, on or before the 1st of May.

3. Persons intending to exhibit implements, must furnish the secretary with a description, written on one side only of the certificate, of the articles intended to be shown, and the probable space which may be required for them, bearing in mind that the sheds are only 20 feet wide; in order that the stewards may be enabled properly to apportion the space allotted for the exhibition of such articles among the various parties making application; and the articles to be exhibited must be brought to the show-yard before nine o'clock in the evening of the Thursday preceding the show, as none will be admitted after that day and hour.

4. Admission tickets, corresponding with the certificates, will be sent to the exhibitors, and be required to be delivered on the implements being presented for admission into the Show-yard. Numbers corresponding with the certificate to be marked on a

conspicuous part of each implement when presented at the gate.

5. All implements which shall have previously gained prizes at the annual exhibitions of the Society shall be entered as such, with the amount of the prize awarded, and when and where obtained detailed in the certificate; and should any improvements have been made in such implements subsequently to such award of prize, a drawing and description of such improvements shall be delivered in with the certificate.

6. The lowest selling prices of the implements exhibited must be stated in the certificates, and all implements admitted to the exhibition will be liable to be proved by actual trial, upon the recommendation of the Judges.

7. The Judges cannot divide any prize. In case of equality of merit in the opinion of the Judges, a special report must be made to the Council, who are to decide on the award. No published premium, if not awarded to the particular implement specified in the Prize Sheet, can be awarded to any other description of implement. The Judges are instructed to withhold prizes where there shall not be sufficient merit, and may award such sum of money as may be set apart by the Council to be used at their discretion, either in premiums or medals.

8. Six Judges of Implements shall be selected; they shall have Friday, Saturday, and Monday for making their adjudication and signing their award; an ample private trial during that period shall be given to all such implements as may be selected by them for trial, at such time and place as shall be determined upon by the Stewards. On Tuesday the public exhibition of the working of implements shall take place, but only of such implements as may be selected by the judges for public exhibition, or of such as have previously gained prizes at the meetings of the Royal Agricultural Society of England. All implements tried shall be returned to the Show Yard either on Tuesday night or early on Wednesday morning; and no implements, although taken to the field for trial, will be allowed to start at any time unless by express orders of the Judges or Stewards.

9. A Mechanical Referee will be in attendance in the Implement Yard, and during the private trials, to give his advice to the Judges when required.

10. The Director and Stewards of the Implement Yard are instructed to take care that no Governor or Member, including the Council, or stranger, be admitted into the Implement Yard before Tuesday, on which day the price of admission into the Implement Yard shall be 2s. 6d. Full power is delegated by the Council to the Stewards to incur any necessary expense for the next Show, and to select appropriate ground both for the private trials and public exhibition, and to make such rules and regulations relating thereto as they may deem meet, as well as to place the land which they may select for the trial of implements under such culture and management previously as may ensure a perfect and fair trial.

11. An option is given to the exhibitors of implements to send a pair of horses and a man, if declared at the time of returning the certificate, the society paying to the man 5s. for each day he works at the trial of implements, and 2*l*. for the pair of horses for the three days, to be employed primarily in the exhibition of the master's implements, but should these not be in work, to be under the directions of the Stewards.

12. Notice to be given to the exhibitors of the description of ground upon which it is intended to operate.

13. No implements will be allowed to leave the yard, except for trial, until after six o'clock on the Thursday.

14. After the appearance of the report of the judges in the Journal, a copy of such report shall be sent gratis to all exhibitors of implements not being members of the society, who shall have exhibited implements at the show to which the report applies.

15. A space not exceeding two acres shall be attached to the implement yard, and enclosed from the yard by a temporary fence, for the trial of chaff cutters, corn crushers, and other implements; into which the judges of implements and stewards, together with the maker during the trial of his implement, only shall be admitted.

Rules 8 and 15 to be general rules, applicable both to exhibitors of implements and cattle.

These regulations having been discussed in succession, were finally adopted and confirmed by the Council, full power being given to Mr. Miles and Mr. Shelley to make such further regulations of detail, and to take such measures on every point as may from time to time seem to them most desirable for carrying out fully and effectively the wishes of the Council in reference to the trial of implements: they as Stewards, with powers so ample, undertaking on their part the whole responsibility of that important branch of the society's annual country meeting of 1844.

Consulting Engineer.

The President announced that it would be moved at the next Monthly Council, "that a consulting engineer to the Society, with a salary, be appointed."

Date of Country Meeting.

The Council then proceeded to decide the question of the date at which the Annual Country Meeting of 1844 should be held, and having taken into consideration the several communications made to them on this subject, and the occurrence of the various public and stated occasions of local meetings in the district, finally resolved that the Annual Country Meeting of the Society for next year should be held in the fourth week of July, the principal day of the Show being Thursday the 25th of July.

Short woolled Sheep.

Proposals for the classification of the prizes to be given next year for "Short-woolled Sheep, not qualified to compete as Southdowns," were received from the Speaker of the House of Commons and the Hon. R. H. Clive, M.P., when the Council decided on the following schedule:—

Class I.—To the owner of the best Shearling Ram, 20 sovs.

Class II.—To the owner of the best Ram of any other age, 20 sovs.

Class III.—To the owner of the best pen of five Shearling Ewes, 10 sovs.

Channel Islands' Cattle.

Colonel Le Couteur's suggestions for the classification of the Prizes to be given next year for "Cattle of the Channel Islands' Breed," having been read, was discussed, and the following schedule adopted:—

Class I.—To the owner of the best Bull, calved previously to the 1st of January, 1843, 15 sovs.

Class II.—To the owner of the best Bull, calved since the 1st of January, 1843, and more than one year old, 10 sovs.

Class III.—To the owner of the best Cow-in-milk, 10 sovs.

Class IV.—To the owner of the best in-calf Heifer, not exceeding two years old, 10 sovs.

Class V.—To the owner of the best yearling Heifer, 7 sovs.

Prize Sheet.

The Council ordered the immediate publication of the Prize Sheet for next year, in all the Papers of the District of the Meeting, as well as in all the London Agricultural Papers, exclusively of its usual publication in the Journal, and its circulation, by means of distinct broad-side sheets, to be delivered to all parties on application to the Secretary.

Erection of Works.

The Council decided, that Mr. Manning should be engaged on the same principle as on former occasions to undertake the erection of the works for the Pavilion and Show-Yard at the ensuing Country Meeting of the Society, the General Southampton Committee being authorised to complete the arrangements for the details of the estimates and the due performance of the contracts required.

Pavilion Dinner.

The Hon. R. H. Clive, M.P. having suggested that in future all persons should be required as formerly to enter the Pavilion at the particular door designated by the letter of their ticket; but, after admission, should seat themselves at any vacant table in the body of the Pavilion, excepting at the President's and Vice-President's table, and those specially set aside for Stewards, Judges, or Reporters; the Council, on the motion of Mr. Shelley, seconded by Mr. Thompson, unanimously adopted that suggestion.

The Council decided that the number to dine at the Pavilion Dinner, at the ensuing Country Meeting, shall be limited at 1400, and accommodation provided for that number accordingly.

Council Dinner.

The Council directed that the question of having a Council Dinner or not at the Country Meeting of the Society, should be brought before them for final consideration at a future Council.

Admission of Stock.

The Council decided that in future the latest hour for admitting the Stock into the Show-Yard on the Tuesday, shall be four o'clock in the afternoon.

Disqualification for Exhibition.

Mr. Gibbs reported to the Council a case of gross insult to himself and to the Society, in the offer, by certain parties who were disqualified from the right of exhibiting a Churn in consequence of not having made the proper entry in due time, of a bribe to effect that object; when the Council decided, that the parties in question should be informed that they would not be allowed to be exhibitors at any of the Society's future Shows.

Prizes for Horses,

Awarded at the Derby Meeting.

Judges: — Nathaniel Blake, of Stanton-Harcourt; Charles Bowman, of Greatford: William Greaves, of Bakewell.

To Daniel Howsin, of Berthley, near Newark, Notts, the prize of thirty sovereigns, for his 6 years old cart stallion, bred by Mr. Haden, of Baldock, Hertfordshire.

To Darwin Galton, of Edstone Hall, near Stratford-on-Avon, Warwickshire, the prize of twenty sovereigns, for his eight years old cart stallion, bred by Mr. Thomas Moss, of Scargill, near Barnard Castle, Durham.

To Thomas Cutler, of Somercotes, near Alfreton, Derbyshire, the prize of fifteen sovereigns, for his two years old cart stallion, bred by Mr. Radford, of Denby, Derbyshire.

To Matthew Ingle, of Dumbleton, Gloucestershire, near Evesham, Worcestershire, the prize of twenty sovereigns, for his cart mare and foal; the mare bred by the late Thomas Edwards, of Dumbleton, and the sire of the foal the property of Mr. Willet, of Bishampton Field, near Evesham.

To Robert Bean, of Orston Grange, near Bingham, Notts, the prize of ten sovereigns, for his cart mare and foal; the mare nine years old, and bred by Mr. Brewster, of Bingham; the sire of the foal the property of Mr. Daniel Howsin, of North Muskham, Notts.

To Charles Stokes, of Kingston, near Kegworth, Notts, the prize of ten sovereigns, for his two years old filly for agricultural purposes, bred by John Palmer, of Ratcliffe, Notts.

To Arthur Chester, of Nottingham, the prize of thirty sovereigns, for his seven years old thorough-bred stallion, bred by William Orde, of Nunnykirk, near Morpeth, Northumberland, and got by Jerry, out of Beeswing's dam, and served 77 mares at Nottingham and Grantham during the season of 1843, at a price not exceeding three guineas each mare, exclusive of a groom's fee, not exceeding five shillings.

Extra Stock—Horses.

To Robert Coyce, of Measham Field, Derbyshire, near Ashby-de-la-Zouch, Leicestershire, the sum of five sovereigns, for his three years old cart stallion, bred by himself.

To John Lees Brown, of Farewell, near Lichfield, Staffordshire, the sum of five pounds, for his thirteen years old stallion, bred by himself.

To Frederick Thomas Bryan, of Knossington, near Oakham, Rutlandshire, the sum of two and a half sovereigns, for his three years old cart stallion, bred by Richard Daintree, of Hemingford-Abbotts, Huntingdon.

Prizes for Cheese,

Awarded at the Derby Meeting.

Judges.—Edward L. Franklin, of Ascott; John Harris, of Hinton; William Gillett, of Southleigh.

To T. C. Angrave, of Eastleake, near Loughborough, Leicestershire, the prize of ten sovereigns, for his Stilton Cheese.

To James Hill, of Broughton-Astley, near Leicester, the prize of five sovereigns, for his Leicester Cheese.

Seed Wheat,

Exhibited at the Derby Meeting.

Judges.—William Robinson, of Hemel Hempstead; James Stanbrough, of Isleworth; George Smith, of Royston.

Report.—We, the Judges of Wheat exhibited for prizes this day, having before us only four samples of the same, namely, three of red and one of white Wheat, are of opinion that none of them are of sufficient merit to be recommended for the selection of the Society.—*July* 12, 1843.

Forage Plants.

Mr. Easton, of Moortown Farm, near Wimborne, Dorsetshire, in the summer of last year observed a plant, which appeared new to him, growing in some soil recently emptied from flower-pots sent over to England from the Continent, and on its arriving at maturity, he carefully collected the seeds, and sowed them in April last, dividing in March the original plant into several parts, all of which grew and yielded a most luxuriant crop. Mr. Easton inferring from its appearance that the plant bid fair to be of much service in an agricultural point of view, transmitted a specimen of it in its fresh state to the Council at a former meeting, which was by them referred to Mr. Loudon, for the favour of his opinion on its character and designation.

The following report has been received from Mr. Loudon on this subject:—

"Bayswater, Aug. 4, 1843.

"The plant of which you have sent me dried and recent specimens is the *Medicago maculata* of Linnæus and Smith, figured in Sowerby's English Botany, Volume VI, plate 1049. It is said to be frequent in fields and pastures on a gravelly soil in the middle and southern counties of England; and Sir James Smith observes, in his English Flora, Vol. III, page 320, that it has 'been mentioned, but not much recommended, as a fodder for cattle.' Two plants very similar to this in

appearance, and probably only varieties of it, *Medicago intertexta* of Linnæus (*M. echinus*, Dec.) and *Medicago scutellata* All., used to be cultivated in the gardens as ornamental or curious annuals, under the names of 'Snails' and 'Caterpillars.'

"J. C. LOUDON."

The Council directed their best thanks to be returned to Mr. Loudon, for the favour of this communication.

The Noble President stated that the plant in question had attracted his attention, and he had made some trials of its nature and value; at present, however, he had not succeeded so well in its field cultivation as he had been led to hope he should have done from the luxuriance of its garden growth.

ENGLISH COTTON.

Mr. Draycote, of Edwinstowe, Notts, having at a former meeting communicated an account of English cotton growing upon a tree on the estate of Earl Manvers, Mr. Loudon favoured the Society with the following remarks on that subject:—

"I have observed in the reports of the proceedings of the council an account of a cotton tree, in a letter to the Society. I suppose you are aware that it is nothing more than the female plant of the *Populus monolifera*. All the poplars and willows have their seeds enveloped in cottony matter, but in the case of the plant mentioned it is more abundant than in any other species."

STACK COVERING.

Mr. T. J. Marshall, of Spondon, near Derby, having sent the model of a stack covering to the Society previously to the Derby meeting, which had become too much injured and disarranged by the carriage to be exhibited among the models belonging to the Society on that occasion, he called the attention of the Council at the present meeting to the value of the plan proposed for effecting the object in view. The contrivance consists of the erection of a framed roofing above the stacks, and the arranging upon this from the eaves to the ridge, in the mode pursued in the ordinary slating of a house, successive layers of a flat material, of the substance of hat felting, made from felt by Mac Neile & Co., Lambs Buildings, Bunhill-row, and afterwards coated with coal-tar, &c.

Mr. Marshall remarked, "For large farmers who grow a great quantity of corn and hay, I would strongly recommend the erection of sheds near every homestead; indeed they will soon save themselves with a person who may grow only for his own consumption. With this impression, I beg to send you a plan and estimate for one I am about to erect; which, upon blocks and felt roofing will cost about 11*l.*, one twice the size would be less in proportion, say 18*l.*; either of these properly made at the first will last from fifteen to twenty years at the very least: then bear in mind that when once your hay or corn is ready to lead, and safely under such a shed, you neither require stack-cloths, thatching, or other protection: against this outlay, place the expence of thatching in the usual way, the same quantity for the same successive number of years, and no more need be said in its favour. The wood-work I find much lighter, and the inclination of the roof not so steep by one half as slate or tiles require, and the whole cost consequently less. The frost and snow of last winter, and the late heavy rains, have not made the least impression, nor is there any appearance of either damp or wet within. So satisfied am I of its merits, that I am at this moment having one made to cover a stack containing upwards of 20 tons of hay. This stack-covering admits of extension or contraction to any extent."

Mr. Burke presented a copy of the Muck Manual for the Library of the Society; Dr. Playfair, a copy of his Abstract of Liebig's work on Physiology; Mr. Baldwin, of Birmingham, his work on the cultivation and uses of the Swedish Turnip; Mr. Stephens, the last part of his work on "The Farm;" Mr. Cuthbert Johnson, a copy of the Annual Register of Implements, Derby; the Highland Society the 1st No. of the new series of their Transactions; Mr. Arch, a copy of his Journal of Projects; Mr. Allen, copies of his American Agriculturist; Mr. Shaw, the successive Nos. of the Farmer's Magazine; Mr. Youatt, the Veterinarian; the Labourers' Friend Society, their Proceedings; the Society of Arts, a copy of their Premiums; the Isle of Man Agricultural Society, their first Annual Report; the Ristigouche Agricultural Society in Nova Scotia, their third Annual Report; the county of Cork Agricultural Association, their List of Premiums; the Statistical Society of London, their Proceedings; Count de Hompesch, a copy of the notice of his New Manure; the Illustrated Polytechnic Review, from the Editor; the Mark Lane Express, Bell's Weekly Messenger, New Farmer's Journal, Magnet, Gardener's Chronicle, Gardener's Gazette, Cambridge Advertiser, Bristol Mirror, Mercury, and Farley's Journal, Essex Standard and Chelmsford Chronicle, County Press, Hampshire Independent, Midland Counties Herald, and British Lion, from their respective Editors—for all of which donations, the best thanks of the Council were voted.

The Rev. Philip Gurdon offered his services to the Society in the promotion of the local business of the Southampton Meeting; Mr. Bailey Denton, of Southampton, expressed his willingness to act for the Society gratuitously in setting out the land required at Southampton for the purposes of the meeting; Messrs. Best and Snowden, of High-street, Southampton, conveyed to the Council their intention to throw open their spacious room gratuitously to the Members during the period of the Meeting, and have an ample supply of the London papers for their accommodation; Mr. Finber, of 45, above bar, Southampton, placed his offices gratuitously at the service of the Society; all of which offers were received with the best thanks of the Council, and referred to the General Southampton Committee.

Mr. Eames, Treasurer of the Ashby-de-la-Zouch Agricultural Society, communicated his suggestions on the trial of implements, which were referred to the Stewards.

Mr. Bury, of Harley-street, exhibited a specimen of Oats now growing at Wimbledon, and which had attained their present size from the use of artificial manure, drilled in.

Mr. Davis presented a coloured print after his painting of the Everingham Short-horned Prize Cow at the Smithfield Show of 1842. Colonel Phillott submitted to the notice of the Council Eliza Melroe's Economical Cookery, published in 1798, and adapted to the labouring classes.

Letters from Mr. Bates and Mr. Corbet were laid before the Council, and referred to the Monthly Council.

The Council having then granted the Secretary leave of absence for two months during the autumn, adjourned over the long vacation, to meet again on the first Wednesday in November.

NEW MEMBERS.

The following gentlemen were elected members of the Society:—

Baxter, William, Atherstone, Warwickshire
Child, Charles, Hurstgreen, Sussex
De Mauley, Lord, F.R.S., Canford House, Wimborne, Dorset
Ferrers, the Earl, Chartley Castle, near Litchfield, Staffordshire
Glegg, Baskerville, Backford, Chester
Laxe, Joseph, Gloucester Lodge, Regent's Park
Miller, William, East Hampstead, Bracknell, Berkshire
Molesworth, Sir William, Bart., Pencarrow, near Bodmin, Cornwall
Nayle, Joseph Chichester, Caverleigh Court, near Tiverton, Devon
Reeves, John Russell, Huntsland, Crawley Down, Sussex.

ON THE FLAX CROP, FATTENING CATTLE WITH NATIVE PRODUCE, BOX-FEEDING, AND SUMMER GRAZING.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I am sure you will readily afford me an opportunity of offering some information to the public on the above important subjects, acquired by experience. I desire to do so in a series of short letters, in order that objections may be answered before I re-publish them in the form of a pamphlet for general circulation. I shall be happy to reply to any public or private communications, as my object is to arrive at and to promulgate right conclusions.

Flax, at the present moment, when so many inquiries are being made respecting the proper time and method of harvesting the crop, claims our first consideration.

The proper time, of course, is when the utmost profit to the grower may be secured. In Belgium, early pulling is said to produce the finer flax, but when adopted, the seed is chiefly, if not entirely, sacrificed. In Holland, on the contrary, early pulled flax, though finer, is considered to be weaker, and to lose much of its weight while being scutched and prepared for market. In Ireland, till within a year or two, no regard was paid to the seed, but now the Irish are anxious to preserve it. Indeed the importance of this part of the crop is so generally understood, that comparatively very little flax at the present day is pulled, in any part of the world, till the seed has arrived at maturity.

In this country, where the seed, as an ingredient of the cattle compound, has been proved of such incalculable value, the strictest regard ought to be paid to its preservation; otherwise, the present attempt to cultivate flax must inevitably fail, as did that in 1531, when a statute was enacted requiring that for every 60 acres of land fit for tillage one rood should be sown with flax and hemp-seed; and in 1767, when 15,000*l.* was proposed to be divided amongst the most successful cultivators of those plants.

In those times the value of the seed as cattle-food was unknown, it was therefore disregarded, and the only chance of remuneration centred in the fibre. But to *us* flax is a double crop, the most important part of which is the seed. For, admitting that the flax will obtain more money at market, yet, the seed being consumed by cattle on the land where grown, its influence is diffused over the whole farm, and it returns to the pocket of the farmer a ten-fold greater profit in the shape of meat and corn, &c., &c.

The *indirect* advantages of growing flax are infinitely superior to the *direct*. It is impossible fully to estimate them; nor can they be ever rightly appreciated till experience has made them sure. In former times the exercise of agricultural skill and science was extremely limited, and whether flax or wheat, the exhausting effects of a good crop were not easily remedied. Then, sufficient hands were scarcely found to till the soil; now, agricultural skill and science have advanced in an extraordinary degree, aided by industry, learning, and chemical research, so that deterioration of soil consequent on any crops is no longer to be feared. Besides, we have now an overwhelming population, to find employment for which all the skill of scientific men, and all the efforts of a talented and powerful government, are at a perfect stand; and why? Simply because they "vainly compass sea and land to obtain an alleviation of our national distress, while the finger of an all-bountiful Creator points to our own soil as the source whence the remedy can alone be derived."* Yes, to our own soil! And I confidently invite the candid and philanthropic mind to survey our present flax crops in Norfolk—to take into consideration the five millions annually expended to maintain people in idleness, with the ten millions sent out of the country every year to purchase this very crop—to the support and encouragement of foreign agriculture, and to the employment of tens of thousands of foreign labourers; when I am persuaded that he will perceive with me that a door is open, by the cultivation with reference to the seed, for universal employment, and consequently for the advancement of our best interests, and the overthrow of the ruinous designs of those itinerant demagogues who infest the land at the present day.

Workmen from Belgium have lately arrived in this neighbourhood to assist in pulling and preparing our flax; men of experience, who state that they never saw finer crops, and that they are superior this year to those of their own country.

I returned last week from a journey of 700 miles, undertaken for the purpose of obtaining information respecting this important object. I took with me many specimens of the past and present years' crops of flax, and submitted them to the inspection of experienced persons, all of whom were surprised at the perfection to which we had arrived in so short a time, and agreed in the opinion, that the cultivation of this plant ought to become a national undertaking. At Leeds I had a long conference with the Messrs. Marshall, proprietors of the extensive flax-spinning mills in that town, who renewed their declarations of willingness to co-operate in promoting so desirable an end. No higher authority can be adduced than this eminent firm, because, independent of the influence which their immense purchases must have had in stimulating the growth of flax in foreign parts, they subscribed largely and expressly for that purpose, and are now anxious to promote an extended cultivation of the plant at home. I repeat, that these gentlemen take a deep interest in our present proceedings, and therefore any advice through such a medium relative to the pulling of the present crops must be received with peculiar interest. They recommend us not to pull the flax in too green a state; but to allow the seed first to ripen in the bolls, then to pull, dry, and stack it. Afterwards to ripple the seed from the stalks at our leisure, and prepare the flax for sale with a scutching-mill. Their opinion is, that we are likely to insure a more profitable return upon this system than upon any other. To illustrate their views, I would instance my present growing crops, consisting of about twelve acres, ten of which were sown to obtain the finer description of flax. I consider the seed merely for crushing purposes, to be worth at least 60*l.* Now were the flax to be

* "Reasons for the Cultivation of Flax."—London: Edwards and Hughes. Norwich: Matchett and Co.

immediately pulled, the whole of this sum would be lost; for, admitting that part of the seed might arrive at a certain degree of maturity, yet the quantity would be so small, and the quality so inferior, that it would not repay the cost of rippling.

The best criterion for judging the proper time for pulling flax, is precisely that which would influence every judicious farmer in shearing his wheat or mowing his oats—viz., when the major part of the straw turns yellow, and the kernel of the principal ears brown. With flax, as with those grains, it is perhaps better to begin a little too early than too late. The method of pulling flax is merely to collect a small quantity in the left hand, and to pluck it with the right placed about half-way down the stalks. The hands may thus be quickly filled, and then the flax should be spread in neat and even rows upon the ground. In the course of a day or two, according to the weather, it may be turned, for which purpose the shaft of a long form is appropriate. When dried to the state in which hay would not heat on the stack, it should be tied up in small sheaves, about 24 inches in circumference, and either put into a barn or stacked. Or if found necessary to tie up the flax before it is sufficiently weathered, the sheaves may be set up in the field. All weeds ought to be carefully taken out of the flax as soon as pulled; long and short stalks should be tied in separate sheaves, which is easily arranged at the time of pulling. Indeed, every process connected with the cultivation, growth, and preparation of the crop, is extremely simple, requiring the activity of a practical hand more than the efforts of an ingenious head.

I remain, Sir, your obedient servant,

JOHN WARNES, JUN.

Trimingham, July 25, 1843.

ON THE ROTATIONS OF CROPS ON HEAVY LANDS.

BY WM. STACE.

(*From the Journal of the Royal Agricultural Society of England.*)

PRIZE ESSAY.

Having had considerable experience in the cultivation of heavy soils, and having for many years turned my attention particularly to the selection of such crops as are calculated to render heavy soils more friable, by the mechanical action of their roots, and having by that means succeeded in growing such root crops as are usually grown only on lighter soils, I respond to the invitation of the Royal Agricultural Society of England, and proceed to give some account of the rotation of crops which I think best suited for heavy lands, and calculated to bring such lands more nearly on an equality with those of a more friable texture than they at present are in the maintenance of stock.

I am aware that it would be impossible to propose any rotation of crops that would be suited to all heavy soils; nor do I pretend to be able to say what rotation would be best suited to each variety of soils termed heavy; so infinite is that variety in tenacity and quality, that I believe only those who cultivate them are able to determine, in every case, what course of crops is the most profitable to be adopted.

Therefore, although I propose with some confidence a rotation which I believe to be well suited to most heavy soils, yet I readily admit that there are many heavy soils to which it is not suited, and that certain localities, or various circumstances, may render its adoption on some others unadvisable.

As the object in the following rotation is to obtain from heavy soils *profitably* that which has generally been yielded only by light soils, I have introduced such crops in the rotations as, by the mechanical action of their roots on the soil, have the greatest tendency to ameliorate it and render it more friable: such are tares, winter-beans, and clover.

Another motive to the selection of tares and winter-beans is, that the cultivation proper for them is required at the time of year when the treading of horses is least injurious, and when the turning up the soil and exposing it to the action of the atmosphere is most beneficial, so that the cultivation for them, as well as the crops themselves, tend to the desired effect—that of rendering lighter the soil on which they grow.

The following is the course I propose:—

First year—Winter tares, to be fed off by sheep on the land, followed by turnips and rape; the rape, and also part of the turnips, to be fed off by sheep; the remainder to be carried off and eaten in the yards.

Second year—Wheat.

Third year—Clover, to be cut for hay, on one-half, and trefoil and rye-grass mixed on the other half, to be fed off by sheep in the spring, and followed by spring tares, also to be fed off by sheep.

Fourth year—Wheat.

Fifth year—Winter-beans.

This ends the course, excepting that in the next course the clover takes the place of the trefoil and rye-grass in the former course, and the trefoil and rye-grass that of the clover, by which arrangement the land bears clover only once in ten years.

By this system every hundred acres of arable land would produce annually forty acres of wheat, twenty acres of beans, thirty acres of tares, twenty acres of turnips, ten acres of clover, to be mown twice, and ten acres of trefoil and rye-grass, to be fed a few weeks in the spring.

In order to point out the fitness of the above rotation for the object intended, it will be necessary to enter into some particulars respecting the cultivation best suited for some of the crops.

Preparation for the winter tare crop should commence before the beans are carried from the field. My practice is to cut them and bind them in sheaves at the end of July (for *winter* beans will ripen thus early); I then clear a space wide enough for the ploughs to begin, and place the beans on the ploughed land as the ploughs proceed, and then, by arranging them in straight rows across the field, the land may be harrowed and rolled before the beans are ready to be carried, and another ploughing may be given immediately after, followed by the necessary harrowings and rollings. The field should then be manured with rough unfermented dung: the less the manure is decomposed when applied for this crop, the lighter and drier will the land be in the spring, after the tares are fed off, and the greater will be its effect on the following turnip crop. The tares should be sown for successional crops from the first week in September to the end of October: a small portion of those sown

first should have a little rye mixed with the tares—about one bushel of rye and two bushels of tares per acre would be sufficient: this would be ready for the sheep to begin early in the spring, and should be followed by wheat and tares, in the same proportions. A larger quantity of this may be sown than of the rye and tares, as the wheat continues longer in perfection, as food for sheep, when mixed with tares than with rye; and I have found it prove a very wholesome and abundant crop—one acre frequently producing sufficient food for two hundred sheep for a week, in the month of May. The winter tares should then be sown in the following order:—

In the first week of September a small portion should be sown with rye and tares, and a larger portion with wheat and tares.

At the end of September one-third of the remainder should be sown with two-and-a-half bushels of tares per acre.

In the middle of October another third should be sown with the same quantity per acre; and

The last sowing should be finished at the end of October, with three bushels per acre.

When I begin to feed tares in the spring, I keep the sheep entirely upon them; the fold is moved twice in the day, and the tares are cut and put in moveable cribs. As fast as the land is cleared of tares it should, with the greatest expedition that the weather will admit of, be prepared for turnips; for even under the favourable circumstances of the previous cultivation and manure, heavy land cannot be well worked in the spring unless it be sufficiently dry; and from my own experience I have found that heavy land will become earlier dry, and more friable, after bearing a crop of tares than after a winter fallow.

The first turnips that are sown (at the end of May) should be an early sort, to be fed on land before the rape is ready; then all the land that can be prepared before the middle of June should be sown with Swede turnips, to be carried off for winter food in the yards; then all that can be prepared by the end of June should be sown with some sort better suited for late sowing; these may either be fed on the land or carted off; the remainder of the tare-ground should be sown with rape, to be fed on the land in the autumn, after the early turnips. As the turnips and rape are cleared from the field, wheat should be immediately sown, and on one half the wheat, clover should be sown in the spring. The common objection to sowing clover in wheat does not apply when wheat is sown after turnips, as the wheat is not likely to be laid by an over luxuriance of straw, though I have always found it a good yielding crop. The other half should be sown with trefoil and rye-grass; and although it may appear that this crop is sacrificed by being ploughed up early in the following spring, to make room for the more valuable one of spring tares, yet it will be found to produce a good quantity of food in the stubble after harvest, and very nutritious and wholesome food for sheep early in the spring. As soon as the land is sufficiently dry in the spring, a small portion of tares should be sown, and the rest in succession till the beginning of May. In feeding these tares off with sheep the land will be manured for the following wheat crop; and the clover ley may be manured by folding sheep on it at night, whilst they are eating the turnips and rape, as the land on which they grow has been sufficiently manured before. Wheat follows; and after that the land should be ploughed and the winter-beans drilled in, in October, at the rate of two-and-a-half bushels per acre. The rows should be sufficiently far apart to admit the horse-hoe, and the beans should be kept as clean as possible. The winter-beans coming early to harvest are generally carried before the haulm is much injured by the weather, consequently sheep will eat it (*i. e.* the haulm) with avidity, if given to them in a yard at some part of the day whilst feeding off turnips and rape; this I have practised for some years, and found it particularly wholesome for the sheep.

I must be allowed to repeat, that in this rotation such crops have been excluded as require the land to be ploughed early in the spring, when it is most injured by the treading of cattle, such as oats and spring beans; and such are introduced as are least exhausting to the soil and best calculated to render it more friable, such as tares, clover, and beans; and my own experience assures me that by it is afforded such an abundance of food for cattle as will insure an ample supply of manure to keep up, or rather increase the fertility of the soil.

Berwick, near Lewes, Sussex.

ON DRAINING.

This subject seems now to obtain the attention of every class of farmers, from the renter of 80 acres to the one of 800; perhaps, on the whole, nothing has of late proved so beneficial to his interests. In daily conversation, no sooner is the barrenness of a neighbour's farm talked of, than this reason is given by some one standing by—"it wants draining;" and true it is, draining may do very much towards rendering a soil productive. Who will view the tracts of land about Glastonbury, and believe that once the briny sea watered those parts, where now the honest farmer speeds his plough? But such is the fact, though this may not be in the recollection of any one now living. Grant we allow that draining is highly beneficial—still the diversity of opinion on this subject is so great that it would take pages to explain and satisfy the fancies of all. One speaks high in favour of thorns being used in the construction of drains; another is as strong in favour of the use of tiles—but here we can lay down no fixed rule. A drain constructed with thorny or brush wood, in a heavy clay soil, may last a long time, but still it is never quite the thing. Tiles are at the first set-out expensive, if not made near at hand, but they last longer than the thorns, and pay better than the peat drains. In the heavy clay grounds, tiles or pieces of slate with thorns laid over them, and filled up with a porous surface soil, will perhaps do best. The material of which the drain is formed, however, is not the only point of dispute; the depth of it, and how far it should be below the surface of the ground, equally engages the attention of the farmer. Often we see drains opened, and instead of there being quite a little stream in them, we find them dry and cracked; now this is generally the case where the drains are only eight or nine inches deep, for in fact the drain is above instead of below the water, but by sinking it eight inches deeper we come in contact with a large body of water, which lies stagnant and cold at the roots of the plant, and starves the land, which, like a sponge, is always sucking it in.

We know that few farmers will take upon themselves the whole expence of draining, but many will willingly accede to paying the half; some agree to putting in the tiles, provided the landlord supplies them. Now what is the result of all this? The operation of draining is never well done—the owner of a farm, perhaps, is quite content if he gets his rents, but for the good of his country he should not stop here. I will mention an instance which occurred lately, which will show the profit arising to a landlord by undertaking the chief expence himself. The farm of which he was owner was let nominally for 250*l.* per annum, but when rent-day came the farmer told such a pitiful story of the state of his crops in consequence of the wetness of the land, that some great reduction was obliged to be made. The landlord having been continually pestered in this way, determined to mend his estates, and the way he set about it was this. He agreed with his tenant to buy himself the tiles, and make the drains, provided he hauled them; to this the farmer willingly acceded, provided it was done in the winter months when his horses had not much to do. Accordingly when winter set in, all was activity on his farm; several poor labourers were busily employed, when otherwise they would have been a burden on the parish. But to return to the state of the land—for the first year after the draining, no improvement was to be seen, but in the following winter a rapid improvement was to be noticed. Hay-making season came on, and never before was there such a crop on the land. The corn too looked strong, and fine in the ear. Two tons of good hay was now made on the land which before yielded only one ton of inferior hay. How different was the face of the tenant when he came to pay his next rent! Though grumbling (as farmers generally do when they put down their gold, as if every coin they parted with was a drop of blood), he could not but allow that the season had been pretty fair; for three years the land continued to improve, and the tenant to fill his coffers (which was evident from a new suit of clothes and a smart pair of boots with mahogany-coloured tops) when the lease dropped. At this time the landlord thought he must endeavour to get the interest of the money he had spent in the draining; accordingly he had the land valued, and to his surprise found his farm was now worth 400*l.* per annum, and his astonishment was not a little increased when he found this same tenant willing to take it at that sum on a lease of 21 years. So much for the good to be derived from draining.

In conclusion, I would ask cannot much be done in this way in the present depressed state of trade. There are on a moderate calculation ten millions of acres of cultivated land which require draining. Here then is employment for thousands of our distressed poor, while the owners will be the great gainers, and that at the good of the poor. It is high time to have recourse to some expedient of this kind, and I hope Mr. Pusey will carry out his plans with all success, and Parliament will duly weigh the matter, so that public good may not stoop to private interest.

Yours obediently,

Wells. H. F. E.

We are informed that Mr. Parkinson sold a yearling short-horned heifer, at the meeting of the Yorkshire Agricultural Society, held at Doncaster for 200 guineas.

ON FARM-YARDS AND DUNG-HEAPS.

(FROM THE MUCK MANUAL, JUST PUBLISHED.)

On the subject of farm-yard manure, we shall here recapitulate a summary of the chief points which we deem particularly worthy of consideration.

1. To bottom the farm-yard with furze, fern, dry haulm, or any other loose refuse that takes the longest time to dissolve, and over that to bed it deep with straw.

2. To occasionally remove the cribs of the store to different parts of the straw-yard, in order that their dung may be dropped, and their litter trodden equally.

3. To spread the dung of other animals, when thrown into the yard, in equal layers on every part.

4. To remove the dung from the yard at least once, or oftener, during the winter, to the mixen.

5. To turn and mix all dunghills until the woody or fibrous texture of the matter contained in them, and the roots and seeds of weeds, be completely decomposed, and until they emit a foul and putrid smell, by which time they reach their greatest degree of strength, and arrive at the state of spit-dung.

6. To keep the dung in an equal state of moisture, so as to prevent any portion of the heap from becoming fire-fanged. If the fermentation be too rapid, heavy watering will abate the heat; but it will afterwards revive with increased force, unless the heap be either trodden firmly down or covered with mould to exclude the air.

7. To ferment the dung, if to be laid on arable land during the autumn, in a much less degree than that to be applied before a spring sowing.

8. To lay a larger quantity on cold and wet lands than on those of a higher nature, because the former require to be corrected by the warmth of the dung; while on dry, sandy, and gravelly soils, the application of too much dung is apt to burn up the plants. Stiff land will also be loosened by the undecayed fibres of long dung, which, although its putrefaction will be thus retarded, and its fertilizing power delayed, will yet ultimately afford nourishment.

9. To form composts with dung, or other animal and vegetable substances and earth, for application to light soils.

10. To spread the manure upon the land, when carried to the field, with the least possible delay; and, if the land be arable, to turn it immediately into the soil.

11. To preserve the drainage from stables and dung-hills in every possible way; and if not applicable in a liquid state, to throw it again upon the mixen.

12. To try experiments, during a series of years upon the same soils and crops, equal quantities of dung, laid on fresh, and afterwards rotted, in order to ascertain the results of their application to the land. The whole quantity to be first weighed or measured, and then divided.

The fermentation of farm-yard manure is, in fact, a subject of far greater importance than is generally imagined; for on a due estimation of its value, mainly depends the individual success as well as the national prosperity of our agriculture. The experiments to which we point cannot fail

therefore to come home to the interests of every man: they may be made without expence, and without any other trouble than the mere exercise of common observation and intelligence. Leaving aside, however, the discussion concerning the disputed worth of fresh or fermented—of long or short dung—let the farmer sedulously bend his attention to the accumulation of the utmost quantity that it may be in his power to procure. The manner and the time of using it, in either state, must however be governed by circumstances which may not always be within his control; and every judicious husbandman will rather accommodate himself to the exigency of the case than adhere strictly to his own notions of what he conceives to be the best practice. In fine, whether favouring the one or the other side of the question, let him collect all he can, apply it carefully to his crops, and then, trusting to events, "let the land and the muck settle it."

YORKSHIRE AGRICULTURAL SOCIETY.

LIST OF THE PRIZES AWARDED AT THE MEETING HELD AT DONCASTER AUGUST 2.

The following were the Judges—

For the Farm sweepstakes—Messrs. R. Brough, Meltonby, Hull; Charles Howard, York; W. Pick, Grasskill, Ouseburn.

For Horses—Messrs. Geo. Higginson, Hutton Sessay, Thirsk; Richard Nainby, Barnoldby le Beck, Grimsby; William Wetherell, Durham.

For Cattle—Messrs. John Grey, Dilston; Robert Cattley, Stearsby; William Torr, jun., Riby.

For Sheep and Pigs—Messrs. William Pratt, Newfield, Southam, Warwick; Leonard Severs, Oliver, Richmond; Philip Skipworth, Aylesbury, Brigg.

For Implements—Messrs. Timothy Wheatley, Neswick, Driffield; Peter Stevenson, Rainton, Ripon.

The following is a list of the premiums awarded:

SHORT-HORNED CATTLE.

Class 1.—For the best bull of any age, 25*l.*; second, 10*l.* Fifteen competitors. First prize awarded to Mr. John Forrest, Stretton, Warrington (Symmetry), roan, bred by Mr. Thomas Forrest. Second ditto to Mr. Thomas Bates, Kirkleavington, Yarm (Cleveland Lad Second), roan, bred by him.

Class 2.—For the best yearling bull, 20*l.*; second, 10*l.* Seventeen competitors. First prize awarded to Mr. John Beetham, West Harlsey, Northallerton, (Harlsonio), roan, bred by him. Second ditto to Mr. John Forrest, Stretton, Warrington (Cheshire Lad), white, bred by him.

Class 3.—For the best bull calf, 10*l.*; second, 5*l.* Fourteen competitors. First prize awarded to Mr. John Parkinson, Leyfields, Newark (Cramer), bred by him. Second ditto to Mr. Jonas Whitaker, Burley, Otley (Gustavus the Hero), roan, bred by him.

Class 4.—For the best cow of any age, in calf or milk, 20*l.*; second, 10*l.* Sixteen competitors. First prize awarded to Mr. John Booth, Killerby, Catterick (Necklace), red, bred by him. Second ditto to Mr. R. Earnshaw, jun., Eastthorpe, Market Weighton (Mayflower), yellow, red, and white, bred by the late Mr. Henry Edwards.

Class 5.—For the best three-year old cow or heifer, in calf or milk, 15*l.*; second, 5*l.* Ten competitors. First prize awarded to Mr. John Forrest (Victoria), roan, bred by him. Second ditto to Mr. Thomas Crofton (Emma), red and white, bred by him.

Class 6.—For the best two-year old heifer, in calf, 10*l.*; second, 5*l.* Ten competitors. First and second prizes awarded to Mr. John Booth, Killerby, Catterick, (Ladythorne), roan, (Birthday), white; both bred by him.

Class 7.—For the best yearling heifer, 10*l.*; second, 5*l.* Ten competitors. First prize awarded to Mr. Henry Watson, Walkeringham, Bawtry (Myrtle), roan, bred by him. Second ditto to Mr. John Booth, Killerby, Catterick, a roan heifer (not named), bred by him.

Class 8.—For the best heifer calf, 10*l.*; second, 5*l.* Twelve competitors. First prize awarded to Mr. G. O. Trotter, Bishop-Middleham, Rusheyford (Boadicea), roan, bred by him. Second do. to Mr. H. L. Maw, (Sarah), roan, bred by him.

CATTLE OF ANY BREED.

Class 9.—For the best fat ox, under four years of age, 10*l.* Three competitors. Awarded to Mr. Henry Mann, Pigburn, Doncaster, a red ox, bred by him.

Class 10.—For the best fat ox, under three years of age, 10*l.* Two competitors. Awarded to Mr. Henry Mann, Pigburn, Doncaster, a red ox, bred by him.

Class 11.—For the best fat cow or heifer, of any age, 10*l.* Four competitors. Awarded to Mr. John Morley, Eastoft, Crowle, a red roan heifer, 8 years old, bred by Sir John Ramsden, Bart.

LONG-WOOLLED SHEEP.

Class 12.—For the best shearling ram, 15*l.*; second, 7*l.* Nineteen competitors. First and second prizes awarded to Mr. Samuel Wiley, Brandsby, York, bred from his own flock.

Class 13.—For the best ram of any age, 10*l.*; second, 5*l.* Twenty-three competitors. First prize awarded to Mr. William Thorp, Londesbro' Market Weighton, aged, bred from the flock of the late Mr. Marshall. Second do. to Mr. Robert Dawson, jun., 2 years 4 months old, bred from the flock of Mr. Greame.

Class 14.—For the best pen of five ewes, 10*l.*; second, 5*l.* Nine competitors. First prize awarded to Mr. William Abraham, Barnetby-le-Wold, from 2 to 4 years old. Second do. to Mr. J. W. Childers, Cantley, Doncaster, 4 years 4 months old, bred from the flock of Mr. Meggison.

Class 15.—For the best pen of five shearling wethers, 10*l.*; second, 5*l.* Eight competitors. First prize awarded to Mr. John D. Clark, bred from his own flock. Second do. to Lord Wenlock, bred from his lordship's stock.

Class 16.—For the best pen of five shearling gimmers, 10*l.*; second, 5*l.* Eleven competitors. First prize awarded to Mr. John Creassy, Blyth, Bawtry, bred from his own flock. Second do. to Mr. William Newham, bred from his own flock, by rams hired from Mr. Robert Burgess.

PIGS.

Class 17.—For the best boar, large breed, 5*l.*; second, 2*l.* Two competitors. First prize awarded to Mr. John Walton Nutt, York, an aged boar. Second do. to Mr. Philip Davies Cooke, a boar, 19 months old, bred by Mr. Stothard.

Class 18.—For the best sow, large breed, in pig or milk, 5*l.*; second 2*l.* Four competitors. First prize awarded to Mr. Philip Davies Cooke, 3½ years old, bred by him, in pig. Second do. to Mr. John Beetham, 3½ years old, bred by him, in pig.

Class 19.—For the best boar, small breed, 5*l.*; second, 2*l.* Eight competitors. First prize awarded to Mr. John Saull, Alverley Grange, Doncaster, 10 months old, bred by Mr. Thomas Saul, of Foxholes. Second do. to Mr. R. M. Jaques, 9 months old, bred by him.

Class 20.—For the best sow, small breed, in pig or milk, 5*l*; second, 2*l.* Seven competitors. First prize awarded to Earl Fitzwilliam; 1 year and 8 months old, bred by his lordship; in pig. Second ditto, Viscount Galwey, Serlby Hall, Bawtry; 2½ years old; in pig.

Class 21.—For the best three store pigs, of the same litter, from four to nine months old, 5*l.*; second, 2*l.* Two competitors. First prize, awarded to Earl Fitzwilliam; 32 weeks old, bred by his lordship. Second ditto, Samuel Wiley, Bransby, York; 7 months old; bred by him.

HORSES.

Class 22.—For the best stallion for hunters, 10*l.*; second, 5*l.* Six competitors. First prize, was awarded to John Outhwaite, Acketon, Wetherby (Lambkin), bay, 12 years old. Second ditto, Mr. Richard Gaunt, Ingmanthorpe, Wetherby (Father of the Turf), chestnut, 3 years old.

Class 23.—For the best stallion for coach horses, 10*l.*; second, 5*l.* Three competitors. First prize, awarded to Mr. Richard Tennant, Osgodby, Selby; (Grey Orville), grey, aged. Second ditto, Mr. Thomas Kirby, York (Walter Scott), bay, 4 years old.

Class 24.—For the best stallion for roadsters, 10*l.*; second, 5*l.* Five competitors. First prize, awarded to Mr. Thomas Cockshott, Cringles, Skipton (Young Pretender), brown, 5 years old. Second ditto, Mr. Thomas Cockshott, Addingham Moorside, Otley; (Young Gainsborough), brown, 7 years old.

Class 25.—For the best stallion for agricultural purposes, 10*l.*; second, 5*l.* Four competitors. First prize, awarded to Mr. George Buckle, Arthington, Otley (Wharfdale Hero), grey, 6 years old. Second ditto, Mr. George Lane Fox, Bramham Park, Tadcaster (Belhaven), 7 years old.

Class 26.—For the best mare and foal for hunting, 5*l.*; second, 2*l.* Seven competitors. First prize, awarded to Mr. John Morley, Eastoft, Crowle. Second ditto, Mr. Richard Johnson, Goldthorpe, Doncaster; bay, 14 years old, foal by Ascot.

Class 27.—For the best mare and foal for coaching, 5*l.*; second, 2*l.* Four Competitors. No prizes awarded for want of merit.

Class 28.—For the best roadster mare and foal, 5*l.*; second, 2*l.* Five competitors. First prize, awarded to Mr. Henry Watson; brown, 9 years old, foal by The Shah. Second ditto, Mr. William Lythe, Thirsk; black, 14 years old, foal by Bay President.

Class 29.—For the best mare and foal for draught, 5*l.*; second, 2*l.* Five competitors. First prize, awarded to Mr. James Hepstonstall, Hazlewood, Tadcaster; grey, 6 years old, foal by Little John. Second ditto, Mr. Henry Mann; brown, aged, foal by Young Merryman.

Class 30.—For the best three-year old hunting gelding or filly, 5*l.*; second, 2*l.* Seven competitors. First prize, awarded to Mr. Joseph Smith, Carlton, Selby; a chesnut gelding. Second ditto, Mr. John Ireland, Goole; a chesnut filly.

Class 31.—For the best three-year old coaching gelding or filly, 5*l.*; second, 2*l.* Four competitors. First prize, awarded to Mr. Thomas Wright, Thorp-Basset, Malton; a bay gelding. Second ditto, Mr. John Littlewood, a bay gelding.

Class 32.—For the best two-year old coaching gelding or filly, 5*l.*; second, 2*l.* Five competitors. First prize, awarded to Mr. William Burton, Water-Fulford, York; a bay gelding. Second ditto, Mr. William Prince, Chapel Haddlesey, Selby; black grey gelding.

Class 33.—For the best three-year old hackney gelding or filly, 5*l.*; second, 2*l.* Four competitors. First prize, awarded to the Rev. Charles George Smith; a brown gelding. Second ditto, Mr. Anthony Webster, Sprotbro', Doncaster; a bay gelding.

Class 34.—For the best three-year old gelding or filly for agricultural purposes, 5*l.*; second, 2*l.* Three competitors. First prize, awarded to the Rev. Charles George Smith; a bay filly. Second ditto, Mr. Robert John Coulman; a bay gelding.

EXTRA STOCK.

Cattle.—2*l.* awarded to John Parkinson, Leyfields, Newark, for Sir Thomas Fairfax; 1*l.* to Richard Booth, Warlaby, for White Strawberry; and 10s. to John Fullerton, Thrybergh Park, for a North Devon fat ox.

Sheep.—1*l.* 10s. awarded to Sir W. B. Cooke, Wheatley, for ten fat Leicester ewes; 1*l.* to William Richardson, Great Limber, Caistor, for two new Leicester wethers, aged 40 months; and 10s. to John Walbanke Childers, Cantley, for a five-year old ewe, bred from the flock of Mr. Meggison.

Pigs.—30s. awarded to Viscount Galway, Bawtry, for nine pigs, 17 weeks old; 1*l.* to Philip Davies Cooke, Owston, for two gilt pigs of the same litter, seven months old; 1*l.* to the Rev. Charles George Smith, Everton, Bawtry, for two boars, small breed, 19 weeks old, bred by himself from a boar belonging to Mr. Henderson; 1*l.* to Samuel Wiley, Bransby, York, for two sows, 7 months old, small breed; 1*l.* to ditto for a sow, 2 years 6 months old; 10s. to Sir W. B. Cooke, Wheatley, for 4 boars; and 10s. to John Walton, York, for a gilt, eleven months old.

Shepherds.—To the shepherd, being an annual servant, who shall have lost the smallest proportionate number of ewes and lambs previous to the 12th of May, from those that produced lambs in 1843, the number of the flock not being less than fifty, 5*l.*; second, 3*l.*; third, 2*l.* Seven candidates. First prize, awarded to John Barrick; second to Joseph Martin; third to Edmund Gillott.

SAVING CORN IN WET WEATHER.

TO THE EDITOR OF THE EXETER FLYING POST.

Sir,—The variable state of the weather threatening a showery harvest, I am induced to offer a suggestion for saving damp corn by a method safe and economical, and I hope practicable and effectual. In Russia and the North of Europe this is done by kiln-drying, of which a very simple method is described in Brit. Husb., v. ii., p. 206; still improvable in this country by the substitution of coke for their wood and fuel. It is, however, in either case liable to the cost of fuel, and of a person to look after the fire; and to the danger of a few straws falling in, and kindling the whole pile.

In the laboratory we are in the practice of drying materials which do not bear heat, by aid of substances having a strong attraction for moisture; one of which, lime, being largely used in manure, might be employed for drying the corn at no other cost than the labour.

If the rick be made hollow, with the grain turned inward, a sufficient quantity of fresh quicklime placed within, and then all closed from bottom to top, and covered over to exclude the external air; the lime will rapidly dry the air within, which will as rapidly draw the moisture from the corn, and so continue until the corn is dry, or the lime saturated; and as quicklime will absorb about one-third its weight of water, a ton of lime will take between six and seven cwt. of water, and thus probably dry six or seven tons of corn and straw. For all this water must come from the corn, if the external air is well excluded, and the lime raised from the soil by a bed of stones or gravel.

The lime must not, of course, touch the corn, and therefore room must be left for it to swell, in slaking.

The intelligent farmer will understand better than I the details of construction of such a rick; I need only suggest, that it may be best raised in the stack yard, upon dwarf walls, with an opening to throw in the lime, which should then be immediately closed up; but opened occasionally to turn over the

lime. If the latter be all slaked before the corn be dry, it should be withdrawn, and a second quantity put in.

The rick might be steadied to bear the wind, by poles across the inside; or when dry, might be filled in from part of the same, or other dry corn; or it might be raised temporary on the field itself, where it would dry the better for being based on a bed of dry straw.

If there be no practical impediment to this method, the farmer may be enabled to save his corn in the most capricious seasons; without the mortification of seeing it sprouting in the ear, as it stands or lies on the ground.

For drying hay in damp weather, this method would require too much lime; as grasses cut green contain 2-3rds to 3-4ths their weight of water. But may not half dried hay be stacked (like lucerne) with layers of dry oat straw; sprinkling the latter with salt to draw juice out of the grass, and impart it to the straw? Or where straw was scarce or objectionable, using old dry hay instead, with only as much salt as would prevent heating and mouldiness. If this is conveniently practicable, it would obviate the necessity of leaving the hay in cocks, for days or weeks of rain, until the inside is heated and mouldy.

Yours, sir, &c.,

J. Prideaux.

GREAT AGRICULTURAL MEETING AT DUNDEE.

AWARDS OF THE JUDGES.

1. CATTLE.

SHORT-HORNED BREED.

Class I.—For the best Bull, calved after 1st Jan., 1837—Fifty sovs.—George A. Grey, Esq., Millfield-hill, Northumberland.

For the second best do.—Twenty sovs.—Mr. David Hill, Edenhall, Cumberland.

To the breeder of the best Bull in this Class—The Honorary Silver Medal—Mr. Aitkinson, of Peepy, Northumberland.

II. For the best Bull, calved after 1st Jan., 1841—Twenty sovs.—Mr. Nicol Milne, Faldenside, Roxburgh.

For the second best do.—Ten sovs.—Mr. Hugh Watson, Keillor, Forfar.

III. For the best Bull, calved after 1st Jan., 1842—Twenty sovs.—Mr. Alexander Geckie, of Baldowrie, Forfar.

IV. For the best Cow—Fifteen sovs.—Mr. Lewis Crombie, Kirkhill, Kincardine.

For the second best do.—Seven sovs.—Mr. Millar, of Ballumbie, Forfar.

V. For the best two Cows—Ten sovs.—The Duke of Buccleuch.

VI. For the best two Heifers, calved after 1st Jan., 1841—Ten sovs.—Mr. Amos Cruickshank, Sittyton, Aberdeen.

For the second best two do.—Five sovs.—Mr. Hugh Watson, Keillor, Forfar.

VII. For the best Heifer, calved after 1st Jan., 1842—Ten sovs.—Mr. Amos Cruickshank, Sittyton.

For the second best do.—Five sovs.—Mr. James Walker, Wester Fintray, Aberdeen.

VIII. For the best two Oxen, calved after 1st Jan., 1840—Ten sovs.—Mr. Millar, of Ballumbie.

For the second best two do.—Five sovs.—Mr. David Hood, Hatton of Eassie, Forfar.

IX. For the best two Oxen, calved after 1st Jan., 1841, only one lot exhibited, by the Duke of Buccleuch. Not deemed worthy of the Premium; the half, Five sovs., was voted.

POLLED BREEDS.

X. For the best Bull, calved after 1st Jan., 1837—Twenty sovs.—Mr. William Fullarton, Mains of Ardovie, Forfar.

For the second best do.—Ten sovs.—Mr. Alexander Ronaldson, Littlegight, Aberdeen.

XI. For the best Bull, calved after 1st Jan. 1841—Fifteen sovs.—Mr. Hugh Watson, Keillor.

For the second best ditto—Eight sovs.—Mr. Robert Walker, Portlethen Mains, Kincardine.

XII. For the best Bull, calved after 1st Jan., 1842—Ten sovs.—Mr. Hugh Watson, Keillor.

For the second best ditto—Five sovs.—Sir Thomas Burnett, Bart., of Loys, Kincardine.

XIII. For the best Cow—Ten sovs.—Colonel Dalgairns, of Balgavies, Forfar.

For the second best ditto—Seven sovs.—Mr. Robert Hector, Ferney-flat, Kincardine.

XIV. For the best three Cows—Ten Sovs.—Mr. William Fullerton, Mains of Ardovie, Forfar.

XV. For the best two Heifers, calved after the 1st Jan., 1841—Eight sovs.—Mr. Hugh Watson, Keillor.

For the second best two ditto—Five sovs.—Mr. James Mustard, Leuchland, Forfar.

XVI. For the best two Heifers, calved after 1st. Jan., 1842—Seven sovs.—Mr. H. Watson, Keillor.

XVII. For the best two Oxen, calved after the 1st Jan., 1839—Ten sovs.—Lord Panmure.

For the second best two ditto—Seven sovs.—Mr. Hugh Watson, Keillor.

XVIII. For the best two Oxen, calved after 1st. Jan., 1840—Eight sovs.—Mr. Robert Lyall, Old Montrose, Forfar.

For the second best two ditto—Five Sovs.—Mr. Robert Lyall.

XIX. For the best three Oxen, calved after 1st Jan., 1841—Five sovs.—Mr. Thomas Collier, Hatton.

FIFE BREED.

XX. For the best Bull, calved after 1st Jan. 1839—Twenty sovs.—Mr. James Landale, Woodmill, Fife.

For the second best ditto—Ten sovs.—Mr. Andrew Aitken, Carnbee, Fife,

To Mr. J. Landale, as the breeder of the best Bull, the silver medal.

XXI. For the best Bull, calved after 1st Jan. 1841,—ten sovs.—F. Wedderburn, Esq., of Birkhill, Fife.

XXII. For the best two Cows, ten sovs.—Mr. George Brown, Belgarvie, Fife.—[The sire and dam of these Cows were also bred by Mr. Brown himself, and were of the pure Fife breed.]

For the second best, two ditto, seven sovs.—Mr. David Wallace, Balgrummo, Fife.

XXIII. For the best two Heifers, calved after 1st Jan. 1841—No competition.

XXIV. For the best two Heifers, calved after 1st Jan. 1842, five sovs.—Mr. George Brown, Balgarvie, Fife.

XXV. For the best two Oxen, calved after 1st Jan. 1839, ten sovs.—Mr. David Wallace, Balgrummo, Fife.

For the second best two ditto, seven sovs.—Mr. David Wallace.

XXVI. For the best three oxen, calved after the 1st Jan. 1841, five sovs.—Mr. D. Wallace.

WEST HIGHLAND BREED.

XXVII. For the best Bull, calved after 1st Jan. 1836, twenty sovs.—Mr. Wm. Grant, Ruthven, Banff.

For the second best ditto, ten sovs.—Mr. Wm. Grant.

To Mr. Grant, as the breeder of the best Bull in this class, the silver medal.

XXVIII. For the best Cow, calved after the 1st Jan. 1836, eight sovs.—The Marquis of Breadalbane.

For the second best ditto, five sovs.—Mr. Patrick Small, Dirnanean, Perth.

XXIX. For the best two Heifers, calved after 1st Jan. 1840, seven sovs.—The Marquis of Breadalbane.

XXX. For the best two Oxen, calved after 1st Jan., 1839—Ten Sovs.—The Earl of Mansfield.

XXXI. For the best three Oxen, calved after 1st Jan., 1841—Five Sovs.—The Marquis of Breadalbane.

DAIRY COWS.

XXXII. For the best Dairy Cow of any breed, pure or cross—Ten Sovs.—The Earl of Mansfield.

For the second best do.—Seven Sovs.—The Earl of Mansfield.

For the third best do.—Five Sovs.—Mr. Thos. Ross, Quinzie Burn, Stirlingshire.

ANY BREED.

XXXIII. For the best Ox of any breed, pure or cross, showing most symmetry, weight, and fat, calved after 1st Jan., 1839—Ten Sovs.—Mr. John Millar, Ballumbie.

For the second best do.—Seven Sovs.—Mr. W. D. Proctor, Glammiss.

II. HORSES.

FOR AGRICULTURAL PURPOSES.

CLASS I. For the best Stallion under ten years old—Forty Sovs.—Mr. Geo. Paton, Bankhead, Renfrew.

For the second best do.—Thirty Sovs.—Mr. Richard Hogg, New Blainslie, Roxburgh.

II. For the best Stallion, foaled after 1st Jan., 1840—Twenty Sovs.—Mr. Andrew Aitken, Carnbee, Fife.

III. For the best Stallion, foaled after 1st Jan., 1841—Ten Sovs.—Mr. Andrew Dudgeon, Falkland Wood, Fife.

IV. For the best Mare—Fifteen Sovs.—Mr. Thomas Gowans, Addinbrae, Edinburgh.

For the second best do.—Ten Sovs.—Mr. Robert Murdoch, Haughhead, Lanark.

V. For the best two-year-old Filly—Ten Sovs.—Mr. Wm. Tod, Elphingstone Tower, Haddington.

For the second best do.—Seven Sovs.—Mr. James Steele, Ingliston, Forfar.

III. SHEEP.

LEICESTER BREED.

CLASS I. For the best Tup, lambed after 1st January, 1839—Twenty sovs.—Mr. Thomas Simpson, Blainslie, Roxburgh.

For the second best ditto—Ten sovs.—Mr. Alexander Geekie, Baldowrie, Forfar.

II. For the best Shearling Tup—Twenty sovs.—Mr. William Smith, Burton, Northumberland.

For the second best ditto—Ten sovs.—Sir Thomas Moncrieffe, Bart., Moncrieffe.

III. For the best pen of three Ewes—Seven sovs.—Mr. Hugh Watson, Keillor.

For the second best ditto—Five sovs.—Mr. Hugh Watson, Keillor.

IV. For the best pen of three Gimmers—Seven sovs.—Mr. Alexander Geekie, of Baldowrie.

For the second best ditto—Five sovs.—Mr. Hugh Watson, Keillor.

V. For the best pen of five Wethers, not exceeding twenty months old—Fife sovs.—Mr. Millar, of Ballumbie.

SOUTHDOWN BREED.

VI. For the best aged Tup—Ten sovs.—The Duke of Richmond.

VII. For the best Shearling Tup—Ten sovs.—Mr. Jonas Webb, Babraham, Cambridge.

VIII. For the best three Ewes—Seven sovs.—Mr. Hugh Watson, Keillor.

IX. For the best three Gimmers—Five sovs.—Mr. Hugh Watson, Keillor.

BLACKFACED BREED.

X. For the best three aged Tups—Ten sovs.—Mr. James Deans, Mitchell Hill, Peebles.

For the second best three ditto—Five sovs.—Mr. James Welsh, Earlshall, Dumfries.

XI. For the best five Ewes—Five sovs.—Mr. John Collin, Forfar.

For the second best five ditto—Three sovs.—Mr. J. Falconer, Balnakettle, Kincardine.

XII. For the best five Gimmers—Five sovs.—Mr. John Collier, Panlathie.

For the second best five ditto—Three sovs.—Mr. Patrick Small, of Dirnanean, Perthshire.

XIII. For the best five Wethers, lambed after 1st January, 1839—Five sovs.—Mr. David Scott, Morthfield, Edinburgh.

XIV. For the best five Wethers, lambed after 1st January, 1838—Five sovs.—Mr. Millar, of Ballumbie.

CHEVIOT BREED.

XV. For the best three Tups—Ten sovs.—Mr. William Atchison, Menzion, Peebles.

XVI. For the best five Ewes—Five sovs.—Said Mr. William Atchison, Menzion.

XVII. For the best five Gimmers—Five sovs.—Mr. William Grieve, Branxholm Park, Roxburgh.

XVIII. For the best five Wethers, lambed after 1st January, 1839—Five sovs—the Duke of Northumberland.

ANY BREED.

XIX. For the best pen of five Wethers, of any breed or cross, of most value to the Grazier, quality of wool and mutton considered—Five sovs.—Mr. Millar, of Ballumbie.

IV. SWINE.

CLASS I. For the best Boar—Five sovs.—Mr. John Mitchell, Cupar, Fife.

II. For the best Sow—Four sovs.—Sir John Stuart Forbes, Bart., of Fettercairn.

For the second best ditto—Three sovs.—Mr. John Hunter, Beith, Ayr.

III. For the best three Pigs, under ten months old—Three sovs.—the Earl of Mansfield.

IV. For the best Pig, not exceeding one year old, belonging to a Cottager paying not more than £6 of yearly rent, or whose cottage does not exceed that annual value—Two sovs.—Mr. David Couper, farm-servant at Scroggarfield, Forfar.

V. DAIRY PRODUCE.

1. CURING BUTTER.

CLASS I. To the owner of any Dairy in Scotland who had made and cured, and exhibited at the Show, the best quality of Butter for the market; the quantity not being less than two cwt. during the season 1843—Five sovs.—Mr. John Ramsey, Hilton of Balmure, Forfar.

For the second best quality—Three sovs.—Miss Mary Grahame, Baldutho, Fife.

2. MAKING CHEESE.

II. To the person in Scotland who produced the best specimen of Sweet or Full Milk Cheese, made of any variety that he shall find most profitable for the market, not less than one cwt., 16 oz. to the lb.—Five sovs.—Mr. Robert Arthur, Pirliehill, Stirling.

For the second best quality—Three sovs.—the Marquis of Breadalbane.

The Judges recommended to the notice of the Committee an old Cheese of particular fine quality, exhibited by Mrs. Dudgeon, Falkland Wood, Fife.

III. To the owner of any Dairy in Scotland who had made for sale the best quality of Cheese from Skimmed Milk, not less than one cwt., during the season 1843—Three sovs.—Mr. Robert Arthur, Pirliehill, Stirling.

For the second best quality of ditto—Two sovs.—Mr. J. Somerville, Lampitts, county of Lanark.

The Judges noticed favourably specimens of Butter, and of full and skimmed Milk Cheese, exhibited by Mr. William Hamilton, Persland, Lanarkshire; and Butter shewn by Miss Grahame, Baldutho.

VI. POULTRY.

Class I.—For the best couple of Turkeys—Two sovs.—Lord Kinnaird.

For the second best ditto—One sov.—Sir John Ogilvie, Bart.

II. For the best couple of Fowls of the Mottled or Speckled Dorking breed—One sov.—Lord Kinnaird.

For the second best ditto—Half-a-sov.—Lord Kinnaird.

III. For the best couple of Fowls of any other breed—One sov.—Mr. James Montgomery, Rankeillour, Fife.

For the second best ditto.—Half a sov.—Mr. Robert Walker, Portlethen Mains.

Among the extra Poultry are noticed, as very superior, two Ducks exhibited by Lord Kinnaird.

VII. EXTRA STOCK, IMPLEMENTS, &c.

The Judges commended the Stock in this department belonging to the following Exhibitors :—

The Duke of Richmond, four very superior Oxen, a cross between the Short Horned and West Highland.

Mr. David Carsewell, Rathillet, county of Fife, three three-year-old Stots, three two-year-old do., and two cows, in all eight, the produce at three births of the same cow, which was also exhibited.

The Earl of Mansfield, an Ox of the West Highland breed.

The Marquess of Breadalbane, two superior West Highland Cows.

Mr. William Nicoll, Newton of Kirkbuddo, county of Forfar, a Cow and three Calves of the Angus breed.

Lord Lynedoch, four North Devon Heifers.

Dr. Fettes, Laurencekirk, a short-horn Calf.

Mr. John Collier, Panlathy, five two-year-old Black-faced Wedders, considered good for their age.

Mr. Jonas Webb, Babraham, Cambridge, three superior Southdown Tups, ditto.

Three Carriage Horses, belonging respectively to Lord Panmure, Mr. Cossar, Dalkeith, and Mr. James Gibson, Haughs of Cossars. Two very useful Fillies, exhibited by Mr. Alexander Bowie, jun., West Scryne.

A fine Maltese Ass, shown by Mr. Thomas Gowans Addenbrae Mill, near Edinburgh.

A fine white Pig, exhibited by Sir J. Ogilvie, Bart.,

SEEDS, ROOTS, PLANTS, &c.

The Judges noticed favourably the interesting collections of Messrs. Peter Lawson and Son, Edinburgh ; Messrs. Dickson and Co., Edinburgh ; and Mr. Bishop, land-steward at Methven Castle. Also, the articles exhibited by Mr. George Sibbald, Crescent, Dundee ; Mr. John Stewart, Dundee ; Mr. William Henderson, Delvin ; Messrs. Scott, Belfast ; and Mr. James Campbell, Dundee.

ALLOTMENTS OF LAND TO THE POOR.

The Select Committee appointed to inquire into the results of the Allotment System, and into the propriety of setting apart a portion of all waste lands which shall be inclosed by act of Parliament, or of any lands which under any inclosure act shall have been appropriated to the benefit of the poor, to be let out in small allotments to the labouring poor of the district, and also into the best mode of effecting the same; and who were empowered to report their observations, together with the minutes of evidence taken before them, to the House, have made a report to the House of Commons.

They have inquired—

1st. Into the effect of the arrangements under which the labouring classes are now enabled to hold and cultivate land on their own account.

2nd. Into such arrangements for that purpose as might be advantageously made into the inclosure of waste lands.

3rd. Into any more general mode of extending the benefits of the allotment system.

They heard a great deal of evidence as to the arrangements and regulations under which the allotment system has been conducted, and have come to the conclusion, that the following are those under which it may be most advantageously carried on.

1. As it is desirable that the profits of the allotment should be viewed by the holder of it in the light of an aid, and not of a substitute for his ordinary income accruing from wages, and that they should not become an inducement to neglect his usual paid labour, the allotment should be of no greater extent than can be cultivated during the leisure moments of the labourer and his family. The exact size which would meet this condition must of course vary according to the nature of the soil, the strength and number of the family, and their leisure time ; but one quarter of an acre is the size usually adopted, and best suited to the average of cases.

2. The allotment should also be near the dwelling of its occupier ; much of its benefit depends upon the facility afforded to the man, his wife, and his children, of devoting spare moments to the care of their ground, and being able to visit it frequently without fatigue.

3. Though the land will yield larger profits under this mode of cultivation, than under the usual method of tillage, the proprietor who wishes to benefit the poor man should not exact more rent than he could expect to receive if he let it out to be farmed in the ordinary way.

4. Tithes, parochial rates, taxes, and all other charges should be included in the rent, and paid by the owner, and not by the occupier, for the purpose of saving trouble in the collection, of preventing the accumulation of arrears, and of guarding the tenant against frequent and sudden demands for payments which he might not be prepared to meet.

The committee have found that much of the waste land is of so inferior a quality, that it could not be successfully reclaimed as a farming speculation ; and yet it could be profitably brought into cultivation through spade husbandry, by the unpaid surplus labour of men who would work at their own time and on their own account.

The committee are strongly of opinion, that the allotment system is more beneficial when taken up by the landlord, than when set on foot by committees, whether voluntarily formed or with delegated authority ; but seeing that this method of benefiting the poor has, from various circumstances, not been sufficiently adopted by the proprietors of land, the committee have turned their attention towards the possibility of promoting its extension through the means of legislation,—

1. By the opportunities furnished in inclosure acts.
2. By general permanent powers to be entrusted to some constituted authority—

which they strongly recommend.

Finally, the committee observe, that they cannot conclude their report without pressing upon the at-

tention of the house and of every landowner this method of fulfilling the duty which they have to perform towards a class less fortunately situated than themselves, who have no landed property, fenced round and protected by Acts of Parliament, but whose whole property is in their labour, constantly though unavoid ably interfered with by improvements in machinery, changes of fashion, alterations of duties, and various other causes, producing distress and misery, against which the most prudent cannot guard, but which the possession of a garden allotment, the committee have abundant evidence to prove, tends most materially to alleviate. They would, therefore, urge upon such landed proprietors as possess property where allotments could conveniently be provided, to give every facility for the purpose; and upon all those having rights in unenclosed lands in the neighbourhood of towns and villages where an inclosure is contemplated, to unite in setting aside some portion of them to effect this object; the advantage of which the committee are of opinion that no one, whatever his previous opinions may have been, will fail to appreciate after a perusal of the evidence which is appended to this report.

ON THE DESTRUCTION OF CROPS BY SPARROWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Observing that the sparrows have already commenced their work of destruction on the wheat crop, even before the kernel is matured, I offer the following statement for your valuable magazine, to invite the attention of my brother farmers again to this important subject, trusting that they will calculate on the extent of damage effected by these mischievous birds embracing the present opportunity, when they will undoubtedly be anxiously surveying the progress their crops are daily making, expecting shortly to gather in their golden grain, which the wheat may be justly styled, not only as it produces the staff of life, but also forms a principal item in the receipts of the farm. Being the most valuable corn, it is also the most precarious, having to encounter the various changes of seasons; we find that the slug and the wire-worm, blight and mildew, often prove fatal to the crop after surmounting such trials; and when the farmer is about to reap the fruits of his labour, how often is he disappointed on finding that the mischievous sparrows have taken possession of his crop, and is surprised to witness the damage effected in a few days. I can almost fancy I hear him exclaiming, on viewing the spoliage, "we ought to destroy these mischievous vermin, and not suffer one to live."

But alas, how forgetful is man! When he has secured his crop (although injured), he consoles himself with the idea that it may not be the case another season, and thus it is that this mischievous race is allowed to go on increasing.

Observe, I do not say this by way of disparagement to my brother farmers, being aware that I am, to a certain extent, culpable.

The primary object I have in view is to raise the question as to the extirpation of the sparrow. Having shown on a former occasion, by taking the growth of wheat in England and Wales according to McCulloch, in 1839, and computing the estimated damage effected by the sparrow at only two pints per acre, it will amount to 16,080 qrs. Having paid considerable attention to this subject upwards of 20 years, I consider that quantity may be doubled, say four pints per acre, if we calculate on their rapid increase and the quantity these destructive birds consume after the corn is in the barn and stacks; this will show the enormous quantity of 32,160 qrs., sufficient to support the same number of individuals in bread, allowing eight bushels to each per year.

With such facts is it not a question of the utmost importance, not only as regards the cultivators of the soil, who are, as a matter of course, the first to suffer loss when their crops are injured, but also a public question, when it is shown that such a surprising quantity of the bread corn is destroyed by the sparrow, or flying-mice, which they have been justly called, more especially with an increasing population, when thousands are in actual want of bread?

Although I have always viewed the sparrow as the most numerous and destructive bird in this country, I am at the same time aware that many persons think differently. It is by mutual discussion we attain the truth; they are disposed to reason on the works of the creation, and that all were created for some wise purpose; such was the case, no doubt, in the first order of the creation, but as the great Creator made man ruler over all, it is for him to dispose or encourage as he may think proper; if it were not so, upon that broad principle of allowing all to increase and multiply, we should very soon be in a deplorable state. We have great reason to be thankful that our ancestors destroyed such wild animals as were found more destructive than beneficial; the wolf was annihilated by a reward given for his head; and our forefathers, who knew the destructive powers of the sparrow, reduced their numbers by giving a reward for their heads out of the parish fund, the greater portion being paid by the occupier of the land. There can be no doubt that the great increase of these birds arises from a discontinuance of the system.

I have often been at a loss to conjecture the utility of the slug, the wire-worm, and the turnip-fly; although insignificant in appearance, by their numbers they commit great destruction, which too often proves a serious loss to the cultivator of the soil, who has not yet discovered a remedy to destroy the wire-worm and turnip-fly; consequently he is placed in the unpleasant situation of witnessing his property destroyed without a remedy. I merely name this subject to show the great advantages that would result if a discovery were made to prevent such destruction—first to the farmer, but ultimately to the community.

Respecting the sparrow, Bradley states that they destroy 3,360 caterpillars weekly, being 480 each day; if such is the case, which I very much doubt, although they are a ravenous race, it can only be at the time they have young. Being a hard-beaked bird, their favourite food is corn; I have a convincing proof that the caterpillars are not, having seen them very plentiful in my garden, destroying the cauliflowers and other vegetables; and although the sparrows were very numerous continually in the garden, I could not discover that they had destroyed any of these insects, consequently they are but of little utility in the destruction of the caterpillar; and as they are a short-lived insect, only flourishing in dry weather, as Goldsmith observes that rain is des-

tructive to them, therefore it may be inferred that their existence does not depend on the sparrow. Middleton in his survey of Middlesex, upwards of 50 years since, estimated the damage by the sparrow at 1s. per acre, which must have been nearly 1-15th of the rental, at that period a very important consideration.

If I were to estimate the damage effected on the oat crop, also the barley and peas, and various sorts of seeds, it would increase the amount to an alarming extent; but my object has been with a view (as before observed) to call the attention of my brother farmers in estimating the damage effected by the sparrow to the wheat crop, to ascertain how far it will be judicious to permit them to go on increasing, and thereby in the same proportion destroying that corn which produces the staff of life.

In conclusion, I must not omit naming the beneficial effects of sparrow clubs; in particular one at Chalfont St. Peter's, which having been established only seven years, upwards of 16,000 sparrows have been destroyed, and they have not only the pleasing satisfaction in seeing their corn fields uninjured, but also their gardens flourishing, quite as free from the caterpillar as at the time when they were infested with the destructive sparrow.

I regret exceedingly that there is not a club in the parish in which I live, although many of the farmers pay for all the young. My practice is to give 6d. per dozen; still they come from the different buildings, and form a considerable number at this season, carrying destruction before them.

I trust you will excuse my trespassing on your columns with such a lengthened statement—the importance of the subject must be my only plea.

I am, sir, yours most respectfully,

CHAS. NEWMAN.

Court Farm, Hayes, July 20.

IMPROVEMENT OF THE POOR LAWS.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

It is still a prevailing opinion in the public mind, notwithstanding the alterations that have been made in the poor laws, and the rigid system of economy that Lord Brougham is said to have introduced into their management by means of unions, that the principal of economy is far from being so well perfected in the arrangement and conducting of union workhouses as it otherwise might be, and in justice towards both the ratepayer and the poor themselves, ought to be. I shall pass over the mode of discipline in workhouses for the present, and shall forbear making any remarks upon that most objectionable of all portions of their arrangements—the separation of man and wife, particularly in the case of aged couples, whom want and misfortune have driven from their home to seek a shelter within their unfriendly walls. The separation of venerable couples thus situated, is alike opposed both to reason and to scripture; and I cannot but think that a small share of calm deliberation might easily lead the judgment to devise a means better adapted to secure their comfort and support than has been devised by the present poor law, and that too by the employment of even more economical means.

My experience as a practical farmer has long ago led me to the conclusion, that a plan might be adopted by which the poor (I mean that portion of them which come under the appellation of paupers), might be in a great measure, if not altogether, rendered independent of the public for support. This plan simply is, to provide them, under certain regulations and conditions, with labour, thereby putting into their hands the means of supporting themselves. In order to create and provide this labour, I would propose that an extensive farm should be taken in every parish, sufficiently large to provide labour for all the pauper population of the parish. In cases where the paupers of large towns were to provide for, I would extend the farm proportionately, and set apart one portion of it for the cultivation of farm produce, and another portion for nursery and garden purposes. Thus such an extent of land under different modes of management and cultivation, would naturally open a wide field for labour. I would likewise propose, that to each farm extensive household buildings should be attached, which I would make perfect models of houses of industry; they should be, in fact, what their name should imply they were, namely, *workhouses*. The industrious habits of every inmate should be daily tested, and they should represent, as it were in miniature, a commonwealth, in which the labour of every individual should proportionately be made to contribute its quota to the common stock. Indeed, the adoption of such a plan might be the means of providing employment occasionally perhaps for others who were not inmates, at such wages as would tend to keep them from want, until they could meet with work elsewhere, though it ought to be perfectly understood that none who were not parishioners should be allowed to become inmates of the establishment.

As has been already observed, this plan would create a wide field for labour, and as there would be a great diversity of employment in the fields, the nursery, and the garden, it is no more than reasonable to suppose that all the inmates would be employed in such a manner as would enable them to contribute by the aggregate of their labour what would be amply sufficient for each individual's support.

In a house of industry thus established, there would also, no doubt, be various kinds of handicraftsmen and mechanics, the produce of whose labour would also be found not only valuable, but also highly essential to supply the common wants of this commonwealth. The joiner, the shoemaker, the tailor, &c., would be found extremely useful, as would also workmen of various kinds, for whom I would provide workshops, and furnish them with tools, making them also maintain themselves by their own labour, and where they were able, to contribute to the maintenance of others more infirm than themselves.

As all would feel interested in such establishments, were they generally adopted, it is reasonable to suppose that there would be a general desire evinced to uphold them by the parishioners, generally purchasing from them whatever produce they might have to dispose of, or whatever articles were made by the pauper mechanics and artizans of which the respective parishioners might stand in need.

The cost of setting such an establishment on foot as I have here endeavoured to describe,

would of course be considerable; but the first cost would in all probability be the whole; or at least it might be managed by a very trifling assistance from the rate-payers, should any at all be required, and the first cost we cannot accurately estimate. In some parishes farms might be obtained where no additional farm buildings would be required, others might require a very considerable enlargement, yet with additional buildings and stocking the farms, I should not consider in any instance would it cost more than two years' expenditure of this unpopular law, yet the majority would, I think, come under one year's.

In short, it is calculated that the proposed plan would not only enable the pauper population to maintain themselves, except at such a period of depression as the present, which cannot be considered a general rule, but would also defray the expense incurred in the management of these establishments. I would suggest the appointment of one general head commissioner to superintend and take under his charge all establishments of this kind; and I would also appoint assistant or district commissioners, each of which should have under his charge three or four, or even more, counties, as might be convenient and practicable. There ought also to be inspectors, each of whom might undertake the inspection of ten, twelve, or even twenty parishes, in his appointed locality or district. I would also appoint two competent persons, a man and his wife, to every farm or establishment, whose duty should be entirely confined to the general management of the same; and the overseers of the parish should audit the accounts, and see that a statement of the receipts and expenditure was properly kept, the whole of which should be published annually.

If plans similar to the above were generally adopted, and put into practical operation by clever practical managers, there can be no doubt but the poor would not only be able to support themselves, and also to defray the expense of the commissioners, inspectors, and managers, along with every other contingent expense which it might be found necessary to incur.

Relative to out-door relief, probably this plan would not afford much. In case of giving out-door relief, it would require an additional officer to collect the rate and pay the paupers.

The great object of this plan is to stimulate the poor to industrious habits, and much of the present plan depends upon the managers of the institution.

I am confident that the unions I propose would answer the objects I seek to accomplish by their establishment; and I feel myself borne out in my opinion by the concurrent testimonies of many intelligent and respectable agriculturists in this and other districts, who have no doubt as to the ultimate advantages which would be derived both by the ratepayers and the paupers, were such establishments as I have here recommended generally adopted.

This plan would not only interest and be advantageous to individuals, to parishes, and to counties, but to the nation at large, which would be greatly interested in the common advantages it would be the means of securing for all classes of the community.

As the money paid for labour forms one of the heaviest items in the expenses of managing a farm, it will be clearly seen that in the department of cultivating a farm belonging to a union, conducted upon this plan, would be managed with great economy; and, moreover, a farm so conducted, and so enonomically managed, would become a pattern farm to all the parish, indicating what may be done by a combination of economy and good practical farming.

The time has now arrived when more economy than has ever yet been practised, must be observed in the management of the poor; the present heavy rates can no longer be collected, and the heavy expenditure cannot any longer be borne; therefore I contend that the time has come for introducing a change in the poor laws. As they are at present conducted, these laws give satisfaction to no one. The burdens of the ratepayers are greatly increased, whilst the comforts of the poor have been proportionably diminished. Should the plan I have proposed not altogether succeed in enabling the poor to maintain themselves, it would, at all events, go very far towards diminishing the poor-rates.

I have, however, no feeling of despondency as to the result; for it will readily appear to any thinking mind capable of grappling with the subject, that the poor could be much more easily supported upon the plan I have mentioned than they are in the present unions, which are conducted at an expense so burdensome to the ratepayers.

This, then, is the brief outline of the plan which I propose for the better and more economical maintenance of the poor, and, at the same time, for the relief of the overburdened rate-payer. By this plan being properly drawn out in detail, and put into practical operation, a great national benefit would be obtained, and an immense sum of money would be annually saved; the poor would be better supported, their feelings of independence would be cherished; habits of industry would be promoted, and their morals greatly improved; and man and wife need not be separated.

The rising generation of paupers would also be trained up in habits of industry, and every wishful desire to indulge in indolence would be banished from the juvenile mind. Thus would a great financial and moral reform be introduced into the management of the poor, which would not only be the means of bettering their physical, moral, and religious condition, but would also present a gratifying and interesting spectacle to all classes of the community.

The poor are "the pilgrims of many a care untold," and any attempt to ameliorate their condition will be received with gratitude by them, and cannot fail to impart feelings of the highest satisfaction to the minds of all who may lend a helping hand in bringing about a consummation so devoutly to be wished for, as is a better and more economical mode of managing the concerns of the poor.

Having thus stated my views and opinions on the subject of the present poor-laws, I can confidently leave the matter in the hands of others possessing more intelligence than myself upon this all-engrossing subject. Whether the suggestions I have thrown out are improvements or not, is for others to judge; and whether or not they could be effectually carried into practical operation, I shall also leave the experienced reader to judge and determine for himself. Having been many years a practical farmer myself, and having been reared in the knowledge of agriculture, I must say that my experience has not taught me to believe

that there is any impediment in the way, whatever, that ought to prevent the views I have submitted on the subject of the poor laws being adopted and practically carried into effect. The improvement of all our institutions ought to keep pace with the growing intelligence and spirit of the age; but the present system of poor laws does not appear to me to harmonize with either.

To agriculture in its present state, the smallest amount of reduction in our local taxation could not fail to be an acceptable boon.

This is one powerful means of recommendation for the adoption of my plan; but it is infinitely poor, when compared with the great moral and physical advantages which I conceive the entire of the pauper population of the British Empire would derive from its general adoption.

Should you, Mr. Editor, think the few hints that I have stated on the poor laws deserving a place in your magazine, the insertion would oblige a subscriber and constant reader.

A CUMBERLAND FARMER.

July 10th.

THE FARMER'S PROGRESS.

No. 9.

(*Continued from September, 1842, p. 179.*)

According to promise I proceed to explain the mode I have adopted, and am now pursuing, in order to drain several hundred acres of wet land in the valley of the river Cloedog.* Confining this detail to about 70 acres, being part of a farm nearly in the centre of the estate, which, as I before mentioned, I took into my own hands on the 25th of March, 1841, in consequence of the death of a tenant.

That the land must remain unproductive, unless thoroughly drained, was beyond all doubt; and it was equally evident that if effectually drained it might be made to produce abundant crops. The question arose, could it be effectually drained? and if so, would it repay the expenses incurred? General opinion was decidedly against both propositions; I was well aware that such opinion prevailed, and equally so of the difficulties I should have to contend with. Thus, with open eyes, I embarked in the undertaking, and continue to feel perfect composure as to the result.

In the state in which I found the river, effectual draining was impracticable; not only was the level of the water too high for proper drains, but the current was so rapid, that the course of the stream varied with every flood; the banks of the river were continually undermined, and immense masses of deep alluvial soil swept away. The undulated surface of the land indicated frequent changes in the river-course. It appeared to me that the stream had passed over almost every part of the valley, and this opinion is confirmed by the distinct beds of gravel and sand we met with in cutting the deep drains. These frequent changes in the river-course were caused by huge beds of sand and gravel brought down by every flood from an immense broken bank, from whence thousands of tons had evidently been torn away. The course of the river below the broken bank being circuitous, we formed a new direct channel for that part of the river, and in two other places we straightened the river-course by cutting new channels, and in each of those new channels we constructed a weir, or rather an inclined plane, formed by driving four or five rows of larch poles across the stream, bound firmly together by larch croppings, and wedged betwixt the rows with fragments of rock; ponderous stones were also fixed below the bottom tier, sufficiently large to receive the full pressure of the stream in the heaviest floods. The new river course being much wider—sloped at the sides, and without angles or obstructions, allows the water, even in floods, to glide gently down the inclined planes, losing the formidable character of a rapid stream. Besides these three weirs, constructed in the new channels before the stream was turned through them, we managed in a dry season to make two other weirs in the regular channel of the river. Thus we have reduced the rapidity of the stream in this farm by fully 20 feet of fall; lowered the bed of the river by taking out the gravel, so that we can effectually drain every part of the adjoining land; and obviated the frequent annoyance and expense of piling the sides of the river. Those serious obstacles being removed, I proceeded to drain the 70 acres before mentioned, in the following manner.

We commenced with a wet, rushy field, of 28 acres, next to the farm buildings; but having in No. 8 described a heavy crop of Swedes obtained by draining and trenching the lowest and wettest part of it, and having left a few acres unfinished, waiting for newly formed sand banks to assist in levelling the old river-course, I proceed to describe the draining of 22 acres, called the Wenalt Rhos, or Bog.

Selecting for my first operation a part of the river where the bank was firm, and the surface of the water lower than the intended bottom of a main drain, I there fixed a surveying staff or rod,* and another at the foot of the hill, on the opposite side of the wet valley, and with three or four intermediate rods, a correct line was formed; in selecting this line I avoided very wet places, and very deep cutting, both on the score of economy. The line of this main drain being thus determined, and denoted by the rods, two labourers with sharp spades† cut one side perpendicularly to

* The river Cloedog takes its rise in the sheepwalks belonging to the estate, and running through it about six miles, soon after joins the river Ithon, which unites with the Wye, and at Chepstow falls into the Bristol Channel. In the Ordnance map the eye is attracted to the course of the Cloedog by the conspicuous words, "*Abbey cwm hir Ruins;*" 18 miles, west by north, from Kington, in Herefordshire. Half an inch west (the equivalent of half a mile) "Wenalt Barn" is inserted; the space betwixt the highway, passing that barn, and the river, is the morass I am going to refer to.

* Instead of the heavy *staffs* in common use with surveyors, requiring an attendant to carry them, I prefer *rods* made from well seasoned inch deal, pointed at one end and tapered to the other, painted white with black rings 12 inches apart, for the purposes of measuring or levelling. With five or six of these rods in one hand, with the other, and unassisted, I fix the lines for the main drains; these rods are generally useful on a farm.

† It is as necessary to have sharp spades in a bog as sharp scythes in a meadow; my drainers have a light grindstone in the field. Pushing rushes with

the full depth of the spade. The other side is also cut to the full depth of the spade, but a little aslant; the distance from the fast side depending on the state of the ground. If very wet, one graft of 10 to 12 inches in width; if not very wet, 2 feet wide. If it be a dry knowl requiring deep cutting, we begin that part of the drain 3, 4, or 5 feet wide, and at once wheel the spare soil to the nearest place that requires raising. After thus marking out the sides, they proceed to cut the top graft, an operation that requires considerable tact; I, therefore, select intelligent men for this work, and employ them as pioneers for my draining parties. When they meet with fibrous peat they cut it into large slices, which are spread on the ground to dry, ready to cover spit drains, or the gravel in main drains; roots of rushes are also spread to dry, for the same purpose. With those exceptions the ground is cut (not lifted) into large square sods, to be thrown out by a third person with a pikel. By this means a much heavier weight is lifted, and with more ease than with a spade; it is also thrown further from the drain, it being very desirable to have no pressure on the spongy sides until the water is drained from them. After the drain is two or three feet deep, and ample time has been allowed for the sides to sink, to harden, to crack, allowing water to trickle through the crevices, *then* I consider pressure desirable. By taking out the top graft in this manner, two men and a stout lad will do more work, and better, than five men with the spades in common use, and it leaves a clearer course for the water to run off, than when puddled by the spade.

Those three labourers having cleared away the top graft of the drain from the river to the upper side of the morass, commenced a second drain in the same manner, in a line denoted by rods as before, and thus they proceeded until the 22 acres were intersected by drains in the first stage of improvement, at various distances and in various directions, suited to the undulations of the morass. In this state the drains remained a month or more until the labourers, when not particularly wanted in the farm, returned to the drains, and with their sharp spades and pikel, widened the narrow parts in the way above described, so as to be two feet wide; this is rapidly effected, the ground being nearly dry. Next, they deepen the drain a second foot, wherever a sharp spade can act without injury, being followed and assisted by a second draining party with stronger implements. The drains are again left a month or two, except that a man with a scraper occasionally clears the bottom of the drains so as to allow water to escape freely; thus, at convenient intervals of time during summer, and at a slight expense, the bog is relieved from an immense load of water. The sides of the drains sink materially, and becoming crusted and firm, the levelling of the bottom of the drains, the construction of culverts, the carting and filling up of the drains with stone, all those operations are effected at much less than half the expense which would be required if done without cautious delay. Although several of the drains, especially the upper cross-drains, were in some parts 6 to 7 feet deep, and in none less than 3 feet, I have not had an instance of slip or collapse that would require a man an hour to remove.

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a blunt spade into a bog, though a very common practice, is an extravagance which the overlooker should provide against.

Besides the main drains which convey the water to the river, deep cross drains were cut on the upper side of the morass, on the Elkinton principle, which conveyed numerous springs to the main drains; and lower down, at distances of thirty to seventy yards from each other, we made a few other cross drains, to receive and convey to the main drains the top water, and whatever drainage might escape the top cross drains.

When the harvests were over and the winter setting in—when it is certainly the interest, and I think the duty, of agriculturists to give employ to labourers—this deep morass, in which a stray cow had recently been smothered, became firm land, and a scene of cheerful industry.

In October, the process of filling the drains commenced in the following manner:—We began with the top cross drain nearest to the quarry; two men, with a narrow scraper and a spade, cleared and levelled the bottom, paving it with thin flat stones or slate; another, with a heavy hammer, built a strong triangular culvert, about three inches wide at the bottom and seven or eight at the top, covered with large stones, pressing into the sides of the drain; two other men, who served them with stones, packed and covered the culvert so firmly, that the drain was filled with fragments of stone out of the carts which conveyed them from the quarry—the surface of the stone being levelled and covered with overlapping peat or sods reversed, and then with a foot of soil, a road was at once formed for my light carts with perpendicular wheels and flat six-inch tires. The two wings of the top cross drain emptied themselves with ample fall into the extreme end of the main drain, which was constructed in the same manner, and received the water also from the lower cross drains in its way to the river.

The drains were all alike, except that they varied in size proportioned to their length and the quantity of water, and that the drains near the river were partly filled up with gravel from the river, whilst the upper parts were filled from the quarry.

From the uneven surface of a great part of the morass, it was necessary to level it; in doing this we trenched about nine acres of it eighteen to twenty inches deep, the bottom of every trench being correctly levelled, with a gradual fall to one of the cross drains. In a few instances, where the subsoil was damp, we deepened the trench to twenty-six or twenty-seven inches, under which we cut a spit drain, precisely the same as the Rev. Coppinger Hill gives plates of in the "Farmer's Magazine" for July, 1843, page 42—the spade and scoop given in page 43 being exactly what I use in stiff land. Over the spit drain we put thick sods of firm peat.

In trenching, we not only levelled the surface, but greatly improved the land, assisted with planks and barrows, by mixing bog and sand with clay, and *vice versâ*. If the advantages of trenching were well understood, I am convinced there would be no want of employment for *every* able labourer in the kingdom. On a hill side, if top springs and top water be effectually cut off by one deep *culverted* or tile drain filled with stone, and the trenches well made down the hill, eighteen or more inches deep, *I do not hesitate to affirm that other drains are unnecessary*; it is also the best mode of reducing serpentine ploughing to a flat surface.

In the present instance, by cutting off the top springs, and giving them vent by a few direct or

main drains to the river, and assisted by a very few cross drains, our difficulties were brought into narrow compass. All that was required was patience, to give ample time for the water retained in the soil, especially in bog, by capillary attraction, to escape by the fissures caused by deep drains, and still more by deep beds of sand and gravel which conveyed water into those drains; the subsoil plough assisted materially in counteracting the retention of water by capillary attraction, but the *few deep* drains filled up with broken stone or gravel effected the cure. In several places water was obstructed in its course to the cross drains by beds of clay; but in all such cases one short deep drain from the wet place to the cross drain below is an effectual cure; with the exception of a few such places in which it is still doubtful whether a few short drains may or may not be necessary, the whole morass is already converted into sound land; from one-third part I have had this season excellent crops of good hay, from about a fourth part about half as much, mixed with a few rushes; the remainder of the twenty-two acres, though much injured with the fly, promises to yield a fair crop of drilled Swedes, the blanks filled up with other turnips. The increased value as farming land is far more than five-fold.

My manager having had many other important operations in progress, and removed the labourers from one to another, as weather, crops, and other circumstances rendered necessary, I am not enabled to state with precision the cost of this improvement; I can only say, in general terms, that the difficulties and expenditure attending the draining, &c., have been less than I expected, and the result has fullyanswered my expectation.

I am now proceeding to drain another similar bog, unmixed with other affairs, so that we shall be able to ascertain the cost. It is in the third stage; the first graft was removed in the early part of March, the second late in April, the third in July. Rushes are dying—grass growing freely—and, much to my satisfaction, on my last visit to the swamp, I found the droppings of a covey of partridges where I had frequently found a snipe.

August 14, 1843. CINCINNATUS.

STEAM DRAINING MACHINE.—On Saturday last, the commissioners for superintending the works for the draining of the Lake of Haarlem laid the first stone of the building of the steam-engine called the "Leeghwater," from Mr. Leeghwater Ryp, mill-builder and engineer, who published, in 1643, his book on the Lake of Haarlem, in which there is a complete plan for draining that great lake. The Leeghwater is the first machine for draining of water by steam instead of wind, and is the greatest attempt at draining in the Netherlands—a work unparalleled among us, and which will do honour as well to the Princes in whose reign it was projected, as to the King under whom it will be completed. The cavity in which the first stone will be placed is about six and a half yards below the lowest of the water; 1400 piles have been driven into the ground, to serve as the foundation of this heavy building. The result of these preliminary operations has proved that the soil is perfectly good and solid, and there is every reason to hope that the foundation will be fully equal to bear the immense weight.

FARMERS' AND GENERAL FIRE AND LIFE INSURANCE, LOAN AND ANNUITY INSTITUTION.

(FROM THE MINING JOURNAL.)

This office, established only in March, 1840, presents, in the amount of business now effected, perhaps a more gratifying progress than is to be found in the history of insurance offices. It stands fifth on the list of London offices, and, in respect to the peculiarly country companies, it is second only to the Norwich Union; on farming stock alone, insurances from fire are now effected to the large amount of 3,204,643*l.*, and on general property 4,393,600*l.*—making a total, after only three years' establishment, of 7,598,243*l.* To account for this more than usually expressed confidence in a young assurance company on the part of the public, the advantages and facilities offered in their prospectus must be taken into consideration, together with the very peculiar and beneficial enactment in the Act of Parliament—viz., that the directors are compelled to have enrolled every shareholder in the undertaking, and which register is always open to the insured, who can, at the present moment, consult a list of nearly 2000 proprietors, moving in the first circles, and thus satisfy themselves of the responsibility of the concern, and the perfect security held for any money they may invest. With respect to the terms of life assurance, they are on the lowest scale possible consistent with the safe conduct of the concern; thus a payment of 35s. 8d. per annum, or about 8d. per week, by a person aged twenty-one years, may secure 100*l.* payable at his death, or for larger sums and other ages in proportion, and should unfortunate circumstances ever render continued payment inconvenient or impossible, policies will, at any time, be purchased for their equitable value; or another insurance for a less sum, without any further premium, may be obtained.

With respect to deferred annuities, the terms are equally liberal; and here, again, should a reverse of circumstances overtake the annuitant, and prevent a continuation of his payments, the whole amount he has paid will be returned to him, or, in the event of his death before the stipulated age, to his representatives, deducting only a small sum for management. The distress which existed generally even at the period of the formation of the company, and which has so materially increased since that period, no doubt must have had a retarding tendency on the business of this, as well as other offices, notwithstanding which a steady increase has taken place—the sum insured for the year ending the 25th of March, 1842, being 158,114*l.*, and in that ending same day, 1843, 202,054*l.*, and such an accumulation of business, in the short space of three years, surpasses anything on record. It is the intention to give a bonus of one-half the profits on life policies, to all shareholders, being holders of policies effected since January 1st, 1843, on a valuation to be made every five years. The business of this company is evidently on the increase; nearly 750 agents have been appointed in the country towns, and others continue to be adding, and with a continuance of that attention and energy which has from the first marked its rapid progress, there can be no doubt but that the Farmers' Insurance Company will keep its high place among similar institutions.

AWFUL AND TERRIFIC THUNDER-STORM.

AUGUST 9.

CAMBRIDGESHIRE.

GOGMAGOG HILLS.—Lord Godolphin has had a very large quantity of glass destroyed.

FULBOURN.—Mr. R. G. Townley's green-house, frames, and plants, are all destroyed. Mr. Thomas Wells—about 60 acres of barley greatly injured. Harvest had commenced here, but after the storm the reapers were discharged.

GRANTCHESTER.—Mr. Samuel Butler suffered great loss from the storm on Weduesday week; 2,469 squares of glass were broken in the green-house. The fruit trees are very much damaged; the ground crop has suffered to a considerable extent; and his loss is upwards of 200*l.*

BARTON.—In addition to the damage done at this place, described in our last impression, we learn that Mr. Ivatt Webb is a severe sufferer, and the more so from his comparative inability to bear his loss. His loss in corn, fruit, and glass, is from 30*l.* to 40*l.*

HASLINGFIELD.—Mr. Angel's farm has suffered a good deal, and also Mr. Pryme's crops.

EVERSDEN LITTLE.—The damage in Mr. Angel's farm is said to be about 600*l.*

WIMPOLE.—Lord Hardwicke has had glass to the amount of 1,000*l.* destroyed. His Lordship's barley is also destroyed, and he is cutting it for stover.

CROYDON.—The north windows of the Church, and those of the Rectory and other houses, were very much shattered by the late hail storm. The cropping has been much damaged. The wheat, which is a hardier plant than either barley or oats, has been beaten from the ear, and lies in some fields scattered on the ground at two, or perhaps, three loads to the acre. The corn in those fields where the storm was not heavy enough to lay it, has yet suffered considerably; because, by remaining erect, it stood more exposed to the pelting of the hail. On examining the crops of barley and oats they appear generally to have been diminished by at least one half—some, perhaps, may not have been damaged so much, whilst others are totally destroyed.

ARRINGTON.—The corn is seriously damaged, particularly on the farms of Messrs. Hayden and Wragg. The loss on the farm of Mr. Hayden is 600*l.*

TADLOW.—The storm was not so heavy in this parish, but the wheat is injured in some of the fields.

HORNINGSEA.—This parish has not suffered much from the hail, but the rain and floods have laid the land under water.

MILTON.—At Mrs. Knight's, Milton-hall, the green-house, frames, and plants are destroyed. Mr. Coulson has lost about 1600 squares of glass in his garden. Mr. Adams—loss in barley, peas, wheat, and turnips, about 120*l.* The corn generally is much injured, and the house windows and little gardens are nearly all destroyed.

BOTTISHAM.—At Bottisham Hall, glass to the value of 75*l.* destroyed, and the garden very seriously damaged. Mr. Newman—barley and wheat damaged to the extent of 500*l.* at least. Mr. J. King—barley all gone, and cropping generally injured to the extent of 300*l.* Mr. James King—fifty acres of corn destroyed, some of it torn up as if by a hurricane; the windows in the south of the house nearly all broken, while in the church, close by, the windows in the north are broken. At the vicarage the windows are destroyed.

BURWELL.—It was a melancholy spectacle to see, when the raging elements had abated their force, the fertile fields, laden with golden corn, laid prostrate, and the ears cut to pieces. These fields but an hour previously had caused the farmers' hearts to beat high in the expectation of realising a prolific harvest, the sequence of unremitting industry and care; but now, alas! they are emblematical of his own crushed hopes. Nor was the injury alone confined to the corn fields—the gardens and orchards, the trees, the fruits, and flowers gave ample testimony of the violence of the storm. That in summer we should be visited with thunder and lightning is not surprising; but that they should be accompanied by hailstones, and of such magnitude, is truly a phenomenon, as they are looked upon as purely hyemal. Again, on Monday, we had another violent tempest, and to such a height did it reach at midnight, that most of the inhabitants hurried in affright from their beds;

"The speedy gleams the darkness swallow'd;
Loud, deep, and long the thunder bellow'd;"

while the rain beat furiously down, perfectly deluging the streets. The tempest abated in an hour or two, but the rain continued during a good part of the following day. The principal losses which have been sustained are the following:—The Duke of Portland—fifty acres of the finest turnips in the neighbourhood utterly destroyed, sixty acres of barley spoiled, wheat not so much injured. Mr. S. Casburn—barley and wheat to the amount of 100*l.* spoiled.

CAMBRIDGE.

BENNET PLACE.—All the glass at the back of the house demolished, as well as the fruit, plants, &c.

CORONATION STREET.—The inhabitants here met with much damage; Mrs. Plumb, at the Dolphin, being one of the principal sufferers.

DOWNING-STREET.—The houses facing the north had three-fouths of the glass smashed in.

DOWNING TERRACE.—Scarcely a pane left whole in the front of the houses.

EAST ROAD.—Nearly every square on the side facing the north smashed.

FITZWILLIAM-STREET.—Damage sustained here chiefly from water coming in at the tops of the houses. At the back of the houses on the north side all the panes were smashed.

HILLS' ROAD.—The destruction here was great, in the small streets branching off from Hills' Road.

HUNTINGTON ROAD.—The graperies and windows in front of Col. Custance's house destroyed. At Mr. Foreman Smith's garden 1,500 panes broken.

MAID'S CAUSEWAY.—Scarcely a window left whole of those facing the north.

JESUS LANE.—The damage sustained by the inhabitants of this locality was very considerable.

KING-STREET.—The windows of every house in this district suffered more or less.

MILL LANE.—Messrs. Foster, Mr. Hazard, and other inhabitants are serious sufferers. Among other losses, Mr. Hazard had 17 pigeons killed by the hail.

PETTY CURY.—Several thousand panes of glass were destroyed in this street. At the Red Lion a large quantity of glass was broken, and very considerable damage sustained. Mr. Garner, Mr. Harris, Mr. Constable, Mr. Patman, at the Wrestlers, and Mr. Thrower, solicitor, are also considerable losers by the breakage of glass. The two latter more particularly.

PEMBROKE-STREET.—Scarcely a pane of glass escaped.

REGENT-STREET.—Suffered less than other places.

ROSE CRESCENT.—Windows on the north-west side broken.

SIDNEY STREET.—The numerous skylights on the premises of Mr. John Swan were entirely destroyed.

TRUMPINGTON-STREET.—Mr. Pemberton had 3,220 squares of glass broken in his garden.

BARNWELL.—Mr. Briggs, the gardener, of George street, suffered to the extent of 20*l.* His garden was a foot deep in water, and all his flowers and vegetables destroyed.

Mr. Glaisher, of the Cambridge Observatory, makes the following observations:—"This day will be for a long time memorable, on account of the extraordinary storm and accompanying phenomena which occurred in the afternoon. The day previous was sultry, and so was this, but hardly sufficiently so to make the approach of any storm of consequence expected. The morning of this day was fine, with sunshine; the wind until 11 A.M. was from S., after then from N.; at 2 P.M. thunder was distinctly heard in the direction of N.W., and from this time until 4 o'clock the distant, though gra-

dually approaching storm, gave unequivocal signs of being of more than ordinary magnitude. The lightning, or rather its reflection, was first seen in the W. and N.W. horizon about three o'clock; by 3h. 30m. the lightning itself was visible, and the thunder was then heard in more distinct claps, the previous sounds being but the echoes from the masses of clouds which hovered about; these echoes were so numerous that the reverberations of one clap had not subsided before the next occurred, thus causing a continued rumbling since two o'clock. From 4 o'clock until 4h. 45m. the storm approached rapidly in an almost due east direction, passing therefore rather northward; some large drops of rain fell in this interval, and the flashes of lightning became very vivid and of a brilliant purple colour. At 4h. 45m. the hail-storm began, and for 20 minutes continued with a violence probably unprecedented in the last century, in the latitude of England. The great size of the hailstones was the first thing to attract attention, for many measured *an inch in diameter;* some were even larger, and the average size was probably from half to three quarters of an inch in diameter. They fell as closely as the drops of rain from a waterspout; and this, with their weight, and some accelerating force from a brisk N.E. wind, caused them to do immense destruction. The temperature of the rain was certainly not higher than 40 degrees; the hail was, of course, icy. They fell upon the earth, whose temperature was considerably higher, and thus a mist, or almost a steam, arose, and made the view still more dreary than the effect of a snow-white ground alone would have presented. The entire storm went by N.E. to E., and for a time disappeared, though the lightning now and then became visible. At six o'clock it had completed three-quarters of the circle, and appeared again in the S. and S.W.; soon afterwards it was evident that Cambridge would have its near approach again, although it was fast getting westward. The character of the lightning in this second appearance was more terrific than before, for the principal portion of every flash was in a vertical direction, and on many occasions several of these vertical streams were visible almost simultaneously; once I counted seven distinctly at irregular intervals, varying from 4 to 10 degrees; from this circumstance it is much to be feared that considerable destruction has occurred from this cause also. No hail accompanied this appearance of the storm, but a very copious rain fell whilst it was passing from W. to N. Frequent flashes of lightning were visible all the evening in the N. and N.E. horizon, and there were frequent heavy showers during the night, especially about one o'clock, when thunder was again heard distinctly. Unfortunately, my rain-gauge was not in a proper condition to receive so much rain without overflowing, and therefore I cannot state accurately the quantity of rain which fell; but estimating from so much as the gauge did retain, and some years' experience, I think the amount cannot be less than 2½ inches. The wind varied but little from the N., except after the hail-storm, when it blew from the E. for an hour, and then returned to N. The barometer fell but little before it commenced, and then continued stationary."

CAMBRIDGE.—(*Abridged from the Independent Press.*)—On Wednesday afternoon last, this town and neighbourhood were visited by a most unprecedented storm of thunder and lightning, accompanied by the most extraordinary fall of hailstones which has been witnessed in the memory of the oldest inhabitant of the town. In fact, since the year 1795, there has been no storm of such extreme violence, and productive of such great damage, as it is our painful duty to record on the present occasion. The amount of loss in the town and immediate environs has been so immense, that it is at present utterly impossible to estimate it. The day had been remarkably clear and hot, until about four o'clock, when the storm commenced, preceded by an almost total darkness. The storm appeared to rise from the neighbourhood of Stamford, and to come over Huntingdon; but its chief fury was reserved for this town and neighbourhood. About half-past four, another storm, which seemed to arise from the north-east, met in collision with the first one, and the fury of the elements then reached its height. The thunder and lightning were terrific in the extreme, and a storm of hail descended with incredible violence. Some of the stones measured nine inches in circumference, and in their descent caused the destruction of innumerable birds and other animals; a great number of crows, rooks, and even hawks, were killed, and the amount of the smaller tribes of birds is beyond calculation. The windows on the north side of Jesus College were completely destroyed, even some of the framework was broken by the force of the hail. Skylights, green-houses, and garden glasses were entirely smashed. Mr. Cooper had 174 panes broken at the back of his house. Every pane of glass in the windows of the Horse and Groom was smashed. From Mr. Wootton's house more than seventy pailfuls of hailstones were taken out. At Mr. Tate's masses of congealed hailstones, a foot and a half in size, were taken out. The windows of every house in this district suffered more or less, and from King-street to Mr. Wallis's, the bookseller, a long array of shattered windows and deluged cellars, &c., might be seen. The gas-lamps were everywhere broken, and the Company have sustained a loss of not less than 100*l.* Mr. Dyball, the confectioner, had glass in his house to the amount of 30*l.* destroyed, and is a loser, including garden productions and a crop of wheat, to the extent of 100*l.* At Christ's college, the two greenhouses were destroyed, and a considerable number of windows broken. The windows of Great St. Andrew's church, which have just been glazed, were much broken, nearly 500 panes being smashed. Great St. Mary's was not particularly injured, not more than three or four hundred panes of glass being broken. The Mechanics' Institute, in Sidney-street, sustained much injury, the glass dome in the passage being entirely destroyed. At the Cambridge Union house, 1,900 panes were broken, and the contract for repairs is 50*l.* At Mr. Foreman Smith's garden, on the Huntingdon-road, 1,500 panes were broken; at Mr. Lichfield's, at Trumpington, 1,600. The Hoop Hotel escaped pretty well, 10*l.*, it is said, being sufficient to cover the loss sustained in that large establishment. The Philosophical-rooms were seriously injured, and the large glass dome and skylights were shattered to atoms. The cupola of St. Giles's church was struck by lightning; the windows of St. Clement's church, on the north side, were almost entirely smashed. The County Courts have suffered severely; 800 square feet of glass of the best description, have been destroyed. The skylights were double, and *not one* is left whole; the sidelights of the grand jury room, and the lights above the screen in the Nisi Prius court are all smashed, the total amount of damage to this building alone being estimated at 200*l.* The county gaol also has suffered considerably. In the house of Mr. Woods, the linendraper, in St. John's-street, nearly every window was broken. St. John's college escaped with but trivial loss—a few panes in the chapel only being broken. The windows of the houses on the north-west side of the Crescent were universally broken. Mr. Tutin, hosier, Market-street, had 137 panes smashed; and at the house next door, occupied by Messrs. H. Eaden and Co., as a liquor-shop, 140 were broken. Indeed all who had skylights or windows facing the north or north-east, had them destroyed. At our office about 20 panes were broken, and the floor of a room which faces the north was strewed with hailstones, many as large as walnuts. This state of things created the greatest dismay—nothing could be heard but the roar of the thunder and the noise of crashing glass. The darkness of the atmosphere added greatly to the horror of the scene. The dogs rushed into houses for shelter—and the cattle galloped wildly about the fields, many of which were struck by the electric fluid. Mr. Crabb, the butcher, had two bullocks killed in his close. The trees were stripped of their foliage, and branches and leaves strewed the streets, and college and other walks

in wild profusion. The Town-hall had most of its windows shattered, and gave the observer the idea of its having been the object of an insurrectionary attack. The windows of Trinity church also suffered severely. Mr. Hubbard, linen-draper, on the Market-hill, is a sufferer to a large amount; the whole of the back of his shop was covered with glass which was shattered to pieces, and the goods completely deluged. The elemental conflict had now continued to rage with incessant and awful fury for two hours, and the greatest terror pervaded the whole town and neighbourhood. At that moment another and still more fearful storm arose. The lightning was terrific in the extreme, and the claps of thunder caused the houses and the very earth to shake. The windows and skylights of the Pitt Press were shattered, and damage to the amount of 200*l.* has been doae. The houses in Pembroke-street, Downing-street, and Downing-terrace, shared the same fate. Pembroke-street presents an entire row of shattered panes of glass. At Professor Clarke's, in Trumpington-street, 178 panes were demolished. The damage done to the Meeting house, in St. Andrew's-street, is very great, scarcely a glass remaining whole. Mr. Crowe, of Gonville House, has suffered greatly; the whole of his greenhouse and valuable collection of other plants being completely destroyed. Indeed, in the various nursery grounds and gardens in the town and neighbourhood, the labour of years has been destroyed, the proprietors have suffered to a most alarming extent, which in some cases amounts to almost total ruin. The splendid conservatory at Brooklands was completely destroyed. Mr. Brewer, of the Trumpington road, has sustained most serious losses. The glass of his hothouses, frames, and other lights, are all shattered to pieces. Plants of varied description and value are utterly ruined. His vines will not recover the damage for five or six years. Numerous nursery trees, stock evergreens, and fruit trees all equally suffered; numberless garden pots (some very large and thick) were broken to pieces by the hailstones. In one house alone, 1,600 panes of glass were smashed. Mr. Brewer picked up hailstones as large as hen's eggs; his loss cannot be estimated at less than from 500*l.* to 700*l.* Mr. Green's garden at the back of the colleges, as well as that of Mrs. Stittle, suffered in an equal degree. In that of the former, 3,000 feet of glass were destroyed, and grapes and plants to the amount of above 500*l.* Mrs. Stittle is also a loser to a very large amount. Mr. Cumming's large green and hothouses on the Madingly-road, have been entirely destroyed, and immense damage done to his plants, &c. The gardens of Mr. Rhymes and Mr. Pledger, on the Mill-road, have been altogether devastated, and 100*l.* will not recompence the former. Mr Tomline, of Chesterton, is also a severe sufferer, glass to the number of 10,000 panes was broken and his graperies, plants, and other garden property, ruinously injured. Mr. Catling, of Castle-end, is also a serious loser; immense quantities of glass, and his valuable shrubs and plants being totally destroyed. Mr. Hedland, also, of the Trumpington-road, incurred heavy damage in the like description of property. The colleges have not suffered materially; a considerable amount of glass was broken in King's lodge, but the beautifully painted windows of the chapel, most fortunately escaped destruction; much glass was also broken at Pembroke, Peterhouse, Catharine-hall, Trinity-hall, and Clare-hall. At Sidney, about 1,000 panes were shattered. The magnificent lantern on the top of Trinity dining hall, has sustained serious damage. Immense quantities of fruit have been spoiled, and the trees materially damaged, the buds for next year being knocked off; many of the trees are not expected to recover under two or three years; so that the crops in this neighbourhood will for that period be extremely scanty. The wheat and other crops are some of them almost totally ruined, and several specimens have been submitted for our inspection, the barley having hardly a kernel left, and the wheat being cut off below the ear, as though with a knife. The garden and glass-houses of Mr. Ashton, at Newnham, were seriously damaged. The storm, and its attendant disastrous consequences, extended, in a greater or less degree, over all the neighbourhood. The damage done at Quy was most serious: Mr. Ambrose has suffered to a fearful extent; we hear 2,500*l.* One hundred acres of wheat, and a similar quantity of barley, were completely destroyed, the hail absolutely threshing the grain out, and breaking the stalk off. Mr. Payne is also a great sufferer, the greater portion of his crops being entirely ruined. The damage done in this village alone exceeds 5,000*l.* Mr Jenyns, of Bottisham Hall, is a great sufferer, the conservatory, and indeed all skylights, and the windows facing the east and north east being broken in. The storm extended to Mr. Newman's, Chalk Farm, who had about forty panes broken; but its fury did not extend much further in that direction. The neighbourhood of Cherryhinton, Fulbourn, and other parts, have equally suffered. At Fulbourn, however, Mr. John Wells, Mr. J. King, and Mrs. Furbank are insured, with Mr. Rance in the Hailstorm Company's office, and therefore will have their losses made good; so also is Mr. John Kent, of Swaffham. The mansion of Mr. Adeane, at Babraham, has suffered, and his valuable conservatories and greenhouses are completely destroyed. The losses of Mr. Widnall, of Grantchester, are very great. Besides incredible damage inflicted on his plants and shrubs, hothouses, &c., one field of wheat was entirely destroyed. The storm continued with incessant fury for three hours. The quantity of glass destroyed is so immense, that it is said that it will take at least two months to repair. Scarcely a house in the town has escaped without some broken windows. The damage done to the property of Mrs. Beckett, confectioner, in Trumpington-street, was extremely serious; her house was entirely inundated. The congealed hail, or rather bodies of ice, rose in the kitchen to the height of seven feet; the whole of the kitchen apparatus was buried, and the dresser and flour tubs were lifted up from their original position. About half-past five, the fury of the storm abated; the streets then presented a most singular appearance – masses of hail-stones were being swept along in the torrents of water which were pouring down them.

GRANTCHESTER.—In this village the damage has equalled that in other parts. The extensive grounds of Mr. Widnell have suffered to an immense extent, upwards of 5,000 feet of glass being broken; the loss in plants, dahlias, geraniums, &c., many of them irreplaceable, is incalculable. Mats and canvas were no protection to the glass, and these are completely riddled. The church has all the windows on the north side broken. The crops are many of them completely spoiled, the corn being literally threshed out in the fields, and birds innumerable, crows, pigeons, sparrows, &c., &c., might have been seen lying in the fields and roads. The fruit is all knocked off, and the trees are partially stripped of their foliage.

BARTON.—The storm was felt very severely here. Mr. Baker had a splendid crop of barley, 80 acres, from which he now does not expect to secure enough to pay for gathering. He estimates his total loss at considerably more than £1000. Others in proportion.

CHERRY-HINTON.—We have had brought to our office specimens of the crops from this neighbourhood. The wheat is cut off just below the ear, as though by a knife, and of the barley not a kernel is left.

ELY.—The crops in this neighbourhood, it is feared, are much injured.

NORFOLK.

(FROM THE NORWICH PAPERS).

The oldest inhabitant does not recollect a thunder-storm so violent or so injurious as that with which this city and neighbourhood were visited on Wednesday night. About half-past seven it burst over Norwich in all its fury—the thunder and lightning, commingling with wind, hail, and rain, to a degree that produced sensations of awe and fear in the boldest and most in-

different spectator. The rain fell literally in torrents, and the hailstones, or rather pieces of ice, covered the ground, in many places, to a depth of four or five inches, descending in such profusion that objects could not be discerned through the falling mass. The effect was disastrous in the extreme. The crash of windows was heard in every direction, and the first floors and the cellars of houses were deluged by the rain, and in many instances almost blocked up by hail and ice. In about half an hour the storm ceased; but at nine o'clock it again commenced raining very heavily; with a few intervals of calm, the thunder and lightning continued till about two o'clock in the morning. Gardens in every direction were cut to pieces; fields of corn levelled, green-houses and conservatories smashed, and the windows of those houses which stood in the range of the storm greatly injured.

Messrs. Barber, grocers, Old Haymarket, are amongst those who have experienced the greatest injury to their property. Four cart loads of ice were, during the night of Wednesday, conveyed out of their cellars and shop.

Great as the devastation was in our city, the desolation in the country was much greater. Fields of corn beaten down, and the grain knocked out, as if with a flail; trees stripped of their fruit and their leaves; windows carried away, not merely the glass gone, but the lead entirely driven out. To many persons the storm will have brought utter ruin; and the aggregate damage done must be immense. At the horticultural establishment of Mr. Bell, at Bracondale, the storm has converted the so lately blooming garden into a wilderness. In glass alone the loss is very great —20,000 to 30,000 feet having been smashed; the numerous collections of plants have been destroyed or greatly injured, as well as the vines, the grapes on which were in different stages of ripening. The damage done to these premises is estimated at nearly 3,000*l*. All along Thorpe road, and at Thorpe, there was a general destruction of the greenhouses and windows which looked southward. The Rev. Geo. Stracey had a party that day, who were just sitting down to dinner, when the tempest broke over the house, and dashed in the windows of the dining room. At the Asylum, 1,030 squares of glass were broken. In Whitlingham-lane three trees were blown down, one appeared as if cut down by an axe. Opposite the white house at Whitlingham, a carriage, without horses in it, was twisted completely round. At Lakenham, Mr. Geo. Stacy had upwards of 800 squares of glass broken, and 700 squares were shattered at Mr. Blake's factory mills.

H. Birkbeck, Esq., of Keswick, had 1,000 squares of glass broken in a hot-house; and H. Gurney, Esq., of the same place, lost about as many; in one wing of the house every window was beaten in but one. At this place the crops are greatly injured, particularly at Mr. Hudson Gurney's, whose loss is estimated at 2,000*l*.

At East Carlton, Mr. Delf sustained much injury, having his windows blown in, and the crops almost entirely destroyed.

At Bixley, Mr. Chamberlin and Mr. Coleman have suffered severely. Mr. Parker had about forty acres of corn destroyed. At this place, out of ten cottages, the windows are all broken; not a pane is left; every garden is destroyed; pears, apples, and plum trees completely stripped; cucumbers cut to pieces, and plants washed away. The corn here is absolutely thrashed out by the hail.

At Mulbarton the whole of the windows in nine houses, forming a factory, are broken. In the neighbourhood of this village and of Corlton, the storm seems to have raged with great fury, and to have done immense damage to the crops. Mr. Stannard, of Hethel, has lost nearly his whole crop, cut by the hail. Mr. Cook, Mr. Claxton, and Mr. Crane, of the same parish, have also sustained serious loss; also Mr. Smith, of Bracon, and Mr. Riches, of Carleton. Mr. J. Turner, of Mulbarton, has lost nearly his whole crop. Such was the fall of hail in this district, that one farmer declares he could have collected forty loads of hailstones in one field. Mr. Bush, of Swardeston; Mr. Bond of the same parish; Mr. Spalding, Keswick; and Mr. Gillett, of Merkshall, have all suffered severely: 2,000*l*. would not be sufficient to cover the amount of the loss sustained by Mr. Gillett; whilst the destruction of the wheat and barley crops on the respective farms of Mr. Turner and Mr. Lane, is estimated at six out of every ten coombs of produce. From Swardeston Dog to Mulbarton scarcely a pane of glass is left entire.

Thetford. — About half-past five, P.M., a darkness that might almost be felt, overshadowed the north-western horizon, momentarily enlightened with the most vivid flashes of forked lightning, rendered more awful by rolling peals of the loudest thunder—the wind at the time S.E. by E., so that the storm came sideways against the wind. About a quarter-past six, P.M., in the N.W. by W., might be observed the junction of two dark clouds, from which succeeded the grandest and most incessant flashes of lightning, one of which formed on arc of at least 35 degrees; the thunder was at this time tremendous. They closed suddenly, changed into a funnel shape, and rain and hail descended in torrents, which lasted about 25 minutes; during which time several pieces of ice were taken up that measured, on an average, 1¼ inch square. The gardens in the neighbourhood have suffered severely. Messrs. Fison have also suffered to a large amount, in consequence of the water rushing into the oilcake and wool warehouses. There were at one time two feet of water in Mr. Brown's (the ironmonger) shop. In the garden of W. Clarke, Esq., over 100 sparrows were taken up dead. The storm passed over bearing N.N.E., and its great fury had spent itself by seven, P.M.

Lynn.—The storm which did so much damage in various parts of the country on the 9th instant, visited also Lynn. During the whole of the day distant thunder was heard, but about eleven at night it approached nearer the town, and accompanied by the most vivid lightning, continued with scarcely any intermission for nearly three hours, the rain falling during the whole time in torrents. We have not heard of any damage received in this neighbourhood beyond the beating down of the corn, except the death of one horse, which was struck by the lightning in a field near the town. About one o'clock on Monday morning we had another thunder-storm, which, however, though severe, was not to be compared to that of the previous Wednesday.

A correspondent writes—On Wednesday the parish of Litcham and its neighbourhood were visited with a frightful tempest of thunder, lightning, hail, and rain. Although it did not equal in severity the storm at Norwich, it was most awful for the time it lasted. It was attended with a hissing rending sound and waving tremulous motion in the air. In the space of a few minutes the street was a rapid rivulet, and the noise from the bounding of the pieces of ice and smoking appearance of the air was singularly imposing, as if "Chaos had come again." We are sorry to add considerable damage is done to the windows in the town and neighbourhood. The house and green-house of F. W. Keppel, Esq., have suffered considerably in glass, and from the appearance of the trees, the storm was more violent at this part of Lexham than in any other place. About two coombs per acre of corn is thrashed out in some places. At Newton or Stanfield it was not so furious, although so near. All the houses and green-houses at Litcham, where the windows faced the storm, are more or less injured by the pieces of ice, which were from half an inch to three quarters of an inch in diameter.

NORWICH. — (*Abridged from the Norwich Mercury.*)—About seven o'clock a cloud, much more dense and dark than any which had preceded it, but not of great extent, was seen warping up from the south-west, and in a quarter of an hour it burst over a portion of the city and the hamlets of Lakenham and Thorpe with a fury hitherto unknown in this district. Hailstones, or rather pieces of ice of immense size (many were more than two inches in diameter) and ex-

traordinary hardness, suddenly poured down with a force nothing could withstand, accompanied by such a rush of mighty wind as to tear up and scatter large trees, and threaten the safety of the roofs which were subject to its power. In an instant, as if by a volley of fire-arms, windows were smashed in, covering the floors with glass and hailstones, and driving the occupants to seek other shelter, while the roaring of the wind rendered the storm still more awful. For about ten minutes hailstones continued without cessation, the rain pouring down in torrents. About half-past ten the storm again commenced and continued unceasing in violence until about two o'clock. Between three and four it gradually passed off towards the East, leaving the proofs of its devastating power along the whole space over which it traversed. The greatest number of sufferers were those who had their windows and skylights smashed by the hailstones. The whole of the windows at one side of Ber-street were completely shattered; the same almost might be said of King-street, where Mr. Jay's factory sustained great damage, and the upper story windows in Surrey-street; also in the new street leading from St. Stephen's. The sky-light of the Pantheon Victoria Gardens; the cottages in the Peafield, Grove Place, Crook's Place, &c., &c. In the glass roof of the Corn Exchange it is estimated that from six to seven hundred squares have been broken; the sky-light of the Norfolk and Norwich Hospital; Crawshay's brewery; and the warehouses of Mr. G. Coleman, Messrs. Chamberlin and Sons, Betts and Co., Market Place; Messrs. Willett, Smith, and Co., Mr. Freeman, Mr. Blakely, and Mrs. Fairweather, London Street; Miss Bedford's Academy, and many of these and other parties likewise suffered from the flood as well as from the hail. The residences and greenhouses of Mr. Matchett, Miss Morse, Mr. Tillett, Mr. Brown, Mr. Evans, Mr. Noverre, Mr. Smith, &c., &c., and other gentlemen, also sustained much damage. At Bracondale, the greatest injury has been done to the Horticultural Establishment of Mr. Bell, whose loss is by far the largest of any individual either in the county or city. A careful and moderate estimate has been made by competent persons, and we understand that it is calculated (in glass) at fifteen hundred pounds, (more than thirty thousand feet are destroyed) and upwards of fourteen hundred in flowers, &c., making a total, and we may add ruinous loss, of three thousand pounds at a low average. Messrs. Mackie suffered about 100*l.* Mrs. Martineau's green-house has suffered but slightly, though but a short distance from Mr. Bell's. The windows at Lakenham Terrace have suffered severely, and indeed most of the houses in this immediate neighbourhood have more or less of damage. The storm swept across from Ber Street towards Thorpe Hamlet, and commencing its ravages close by the Foundry Bridge, left scarcely a house unscathed. The windows broken are those of Messrs. Gardiner, R. Bacon (25), Blakeley (70), Rackham (35), Gilbert, Massey (about 30), Etheridge (70), and green-house 700; Geldart (almost all), Martin, Skipper, N. Bacon, Miss Green, Sir W. Foster (a large number), and green-house; Sir R. J. Harvey, the Coach and Horses (about 40), Mr. Jecks a large number (and green-house); Mr. Palmer; at Cattermole's all the windows of the new room, the bar, and others, the Rev. Mr. Maxwell's, and Miss Clayton's. Many of these had the appearance of being riddled by shot, and we should say that in windows and green-houses alone the hamlet and village of Thorpe will suffer from 4 to 500*l.* damage, while the gardens present the most desolate appearance, every thing that was not strongly propped being washed to the earth, and the leaves torn into shreds. The Lunatic Asylum further on it is said has 800 panes broken, while Mr. Penrice, at Witton, suffers heavily. In the county the storm, from what we have been able to collect, seems to have commenced most violently at or about Fundenhall or Flordon. In its route it spent its fury upon the farms of Mr. Howes, of Fundenhall; Mr. Cooke, Mr. Smith, and Mr. Stannard, of Hethel; Mr. Bush, and Mr. Howard, of Swardeston; Mr. Carpenter, of Dunston; Mr. Bush, of Ketteringham; Mr. James Turner, of Mulbarton, whose corn we are told on competent authority appears to have been swept away as by a whirlwind. Several trees exceeding a century in age, the property of Mr. Squires, of Mulbarton, were riven asunder, and large portions of the trunks whirled away a considerable distance; some of these trees exceeded 10 feet in circumference. Mr. Cremer's mill had its sails torn off, and then falling on the warehouse adjoining, injured it considerably; Mr. C's loss is estimated at 300*l.* There is scarce a cottage or house in this village whose windows are not broken. At Keswick, trees are uptorn and laying in all directions; Mr. H. Gurney's hot-houses had about 1500 pane broken, and Mr. Birkbeck's about 1000. At Markshall, Mr. Cyrus Gillett has suffered an extensive loss; the corn is not only completely thrashed out, and the straw driven into the soil, but the turnips are greatly injured or washed out, and the trees in his gardens absolutely barked. We heard the damage is laid at 2000*l.* Mr. Gowing, of Bixley, had five acres of wheat, and 100 acres of barley, seriously damaged. The extreme violence of the hail storm appears to have been confined to the South and East of the city, and did not extend in width above five miles, for it was not felt at Blofield, or much beyond Bixley. Some farms have been almost miraculously preserved, while the produce of those of their neighbours have been scattered to the winds.

SUFFOLK.

The truly awful visitation with which the counties on each side of us were afflicted on Wednesday last, appears to have merely skirted this county, the only places at which we have heard of any damage being at Exning, and at Mildenhall and its neighbourhood. In the former parish, we understand that Mr. Bryant's loss upon his crops has been laid at 2,000*l.*; at Mildenhall, Mr. Morley estimates his loss of corn at 200*l.*, and Mr. Isaacson, solicitor, sustained a great destruction of glass in his greenhouse, &c.; at Worlington the corn is very much injured; and at Barton Mills the walls of a new Baptist chapel, just ready for the roof, were almost entirely thrown down. Whilst those who have been spared from this devastation should render up their thanks to Him "who rides the whirlwind and directs the storm," they are bound to stretch forth a helping hand to their suffering neighbours, and we think that, as on a less serious occasion, in Essex and Hertfordshire, each of the counties ought to be assembled to take the matter into consideration. The devastation in this county appears to have extended over a track of about a mile or mile and a-half wide, from Thetford by Buckenham to Norwich, and to have spent its fury about Ludham. The complaints in the market on Saturday were heart-rending. Numbers declared themselves to be ruined; and unless a general effort be made for their relief, the results will be most calamitous.—*Bury Post.*

Barton Mills.—The storm was very severe, and the rain, which fell in torrents, washed completely down a new chapel, which was in the course of erection, and nearly fit for the roof, and on two or three farms in the parish much damage has been done.

Mildenhall.—At Badlingham Hall, Mr. Thomas Kent had corn to the amount of 500*l.* destroyed by the hail; — Sharpe, Esq., of Chippenham, about 200*l.*; at Frechenham, Mr. William Westrope had nearly forty acres of fine brank totally destroyed, and several acres of wheat and barley much injured.

Serious losses have been sustained by the holders of property in the Bedford Level, and particularly in Wisbech and Peterborough. In the fens alone, upwards of 2,000 acres of the hay crop, of the value of at least 10,000*l.*, has been totally destroyed, and the pasturage of 1,000 head of cattle is entirely inundated. The consequence of this sad disaster is, that upwards of 1,000 persons, men, women, and children, have been thrown out of employment, and are to be seen about in

the most abject state of wretchedness. Many hail-stones that fell in the neighbourhood measured 3½ inches in circumference.

WOODBRIDGE.—About one o'clock on Thursday morning we were visited with the most severe tempest that has passed over us for a considerable time, but we are happy to state, no injury appears to have resulted from the lightning, although the flashes were most vivid and frequent. It was accompanied by a violent hail-storm, and stones or pieces of ice which fell were of unusual size, and did considerable injury to the green-houses, vineries, and other horizontal glazing, over which it passed.

OXFORD.

The storm in Oxfordshire appeared to be terrific in the extreme. The crops are entirely destroyed. The windows of the houses are broken. The Great Pond Heed for 20 yards gave way. On Beaconsfield farm, Great Tew, near Sandford Park Well, the road for 100 yards was entirely blocked up with hail-stones, the pieces of ice lying from 3 to 5 feet deep from above the gateway to the limekiln, and rendering the road impassable.

BANBURY.—On Wednesday, Aug. 9, the north of Oxfordshire was visited by one of the most terrific thunder-storms that ever fell in this county. From four o'clock in the morning until nearly ten at night the storm raged with little intermission; at times the lightning was very vivid, and for an hour and a half in the middle of the day the thunder was one continuous roar, without any, even the least, sensible cessation. But awful as this was, it was nothing, when compared with the descent of hail about two o'clock. This fortunately did not reach this place, but within a few miles distance the consequences are most disastrous. At Chipping Norton the whole of the windows on one side of the principal street are entirely destroyed; the conservatories in the line of storm are every square smashed; but worst of all, the corn over a large extent of country is utterly destroyed; beaten to the earth as if trodden by contending armies, or the stems clearly cut in two. We have heard various statements from agriculturists, some of whom say that they have lost a year's rent; and from the various accredited reports we have received there can be no doubt, that taking the line of country, from Chipping Norton to Souldern, not less than damage to the amount of 70,000*l.* has been done in the north of Oxfordshire only. Many of the hailstones were as large as hen's eggs, and pieces of ice, some of them nine inches in diameter, fell. A quantity of hail-stones that fell at Chipping Norton were picked up in the street the following morning, and were brought to Banbury; when we saw them, twenty-two hours after they fell, some of them were an inch in diameter.

BEDFORDSHIRE.

WOBURN.—The damage done to the Duke of Bedford's conservatories and at the Abbey, is estimated at upwards of 2,000*l.*

In this county the storm raised vast quantities of sand, which it drifted in heaps across the country, destroying every sort of vegetable.

BEDFORD.—Preceded by a very hot morning, about a quarter past three o'clock on Wednesday afternoon a remarkable thunder-storm occurred, doing extensive damage in Bedford and the surrounding country. Vivid lightning and deafening thunder, with a terrific shower of hail and pieces of ice as large as a nutmeg, continued for half-an-hour, and was then followed by torrents of rain with thunder and lightning, more or less, all the evening afterwards. Not a sky-light in a north-west direction has escaped without damage. The sky-light in our printing-office was soon converted into a cullender by the fury of the elements, which were poured into the office with remorseless haste, doing our machinery much damage, and frightening our compositors from their *composure*.—*Bedford Mercury.*

At BIGGLESWADE its effects were destructively felt. Shortly after 4 o'clock the storm was accompanied by a fall of hail-stones of an extraordinary size, in many places they were picked up measuring from three to six inches in circumference; the windows, with but few exceptions, throughout the whole town were completely dashed to pieces. The town presents a most awful appearance. At Stratton considerable damage was done to the estate of Charles Barnett, Esq. The damage done to the standing crops and fruit trees has, we regret to say, been very serious, whole fields of corn, which only a few minutes before presented a rich and luxuriant appearance, having been completely laid prostrate by the violence of the storm. A number of trees here and in other places have been torn to pieces by the electric fluid; while the apple and other fruit trees are entirely stripped. The church windows were completely demolished. At the Union Workhouse upwards of 1,300 panes of glass were broken. The crops of Messrs. Cocking, Randal, &c., &c., and all the principal gardeners, have been almost destroyed. Altogether the storm has been one of the most terrific ever experienced in this part of the country.—*Bedford Mercury.*

BIGGLESWADE.—ANOTHER REPORT.—On Wednesday afternoon, about half-past three, this town was visited by a dreadful thunder storm, which lasted till seven in the evening, accompanied with a great deal of hail; some of the hailstones were as large as walnuts, weighing more than an ounce. All the houses in the town that fronted the north, north-east, north-west, the windows are broken by the hail, and the rest of the houses have got their back windows broken. Among the principal sufferers are W. Hogg, Esq., Rev. J. Dowton, Mrs. Cater, the Swan Inn, the Crown Inn, Mr. Ryland, Mr. Conder, Mr. Brooks, Mr. Barker, in fact, there is scarcely a house but what is damaged. Many families were obliged to sit up all night, as their windows were all broken; while some nailed up blankets, others carpet, and some got the casements boarded up until they can get them mended. But the worst tale is to be told; the poor gardeners of the parish have their little stock of wheat, rye, onion seed, &c., completely destroyed. Mr. Randal, of the Red Lion, had a fine crop of onion seed destroyed, and his crops of wheat and rye all beaten out; his cucumbers, of which he would have sent two loads to the London market this day, were all battered to pieces. The small gardeners, who hire a few roods of land at the rate of 5*l.* or 6*l.* per acre, are in the habit of employing two or three men to get up their harvest, had their produce all destroyed, not one will be wanted. Mr. Cocking is, we regret to say, a sufferer to the extent of 1000*l.*; he has been compelled to discharge nearly one hundred hands, having no further need of their services, and so it is all through the parish. Several rooks and wood pigeons were picked up dead in Stratton Park, the seat of Charles Barnett, Esq., and much havoc has been made amongst the fine old trees in the park. Mr. Barnett and Mr. Winter sustain considerable damage. Several crops of wheat have been beat out as if it had been thrashed. At Caldecot, two miles from Biggleswade, three houses were burnt down by the lightning, and a female struck dead. At Bucken, on Wednesday morning at two o'clock, the storm raged dreadfully, and the water between Alconbury Hill and Stilton covered the road at a great depth for a considerable distance. At Eynesbury Hardwick the storm was most dreadful. We have heard of a most shocking and fatal accident that happened during the storm, at Abbotsley. One of Mr. J. Smith's shepherds, named Harris, was riding a horse up the road, the lightning killed them both, the man and the horse were found quite dead.

HERTFORD.—Yesterday afternoon this town was visited by one of the severest thunder-storms (although of short duration) which we ever remember to have witnessed. The lightning was exceedingly vivid, thunder so loud as apparently to shake the buildings, and the hailstones of considerable magnitude. We have no doubt the crops in the neighbourhood have suffered severely.—*Herts County Press.*

WORCESTER.—On Tuesday morning this city and neighbourhood were visited with one of the most violent and lasting thunder-storms of which the oldest inhabitant has any recollection. It began about six o'clock, and continued with but little intermission for more than six hours. The lightning was exceedingly vivid and brilliant, and the thunder deafening, causing the houses and the very ground on which they stood to vibrate as though they had been shaken by an earthquake. About ten o'clock a tremendous discharge of the electric fluid took place, which was followed instantaneously by an explosion which surpassed all the others in terrific intensity of sound. It was soon discovered that the lightning had struck two houses in the Shambles, one of them in the occupation Mr. Lewis, hairdresser, and the other of a person named Burgess. It appears to have passed down the chimney of the former house, then along the roof, out at the garret window, and then down the front of the house to the ground, displacing several bricks in its passage. A great portion of the chimney, roof, and garret window was violently dashed to the ground, and strewed about the street. The tremendous discharge of electricity had the effect of paralyzing for a time many persons standing in the market-house, and the neighbourhood of the spot, which felt its full force. The house of Mr. Lane, fringe manufacturer, Pump-street, was also struck by the electric fluid, which passed down the chimney, knocking the top of the chimney to atoms, and then descended the tube, displacing a few bricks about the fire-place, and slightly scorching the hand and cheek of a little boy who was standing beside it.—At his residence at Wick, near this city, Mr. T. Weston was within three or four yards of his house, when he saw a magnificent concussion which took place just before him, and within a few feet of the ground; it appeared like two sheets of flame, violently striking together with a deafening report. Mr. Weston's house was for a long time impregnated with a strong sulphurous smell. Mr. Cobley, of this city, lost three horses, which were killed in a stable at Broadway; two others were injured. Six sheep were killed under a tree in a field near the same neighbourhood.

QUY.—We were shewn on Thursday night nearly half a peck of hailstones, which had been picked up by the roadside, in this village, about three o'clock that afternoon, afterhaving lain there nearly 24hours on a summer's day. When shewn to us they varied in size from a walnut to a large pea. We also saw a handfull of wheat from a field of Mr. Payne's, which was completely threshed. That gentleman's loss is very considerable. Mr. Collett £1,200, and Mr. Ambrose £2,500. The fury of the storm at this village was past all description.

STAGSDEN.—At this village the storm was dreadful; it commenced about three o'clock with thunder and lightning; but soon afterwards the most terrific hail-storm ever witnessed by the oldest inhabitant in this village took place. The hail stones were doubtless five inches in circumference, but some that were picked up, after being in part dissolved by the heat of the hand were 3½ inches round. It has done much damage in the fields, and it is reported that the glass broken at Mr. Bass's was £5 in value. But the most astonishing fact probably is, that a sheep was found dead, the head of which had been split open by the hail.

OLNEY.—The storm on Wednesday was very terrific here, but no particular damage done. We have heard of a house and furniture being almost consumed at North Denton, about eight o'clock in the evening, tenanted by Mr. Coles; and also of a barn on fire from the lightning at Hanslope.

HAWNES.—During the awful and severe storm on Wednesday afternoon, a cow, the property of Mr. J. Armstrong, was struck by lightning and died. At Midloe a barn was struck, but not fired, belonging to Mr. Blott; part of a barn was carried a long distance, doing no other damage. At Caldicot three houses were struck by the electric fluid, and burnt down to the ground; the windows of the Wellington Inn were also struck, and completely smashed to atoms. At Sandy the damage done cannot be estimated, as it has cut off nearly all the onion seed and cucumbers, and will no doubt be the ruin of several. At Dunton the storm raged with fearful violence; it has actually thrashed the corn out of the ear, and left the straw standing. Some farm buildings were knocked down and carried a considerable distance.

ROCHESTER, Aug. 10.—Last night, about 10 o'clock, a tremendous thunder storm approached this city from the westward. About midnight the storm raged with the greatest fury; it was terrific; one continued roar of thunder the perpetual flashing of the lightning, appeared like large masses of fire, resembling the report of discharges of the largest artillery, whilst the roaring sound of the rain and hail, or rather shower of ice, falling at the time, almost equalled the noise of the thunder itself. The bugle sounded at the barracks, and the troops were called up. A stack of hay on Chatham Lines was set fire to by the lightning, and another fire was observed at a distance, either in the hundred of Hoo, or on the Essex shore. The damage done by the hail is incalculable. The skylights in the Dockyard and public buildings have been demolished, and the loss in every direction to individuals must be very great. Mr. G. Masters, nurseryman, estimates his loss at between 400*l.* and 500*l.* The skylights over the Corn-market at the City repository are entirely destroyed; several green-houses in the neighbourhood have hundreds of panes broken, and scarcely a house in the neighbourhood has wholly escaped. Many of the pieces of ice which fell measured an inch and a half in length, and in the marshes, near the Cattle-market, pieces as large as a hen's egg were picked up.

SOUTHEND was visited on Wednesday night, between the hours of eleven and two, with an awful storm of thunder and lightning, accompanied with deluging rain, even more severe than that experienced in this county, it will be remembered, exactly that night twelvemonth, and the effects of it were felt in most parts of Rochford Hundred.—*Essex paper.*

CHELTENHAM.—One of the most awful thunder storms that we ever remember to have witnessed spent its fury over this town and neighbourhood on Wednesday morning. The storm increased in fury until about a quarter past 6 o'clock, after which it became less intense, and gradually died away. During its continuance the High-street was nearly impassable from the torrents of water pouring down the carriage way. The heavy hail and rain must have inflicted considerable damage on the corn, which is already in many places laid to a great extent.—*Cheltenham paper.*

GLOUCESTER.—The storm of Wednesday raged with great fury in the city and county of Gloucester. It commenced about four o'clock, and continued with great violence until half-past six. A valuable ram was struck dead by the lightning, and eleven ducks on a pool were also killed by the electric fluid. A correspondent of the *Gloucester Chronicle* says:—"The storm visited the neighbourhood of Stow-on-the-Wold, and the adjacent villages, with great violence. The ice fell in large lumps, and proved destructive alike to the crops and the glass windows; pieces of ice were picked up *weighing from two to three pounds*, pointed and jagged. It commenced about twelve o'clock on Wednesday morning for about an hour, and recommenced with increased fury for three hours in the evening of the same day."

In another column our readers will find the details of a dreadful and alarming thunder storm which swept over the Midland Counties on Wednesday week. In several places the war of elements was most appalling, most magnificent and sublime. For hours together the thunder roared incessantly, and the murky sky was illuminated by the flashing of the lightning. Hailstones, or rather pieces of ice, large as hen's eggs, were showered down, breaking in fragments all glass upon which they fell, and killing the birds of the air in their descent. In the midst of the wild confusion —of the rain and hail, fires were seen springing up here and there, from stacks of hay and corn which had

been struck and ignited by the lightning. Fields of growing corn have been completely destroyed, and after the storm had passed away, they presented the appearance of fields which had been trampled by the marchings and counter marchings of an army. It is feared that extensive injury has been sustained by the crops generally, in these counties. Individuals will suffer severely, and it is probable that the injury will be felt upon the national grain market.—*Bedford Observer.*

ADDITIONAL PARTICULARS.

BARTON.—Mr. T. Baker, 70 acres of barley, 32 of beans, 50 of wheat, 14 of clover, 9 of tares, and 24 of turnips, either wholly destroyed or very materially damaged; the loss is estimated at 1,000*l.* at least. Mr. Wilson Holben and Mr. Sanders Holben will lose about 700*l.* each.

LITTLE EVERSDEN.—The damage in Mr. Angelo's farm is said to be about 600*l.*

GRANTCHESTER.—Mr. Lilley, it is said, will lose 1,000*l.*

BOTTISHAM.—Mr. Newman—barley and wheat damaged to the extent of 500*l.* at least. Mr. J. King—barley all gone, and cropping generally injured to the extent of 300*l.*

SWAFFHAM BULBECK.—Mr. C. Giblin suffers to the extent of nearly 800*l.* In this parish it is computed that about six bushels per acre, on 3,000 acres of corn, have been destroyed.

SWAFFHAM PRIOR.—Mr. Allix, M.P., Mr. Witt—damage to wheat, barley, and turnips, amounting to about 600*l.* Mr. J. Kent—damage about 500*l.*

BURWELL.—Mr. Joseph Mason—loss in wheat, barley, and turnips about 700*l.* Mr. Fison—loss in wheat, barley, and turnips at least 600*l.* Mr. Fuller—loss in wheat and barley about 200*l.* Mr. Johnson—loss in wheat, barley, turnips, &c., to the value of 300*l.*

BABRAHAM.—At Mr. Deane's 6,000 panes of glass are destroyed, the value of which is about 150*l.*; the plants, &c. Mr. Briggs—loss estimated at 1,000*l.* Mr. Samuel Webb—loss in wheat, barley, &c., about 1,000*l.* On Mr. Jonas Webb's farm, in this parish, scarcely a blade of corn is lost, nor is any damage done of the slightest consequence.

DITTON.—Messrs. Fison have 205 acres destroyed, and more injured; their loss is estimated at 2,000*l.* Mr. Woollard—loss in wheat, barley, oats, beans, and peas, about 500*l.* Mr. Bullen—loss estimated at 300*l.* Mr. Banyard—all the windows on the north broken, garden destroyed, and loss in cropping about 400*l.* Mr. Skinner—loss in wheat, barley, peas, and potatoes, about 250*l.*

CONCRETE FURROW DRAINAGE.—[From a Correspondent.]—There can be little doubt that among the *new* aids which cultivators of the soil must now look to with most anxiety is that of chemistry; but *before* chemistry can be of any advantage, the land must be thoroughly drained, pulverized, and cleaned—the first being done, the others will very naturally follow. This then is to be accomplished, at the least possible expense, by concrete furrow draining. It was invented by Lord James Hay, of Seaton, Aberdeenshire, and has now been reduced into a system, and is highly approved of by the most eminent agriculturists, for its cheapness and utility, and as being well adapted for marshy ground from the buoyancy of the concrete. The expense is about *one third* of that of tile furrow draining, and can be executed where there are to be found stones or gravel, lime and sand. Besides, tile endures only for a short period, but a concrete channel or drain, if properly constructed and covered over, will last for ages. The ditch required is about the same as is in use for tile furrow draining. Three men, with a horse and cart, will execute in one day 500 yards, the concrete being previously prepared. The concrete channel may be covered over, as soon as made, either by a concrete cover, or by timber, and immediately thereafter the ditch can be filled up. The expense of the apparatus or implements required, will not exceed 2*l.* 10s., and the concrete channel can be made of any size required. Any practical farmer, or farm servant, after a few lessons, will be able to perform the process himself of concrete furrow draining.

AWFUL THUNDER STORM.

Sir,—One of the most awful thunder-storms that we ever remember to have witnessed occurred on Wednesday last, and spent its fury over a district extending from Steventon—from north to south—visiting in its career the Downs, West Isley, Catmore, Peasemore, Boxford, Kintbury, and places adjacent. The weather during the morning had been oppressive and sultry. The war of the elements commenced about 11 o'clock; flash succeeded flash of the most vivid lightning, peal upon peal of thunder—indeed a continual rumbling for hours, the most alarming to contemplate, advancing nearer as time crept on, till about 5 o'clock, when hailstones fell, or rather large pieces of ice, without exaggeration as large as pigeons' eggs, or resembling the glass drops of a chandelier. Scarcely a pane of glass was left whole in the numerous conservatories in its direction. At Elcot, near Hungerford, the seat of A. Bacon, Esq., has suffered greatly; the whole of his splendid pinery and rare collection of exotics and green-house plants are destroyed. A valuable window of exquisite painted glass in the mansion (north-west aspect) was struck by the ice and demolished. The damage done is estimated at near 500*l.* The seat of Admiral Dundas was much damaged; upwards of one hundred squares of glass broken, the splendid gardens spoilt for the season. Mr. T. Owen, of Clapham, has suffered much in his crops, particularly his barley. Many of the fields now nearly ready for the scythe, were whipped out as if with flail; his wheat is a little damaged. This gentleman is insured in the Hailstorm Insurance Society for his wheat only. At Boxford the storm vent itself in a deluge of rain; it appeared as if the flood-gates above were opened, the rain poured down in such unceasing torrents. Mr. Fidler, a large farmer, had several fields of turnips lately hoed, and in the morning looking everything that could be wished, turned into a mass of mud, not an atom of vegetable to be now seen; one field of barley that laid upon a slope shared the same fate. Mr. Frome, of Boxford, suffered much, and, in addition, the contents of his yard were washed into the village—poultry, fowl-house, pigs, and all. A Mr. Mundy, between Wiskham and Boxford, on an inclined plane, was much damaged; his servants had to wade up to their middles to save the farm stock. At about seven o'clock the town of Newbury and adjacent were visited by this terror (for such it is when like unto this storm); the rain fell in torrents; the accumulation of water swelled the little stream called the Lamborn (so celebrated for trout), that its narrow course could not contain this fearful increase, and occasioned its overflow, doing considerable damage through the different plantations and gardens this pretty stream winds its way. This storm lasted from eleven o'clock noon till near twelve at night, and great was the damage done. One large tree in Shaw Avenue was struck by the lightning. Fortunately no lives have been lost, as we have heard of.

I am, yours, &c., T. F.

Donnington Bridge, Newbury.

TUXFORD'S STEAM THRASHING MACHINES.

Sir,—The perfect safety from fire, and the complete success which has attended the introduction of our portable steam thrashing machines into the farm-yards of many of the leading agriculturists in the neighbourhood of Boston, Lincoln, &c., in some of which the same machine has been three and four different times, induces us to address you on the subject, and through the medium of the pages of your valuable journal we seek to give publicity to the arrangement of the same, with a detail of their effectiveness, *not* drawn from solitary instances, but taken from the result of months of trial.

The boiler, engine, and thrashing part are all on the same frame upon four wheels, and the thrashing part remains upon the same, when at work; the total length is 10 feet 6 inches, and it will turn in less space than a waggon; the chimney is provided with a spark collecting apparatus at its top, for removing all hazard from fire when the steam is being got up, and prior to the engine being set in motion; there is also an apparatus for heating the water previous to its entering the boiler, and in front of the boiler is a portable box ash-pan, with a reservoir of water about four inches deep for receiving the cinders when drawn from the ash pit, which removes every risk from them. The engine is a horizontal vibrating one, of very simple construction, easily managed by an ordinary farm servant, and is fixed to the top of the boiler, with its piston acting direct upon the crank. The thrashing part stands at the opposite end to the furnace, and when at work the table throws out still further from the furnace end; thus leaving the fire part of the boiler at the greatest possible distance from the stacks when at work. The thrashing part is fed by rollers requiring more power to work them, but considered by all well informed on the subject as essential to a machine for clean thrashing.

The portability of our steam-thrashing machines may be at once imagined, when it is known that after finishing one joint, it can be removed, the cloths refixed, &c., and at work again at another joint in less than a quarter of an hour, requiring but one horse, and the hands in the yard for effecting the change.

In the flats of Lincolnshire, from the nature of the soil, the straw grows to a very great length, and the custom of mowing is becoming common with many; thus we have in this district a more than average quantity of straw in proportion with the quantity of wheat to be thrashed out; and in drawing out an estimate of the effectiveness of any thrashing machine it would at all times lead to a more correct judgment if it could be stated the quantity of straw thrashed, which is seldom or never done, and if also the drum be fed by rollers. Our drum is fed by rollers, and the quantity of wheat thrashed out in a regular day's work varies from *forty* to *seventy* quarters, according to the quantity of straw (or whether it be mown or shorn); the machine would thrash more if the feeder could supply it faster, which is not practicable.

The first steam thrashing machine we sent out was for Mr. Robert Roslin, of Algarkirk, near Boston; it has now been at work for about 12 months, and from an account kept by Mr. Roslin, commencing January 1, 1843, he found that from January 1st up to the middle of June, he had thrashed out upwards of three thousand quarters of wheat, without having to make any repairs to his engine or machine. Mr. Clarke, of Sutterton, near Boston, with one of our steam machines thrashed out from May 1st to July 14th about sixteen hundred quarters of wheat, which his employers stated to be thrashed cleaner than they had seen done by any horse-machine. Mr. Jacob Swinton, of Billinghay, commenced working another of our make in the neighbourhood of Lincoln, in the middle of May, with similar success; and which has given him such satisfaction that he has now ordered a second one. These statements, Mr. Editor, must prove conclusive in regard to the complete success of the steam thrashing machines as arranged and made by us. Their draught is very easy. Yesterday we forwarded one for Mr. John Hodson, of Upwell, near Wisbeach; three horses would take it to Wisbeach from Boston, a distance of thirty miles, baiting but once. At this time we have orders in progress for five other steam machines, all of which are for different parts of Lincolnshire, where the effect of our other machines is best known.

Hoping that these particulars, which bear so directly upon the farming interest, although proceeding from an interested party, will not be found improper for insertion in your valuable publication,

We are, sir, your obedient servants,

Tuxford and Sons,
Iron-works, Boston, Lincolnshire, August 19th, 1843. Engineers.

P.S. Should any of your subscribers or readers require reference to parties who have employed our machines, we would furnish them with a list of many of the leading agriculturists around us, &c.

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—I shall esteem it a great favour, if you or any of your valuable correspondents will answer the following queries, through the medium of the "Farmer's Magazine."

Is it advisable to apply the practice of thorough draining (in a single field for instance), in a tract of level or flat country many miles in extent, as the fens in Lincolnshire, where, during the winter and spring months, the ditches frequently overflow with water, completely saturating the land? But yesterday I was across some land, which is sown with cole and turnip seed, in the hollows and furrows of which a good deal of water stands, from the effects of a recent storm; the surrounding dykes, too, are nearly filled, although it is considered rather high land, and such is the case generally throughout the parish; but the water will settle a foot or two in a few days, if no more rain falls. In such a case, what would be the effects of thorough draining?

If it be practicable to thorough drain, would it not be also necessary to loosen the subsoil with a subsoil plough? *

On the other hand, would not such a system prove injurious, by permitting the great floods of water to completely wash out of the land the greater portion of the most valuable parts of manure and food of plants, or at least carry it to such a depth as to be of no avail?

It is a generally received opinion that thorough draining and subsoil ploughing would be of no use

* Where can Mr. Smith's (of Deanston) pamphlet on Thorough Draining, &c., be procured in London, and the price?

whatever here, nay, that it would do actual injury; that in consequence of the better system of drainage which has been adopted these late years, the highest and best grazing land will not now feed nor carry near so many beasts and sheep as it did before the drainage was so improved; it is said to be kept too dry.

I may add, that we have in this neighbourhood land of all qualities, from the richest loams down to heavy clays, and on the other hand to light sands, the subsoils being mostly of a sandy or clayey nature, the latter varying in tenacity.

If salt be sprinkled over hay as it is stacked, say in the proportion of 20 to 28lbs. to a load, has such hay a tendency to diminish the secretion of milk in cows, during the time they are fed upon it?

If these queries meet with a favourable reply, I shall hope to be permitted to trouble you again, or some friend to the dissemination of agricultural knowledge, assuring you that it will give me much pleasure to communicate the result of any improvement suggested, and acted upon in this neighbourhood, which is much to be desired, as but little has been hitherto attempted.

FILO.

Gosberton, Spalding, Aug. 17th.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Will you allow me the favour to enquire, through your useful paper, whether any of your numerous subscribers and correspondents can prescribe any plan for the destruction of that destructive tribe, the wire-worm? Not only should I be benefited, but a very large number of farmers in this county occupying light loams would be also benefited, if an effectual remedy could be pointed out. I have had the mortification this year to see the first and best of my turnip plants which escaped the ravages of the fly (would that we could find a remedy for this enormous evil as well, which has given so many farmers a sorrowful heart this summer), completely destroyed by the wire-worm, which are in spots as thick as they can possibly be; and they live in the root until they divide it, and the part nearest the top, with the leaves, soon dies. The rooks seem to be drawn to the spot where the worm abounds, for they pull up the plant, and it is soon seen that half the root is gone. I may mention a fact, that in all the fields where there is most shelter around, the plant has escaped the fly and the worm, and particularly where the land is sheltered from the north wind and aspect.

I remain, your obedient servant,

A SUBSCRIBER TO THE MARK-LANE EXPRESS.

Cornwall, August 11.

ANSWER TO AGRICULTURAL QUERY.

SIR,—In reply to your correspondent "Agricola," I beg to inform him that the best mode of cutting corn, either wheat, oats, or beans, is for the reapers to work in sets of three, that is, a mower and two others (usually women) to make bands and sheave the corn. The mowers must invariably mow the swathes into the standing corn; this mode prevents the very great loss occasioned by the scythes cutting off the heads of the corn, as the standing corn supports that mown, as will be seen by any person upon trial. A man then follows (say three or four mowers) and puts the corn into shock, which completes the work except the raking, which can be done by a horse-rake—the whole is thus made safe as the work proceeds. The best scythes are those commonly called "Drummond's reaping scythes," made at Stirling; they may, however, be had of the best quality and workmanship, from Mr. Charles Clifford, smith, Cowhouse Lane, near Belper, Derbyshire, price 10s. 6d. each, which includes a toothed rake or cradle to gather the corn. The writer of this has used them for several years, and very much approves of them.

I remain, sir, your obedient servant,

Aug. 15. MARON.

EXTRAORDINARY SALE OF HOME BRED COWS.—On Tuesday last, Messrs. Cafe and Son, of Malbro' street, met a large assemblage of buyers anxious to become the owners of the beautiful cows submitted to his hammer on the premises of the owner and breeder, T. White, Esq., of Daucer's Hill, South Minns, Middlesex. At four o'clock Mr. Cafe commenced by offering lot 1; first paying the originator of this curious stock a well-deserved compliment for his perseverance, so many years devoted to the raising of a distinct new breed of cattle—in proof of which the calves are and have been for some long time of one uniform colour, viz., black and shuted white, forming the most picturesque herd in a park that can be imagined. They are between the Galloway and Suffolk breeds, and combine the good qualities of size and aptitude to fatten, with superior milking and small bone. One of these cows has produced 33½ quarts of milk at two meals. Our county ought to be proud of a breeder who has produced cows worth 50 guineas each, but more especially the parish of South Minns, which before had the honour for many years of claiming as a resident Arthur Young, the father of our present system of husbandry.

Lot			Guineas.
1	was a handsome shuted cow in profit, bought in at		35
2	ditto, knocked down to	Lyne Stevens, Esq.	12
3	do.	do.	10
4	do.	do.	50
5	do.	do.	25
6	do.	bought in	22
7	fat cow, knocked down to	L. Stevens, Esq.	14
8	fat steer	do.	6½
9	bull, 3 years old	do.	15
10	heifer	do.	15
11	calf	do.	3½
12	bull calf	bought in	7
13	fat calf	do.	3½
14	two years old heifer	do.	20
15	do.	Mr. G. Janes, of Hunton Bridge, Watford	17
16	do.	do.	14
17	do.	knocked down to Mr. Cafe	12½
18	a yearling calf	bought in	5
19	do.	do.	8
20	do.	do.	11
21	do.	do.	7½

Lyne Stevens, Esq. has lately purchased a fine estate at Roehampton, and sent his excellent bailiff, Mr. Ayres, a superior judge of stock, to purchase for him. Mr. James, we believe, bought lots 15 and 16 from Mr. Wittingstall, of Watford. These prices in these times prove this herd of cows to be the best in the county.

The approaching Meeting of the Richmondshire Agricultural Society is looked forward to with much interest by the agricultural implement makers and others. The trial of implements commences on Monday the 25th September, the ploughing matches on Friday the 29th, and the show of cattle, &c. on Saturday the 30th September.

CALENDAR OF HORTICULTURE FOR SEPTEMBER.

The chief art of the gardener at this season is displayed in bringing the ground, in all its departments, into a state of quiet neatness. Flowers are on the decline: some dahlias, it is true, are in the height of perfection; but the plant is on the wane, and as the trouble and immense time which as a "show" plant it requires, begin to be acknowledged, it will gradually fall in repute. Scarlet geraniums, and some fine greenhouse flowers, still deck the parterre; but they must shortly be removed: thus the ground being left vacant, must be trimmed and properly dressed to bring it to that sober condition, free from either finery or litter, which it is so delightful to behold in autumn. Each department requires this regulation; for, if weeds abound, they will multiply beyond belief, and render the business of next year truly embarrassing. An orderly winter garden, with its clean brown tint, the neatly trained espaliers, open dwarfs of trim figure, and entire absence of weeds, is a beautiful, reposing object, be the dimensions what they may; and we earnestly recommend every amateur to emulate it.

Vegetable Garden.

Little is to be done in the way of seed-sowing however, mustard and cress can be sown twice on a warm plot or border, American cress and corn salad to stand the winter: the former is the best substitute for water cresses, and the latter, by some called lamb's lettuce (*fedia olitoria*) in botany is a delicate vegetable, native of England, and now too little cultivated. Radish seed, for a late autumnal crop, is sown early in this month, and also the hardiest cos and cabbage lettuce to endure the winter: it is better to employ a four-feet wide frame, standing upon nice light, but not rich earth, which can be always left open till the nights become severe. Lettuces are apt to damp off, especially in close, moist gardens; yet we have known almost every plant to go through the winter in safety, by raising a ridge with earth thrown out of two small trenches, like those prepared for celery, and sowing the seed early in September along the summit of the ridge.

If the winter spinach be not all in, a sowing must be made in drills, or broad-cast without further delay. Plant cabbages from the seed-beds of the spring, for winter use; also, leeks, endive, and the last celery. Thin out the cauliflowers sown in August, and transplant some into warm situations, and under frames. Sweet herbs of most kinds may be planted: they do best in light mellow loam in an open exposure, or in a wide border. Cover the melon glasses at night; frost sometimes comes on before day-break, even after extremely warm days.

Potatoes—the ash-leaved are nearly finished; but other varieties are now in perfection; and the beds within the garden are well adapted for the reception of the spring crop of cabbages; as therefore a row of potatoes is digged, collect every tuber, and do the work neatly, opening a regular trench, which manure at once, using the leafy reduced compost of dung and leaves; and to it, add about a shovel of coal soot to every moderate barrow load. This manuring will endure twelve months.

Remove haulm and litter: if no animals be kept for which the refuse may serve for the stall or stye, it would be useful to bury the old stalks of beans, artichokes, and cabbage-stumps, because their ashes will contain alkali, carbonate of lime, and carbon, in a condition to be acted upon by oxygen and hydrogen, and thus to become nutritious to plants.

Gather and store seeds; and protect onions, shallots, &c., which have been taken up and dried.

At the end of September, earth up such broccoli plants as have been planted in trenches.

Fruit Department.

Apple and pear trees—*i. e.*, as dwarfs, espaliers, or on walls—should be finally cut back, below the eyes at which the laterals were first shortened. The sap has become tranquil, and those buds which are seated low on the spurred shoots will have swollen; by this final summer regulation the trees will assume a better figure, and the fruit will mature more rapidly.

Peaches and nectarines begin to ripen, and therefore must be handled delicately. A few nets will prevent accidents to fruit which drops. Wasps at present have scarcely made their appearance; but the great heat which now (August 18th) prevails, will soon bring them to sight, if any broods remain. The crops of fruit, including plums, are very uncertain, in some places trifling, in others pretty good; but the damage sustained by many trees under the cold rains of May was very severe.

Vines now promise well: the duration of the present magnificent weather must determine the nature of the crop; but under any circumstances the trees should be finally regulated to admit the full power of the sun to the fruitful shoots, and also to ripen the new wood laid in for next season.

Strawberry plantations are prepared after the first rain of September: the ground ought to be a soft mellow loam, trenched two spits down: manure is not much required. The plants ought to be the strongest runners of any chosen variety, transferred from bed when they are rooted to the new plot or border without loss of time.

The preparation of plants of forcing, or to bring early spring fruit, is variously described; but a very superior method is practised by a few excellent gardeners. A brick pit, of 4-inch work, is prepared of any convenient length; the ground is excavated to the depth of a yard, and filled with semi-decayed leaves; upon these when settled, a foot of sound loam, having with it one-third of rich manure, is placed. This bed is cropped with strong rooted runner plants in rows one foot asunder, the plants six inches apart, watered, and the lights closed till growth be fully established. Air is then gradually admitted, and the lights are finally removed till December, when they are replaced. If the plant be well selected, and duly treated, the crop of fruit is surprising, and frequently brings much money in April, and early in May. Such pits are admirable for every thing; can bring two successive crops—as potatoes and melons, strawberries and melons, cucumbers, and even pine-apples, by aid of a very cheap, hot-water apparatus, comprising either a common copper and two brazed pipes, or a regular conical double boiler; in either case fitted to a range of earthenware and pipes, each 18 inches long, and costing about 7*d*. We have just seen a 24 feet stove fitted up thus for a sum under 3*l*. Early vinery, or grape stove should be exposed, and the sashes repaired and painted. The late vinery ripens its fruit, and must be kept dry and warm as possible.

The pine plants for fruiting must now be in their largest pots, of loam chiefly, and be transferred to the fruiting house; where, after being allowed to

grow with moderate moisture and closed sashes for a few weeks, they should be dried off, and be more exposed to air and sun. Succession pines in 16 size pots of enriched turfy or couch loam, must be pushed on in close pits, furnished with ample dung linings, and one of our economical hot-water apparatus already described. No fire, however, need be lighted till the cold weather sets in.

Flower Garden.

Keep all the parterres in clean condition: support dahlias securely by one upright and three slanting stakes, each so fixed as to meet the south-west, north-west, and east winds. Some of late adopt trellises, supporting the shoots as on espalier rails.

Prepare the greenhouse for the reception of the pelargoniums, calceolarias, &c.; and the conservatory, or second house, for camellias, and ericaceæ. The turf and brick pits should be in readiness, and furnished with a good bed of dry saw-dust; no other material is better adapted to the purpose of protection. When a pot is plunged in it to the rim it defies frost.

Carnation layers, and pink pipings, if well rooted, should be removed to beds or pots, the soil being loam, road drift, a little old manure, and chalk.

Auriculas are already re-potted, but care must be taken to remove decaying leaves.

Prepare flower-beds for ranunculus, anemone, hyacinths, and tulips. They should be deep trenched, adding drift-sand and old manure, then set up in ridges.

As the small beds in lawns lose their flowers, let each be digged out, and the earth be either set up in the compost ground to meliorate by weather, or scattered over vacant plots and shrubberies. Then replenish the beds with fresh loam, and mushroom-bed manure, or strong leaf mould.

Mulch all the American borders and plots with two-year old leaf mould, and some sand. Make new beds with pure black heath soil at the end of September, introducing all the charming azalias, kalmias, the best rhododendrons, andromedas, and hardy heaths.

In the plant stove we have yet very fine specimens of gloxinea—blue, white, purple, and hybrid; also some gemeræ, achimenes, occasionally Russellia, and a few late blossoms of *hibiscus rosa sinensis*—a plant which still has hardly a rival.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

This has been, perhaps, one of the most changeable months—its position in the calendar considered—almost ever recollected; hence productive of great perplexity to all engaged in agricultural pursuits. From the 1st until quite the 20th, various parts of England were visited with destructive thunder and hail storms, which, together with the immense quantity of rain which fell, were, as might be imagined, productive of seriously destructive consequences to the standing crops; still, under all the atmospheric vicissitudes with which our farmers have had to contend—and which no doubt must tend materially to reduce their profits—the state of the fields, as a whole, is one which inspires us with hope as to the result. In our last month's report we took occasion to call attention to the numerous unfavourable statements which had been received from the different grain districts, as to the appearance of the then ripening wheats. Since the time that was written a decided improvement has taken place in the general condition of that grain: indeed, we may safely venture to observe that, it is such as will cause a considerable increase in the quantity produced. On the 8th harvest work was commenced on some of the dry gravelly soils in Hertfordshire, and in parts of the western counties; and that operation became very general by, or shortly after, the 23rd, since which date it has progressed with a rapidity that, under existing circumstances, has somewhat surprised us. The first sample of new wheat shown at Mark-lane was on the 14th, when about 300 quarters were on offer, but the quantity had by the 21st increased to upwards of 2000 quarters, with nearly 4000 on the 28th. Great curiosity was of course manifested by speculators and others to ascertain the actual value and quality of these parcels of the new crop; when on its being known the heaviest weight was not more than 63lbs. per bushel, it was predicted the yield would be positively deficient. It is very true that at the corresponding periods in 1842, wheat of that year's growth was received at Mark-lane weighing 64lbs. per bushel; yet we maintain that it is impossible to form a positively accurate opinion of the crops thus early. That a very great improvement has taken place in them during the month is readily acknowledged; and so far as we are enabled to judge, we certainly do think that the yield of wheat this year will amount to nearly or quite a fair average; but beyond that, our expectations do not extend. As to quality, a serious point for consideration presents itself. The prevailing heavy rains having lodged very large breadths of wheat, and many—very many—fields having been carted of their produce in a damp state, we much fear that that of this season's crop will not be so fine as was that of last. The lateness of the harvest will in all probability tend to that end; yet we much hope that our fears in this respect, taken in the aggregate, will turn out unfounded.

Notwithstanding Barley has been secured rather rapidly, but few parcels of that description of grain have as yet been on sale in any of our markets. So far as we can ascertain, no reasonable fault can be found with it; yet from the fact of many large farmers having declined to grow it this year, from the miserably low prices obtained for all descriptions, we are led to the conclusion that the produce will barely amount to an average in any county.

Oats are well spoken of as to the quantity of corn in the ear; but a short supply of straw is mostly expected.

Both Beans and Peas are looking well, and promise very large returns.

Although consumption has certainly been on the increase during the last three months, and the harvest is at least a fortnight behind that of last season, our markets in all quarters have been well supplied with English wheat. At the close of September, in 1842, many parties contended that

the crops had proved deficient, and that an adequate supply was not in the United Kingdom to meet our wants until the beginning of harvest. We find, however, that the suppositions were founded—as we then stated they were—on false assumptions, as is proved by the available quantities lately brought forward. Now, in our judgment, this is a matter which calls for especial notice—considering it, as we do, of the most vital importance to the agricultural body, that it is indispensably necessary for them to ascertain, as nearly as possible, the actual quantity produced, as upon this, without a doubt, must depend future prices. Could not, then, some plan be adopted whereby the truth might be arrived at, as by that standard of value would the farmers find out the best time at which corn should be disposed of, and thereby have more control over their pecuniary interests?

Considerable attention is now directed towards the averages; and the question now asked is, will the duty fall sufficiently low to enable the importers of wheat to realise a profit proportionate to their risk? On the 25th that impost was lowered to 15s. per qr., and it is placed almost beyond a doubt that it will decline on the 1st of September to 14s. Some think—as many of the country averages come comparatively high—that a 12s. duty may be expected. Such *may* be the case; but in the event of its declining to the sum, the speculators will gain but little by their purchases. All this, however, is mere speculation on our part; for so much now depends upon the weather, that it is impossible for us to tell how much corn will be released this season for home consumption: but thus much, we think, may be inferred, viz., that it will be much smaller than in any season during the last ten years.

As is almost invariably the case in this month, the prices of corn (but more particularly those of wheat) have experienced considerable fluctuation. In its early part, an advance of from 6s. to 12s. per qr. was obtained for all descriptions, owing principally to the before-mentioned rains; but immediately the weather became finer, and the new wheat came to hand, the quotations experienced a very rapid decline, though they did not fall to their original level by from 2s. to 4s. per qr.

The demand for barley has somewhat improved, but without any material alteration in figures, arising from nearly 60,000 qrs. of free foreign having been brought forward. Good sound malt has met a steady sale at full prices; in other kinds a limited amount of business has been transacted. The sale for oats has ruled comparatively steady, yet as the supplies from Ireland have been very great, lower prices are mostly expected. Beans, peas, and flour, may be considered heavy, except at the month's commencement, when the latter rose from 5s. to 8s. per 280lbs.

The parliamentary session has been closed, but not without another blow having been aimed at the English agriculturists, by the passing of the Canada Corn Bill, and that allowing the produce of the state of Maine to enter our ports on the same footing as that of our colonies. We do not view these measures with that alarm as many of our contemporaries affect to behold them, yet it is by these "nibblings" at the corn laws that the whole fabric of protection may at some future time be overthrown.

Sir Robert Peel and his colleagues in office have, to our way of thinking, exhibited a mode of "conciliation," as it is termed, which, instead of appeasing the "choice spirits" which have figured so conspicuously as the leaders of the anti-agriculturists, will, our readers may be assured, only embolden them to prosecute their nefarious designs with redoubled energy to obtain, if possible, a total annihilation of duties upon corn. We have no wish whatever to create unnecessary alarm, but we certainly do think it is the bounden duty of all well-wishers to the prosperity and happiness of this great Empire to be "up and doing," in order to show the Anti-Corn Law League that the interests of that invaluable class—in which is undoubtedly involved all others in the state—are not to be trampled upon with impunity.

The depastured stock has fared extremely well in the month, if we except the prevalence of the epidemic, which has, we find, committed serious ravages upon both beasts and sheep. We scarcely ever recollect a period in which store stock has commanded so little attention: hence the prices have ruled extremely low.

The various crop grasses have turned out extremely well, and a large produce has been secured in good order.

As might be anticipated, the imports of foreign stock have excited no little attention from our graziers, owing to very large arrivals being generally expected about this period; but since our last only about 50 head of beast and 200 sheep have been received in London and at the various outports, from Spain, Holland, and Germany, in for the most part very middling condition. The stock to which we have before observed as having been grazed in the Lincolnshire marshes, has at length been disposed of, but at prices which cannot tempt speculators.

Our advices from Scotland state that harvest work has been commenced in some of the border districts. The crops are represented as looking well, but the in-gathering of the crops is expected to be late. In corn a very moderate amount of business has been transacted, and prices have ruled somewhat easier.

Throughout Ireland, considerable progress has been made in the cutting of wheat, barley, and oats, large quantities of which have been secured in good condition. Although but limited supplies of grain have been on show in the various markets, the corn trade has ruled dull, at in most instances depressed rates.

The turnip crop is well represented, while very few failures have been noticed in it.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market: the former have have consisted, since our last, of 11,700 beasts, 159,420 sheep and lambs, 1,600 calves, and 1,690 pigs; while the latter have ruled as follows:—Beef, from 2s. 8d. to 4s.; mutton, 2s. 10s. to 4s. 4d.; lamb, 3s. 6d. to 4s. 10d.: veal, 3s. 6d. to 4s. 6d.; and pork, 3s. to 3s. 10d. per 8lbs., to sink the offals.

Taken as a whole, the demand for all kinds of stock at the above market has ruled excessively heavy, particularly for the middling and inferior kinds; in consequence of which the rates have had a downward tendency.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, August 29, 1842, and Monday, August 28, 1843.

At per 8lbs. to sink the offals.

	August 29, 1842.			Aug. 28, 1843.		
	s. d.		s. d.	s. d.		s. d.
Coarse & inferior Beasts	3 2	to	3 4	2 8	..	2 10
Second quality do.	3 6		3 8	3 2	..	3 4
Prime large Oxen.....	3 10		4 0	3 6	..	3 8
Prime Scots, &c.....	4 2		4 4	3 10	..	4 0
Coarse & inferior Sheep	3 4		3 8	3 0	..	3 2
Second quality do.	3 10		4 0	3 4	.	3 6
Prime coarse woolled do.	4 0		4 2	3 8	.	3 10
Prime Southdown do..	4 4		4 6	4 0	..	4 4
Lambs	4 6		5 2	3 8	..	4 10
Large coarse Calves ..	3 8		4 0	3 8	..	4 2
Prime small ditto	4 2		4 6	4 4	..	4 6
Large Hogs.....	4 0		4 6	3 0	..	3 6
Neat small Porkers ..	4 8		5 0	3 8	..	4 0

SUPPLIES.

	August 29, 1842.	Aug. 28, 1843.
Beasts	3,021	2,817
Sheep and Lambs	30,690	30,880
Calves	182	135
Pigs	289	293

Up to Newgate and Leadenhall markets very limited quantities of slaughtered meat have been received; yet considerable inactivity has prevailed in the demand, at lower figures. Beef has sold from 2s. 6d. to 3s. 6d.; mutton, 2s. 10d. to 4s. 2d.; lamb, 3s. 6d. to 4s. 8d.; veal, 3s. 4d. to 4s. 4d.; and pork, 3s. to 3s. 10d. per 8lbs. by the carcase.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

Since our last for July, every prospect has undergone more or less of change, dependent chiefly upon the weather. This, therefore, shall be first considered, as a continuation of the remarks in our former notice. July proved warmer than in 1842, but though genial and moderately showery, it could not redeem the injury inflicted by the bitter, sunless season of May and part of June. As a set-off, however, the crop of grasses was enormous, and the ingathering altogether propitious. August of 1842 was true to its character—hot, dry, and gloriously sunny; hence the perfection of the grain, harvested pretty generally by the 15th; the average maximum temperature of the first 24 days was very nearly 75 deg. in the shade. During the present month we have enjoyed much fine weather; the average maximum to the present day inclusive (24th) being about 73 deg. In 1842 there were six successive thunder-storms on Wednesdays, commencing with July 20; but these storms were all of very dry character, and generally unattended with hail. Our thunder of this year has not occurred at intervals so regular, but it has brought with it the scourge of desolating hail: hence it must be deemed a calamity. The harvest, however, has proceeded from the 6th or 8th inst. with rapid strides; amazing breadths of *very fine* wheat have been carried; and we owe it to the consumer, and in justice to the report, to state unequivocally that those really able farmers, who are known by us to rank among the most discerning, state a firm conviction that the crop, viewed extensively, namely, from Hants and Berks, thence North-west to Cheshire, Denbighshire, and the neighbouring counties, is plentiful and of fine quality. How far the ravaged districts may substract from the general return, it is not ascertained; but assuredly unless a very great change occur, the barns and yards will be full.

Prodigious heat occurred on the 18th, and continued till Sunday 20th, when a rapid reduction of temperature took place, and on the 22nd and 23rd there was a profusion of soaking rain, and now, on the 24th, the barometer rising, we have brilliant sun and some promise of settled weather. The turnips are our worst crop; they have failed sadly, and indeed few are expected. All other things are exceedingly favourable, and every hope is entertained that a few—perhaps two—weeks of fine weather will see all the grain in the corn districts of England safely housed.

We know it to be the expressed opinion in a large corn-growing neighbourhood that wheat will recede to 10*l.* a load of five quarters: in fact, 12*l.* 10s. has already been taken for fine new wheat.

As it is our chief object to promote the interets of the farmer by recommending to notice every apparent improvement, we should hail with peculiar pleasure the scheme of an agricultural college, as reported in a late number of the *Mark Lane Express*. Such an establishment would prove a nucleus whence would emanate much useful information, the result of scientific experiments, conducted by persons who have at command every required appliance and instrument; but the proposal appears to make no advances, or at least we hear no more of it. In absence of so great a subject, we venture to allude to another, which we find in the second column of the *Gardener's Chronicle*, p. 571, Aug. 19.

We have never as yet paid any attention to the dibbling of wheat, nor have any experiments come under inspection in our agricultural locality, therefore we have the greater pleasure in citing the evidence of at least a very sensible writer, though we have no knowledge of his experience, referring to the *distance* between plants. The writer observes—

"The practice of dibbling wheat, which is found so useful in Norfolk and Suffolk, leaves proper intervals between the plants, which can be hoed; and depositing the seed at a proper depth insures the formation of roots beyond the influence of a hot and dry sun. The great fault of the dibblers is that they put too many seeds in each dibble hole; if the seed is good, three or four grains at the most are sufficient; of these one or two only will take the lead, and form the tuft, the others will be overpowered by the more vigorous. When land is well prepared half a bushel of seed is an ample allowance for an acre, the rows being at nine inches from each other, and the dibble-holes at the same distance in the rows. This allows of perfect hoeing and stirring of the intervals, and the complete destruction of weeds. Whenever a simple and effective machine shall have been invented to make holes, and deposit the seed with certainty and expedition, or a perfect drop drill which will answer the same purpose, and the land shall have been carefully prepared to receive the seed, we may expect to see the average produce of corn in Great Britain and Ireland so increased as to supply a continually increasing population; while the mechanic will have his bread at a cheap rate, the farmers and landlords will be prosperous from the more abundant return of their land."

The writer suggests that the dibblers are apt to drop too many seeds in each hole: this is likely to be the case; but when the great destruction occasioned by vermin is considered, we can scarcely wonder that men are inclined to be prodigal of

seed. The only objection we perceive to dibbling is the liability to failure causing blanks in the rows, otherwise the process must be exceedingly economical. Practice and experience must decide. What would our agricultural readers think of bringing it to the proof by another mode of proceeding—or to put the question in the words of the writer—"What would farmers say if we proposed to *hoe out the wheat plants to ten inches or more apart* as we do turnips? and yet, whoever has examined a crop of wheat of *seven or eight quarters per acre*, will have seen that it consisted of tufts of ten or fifteen stems, each proceeding from one coronal root, and that such plants required nearly a square foot of ground to grow in."

These are serious considerations; and if great economy of seed can be combined with vastly increased productiveness, who would hesitate?

We have not seen—we repeat it—one instance of dibbling, nor heard it mentioned by any of our agricultural neighbours; but we *have* inspected an acre of land, owned and cultivated by a shopkeeper not remote, which has produced wheat with intervals of beans and barley—now and then turnips—for 32 years: this acre has yielded 5½ quarters of wheat, and its last crop sold for 18*l.*, besides leaving a sack for the grower!

It is tilled and sown in the usual way—but with much attention—by the careful proprietor.

Improvements will assuredly reward wisdom and industry.—*Aug.* 24.

EAST CUMBERLAND.

As the growing crops progress towards maturity, the state of the weather becomes more interesting and important. For although wet weather, at a more early stage of their growth, might materially affect both the quantity and quality, yet it is only when grain is about ripe that it can be affected in point of soundness. The weather, in the beginning of last month, was favourable for the growing crops, the temperature being pretty high, with only occasional showers, which were calculated to promote the growth without in any way injuring the grain. But since the fifteenth there has been more or less rain every day, with the exception of yesterday. To day, though fine and warm in the morning, with every appearance of the weather being about to settle, there have been several showers in the course of the afternoon. Notwithstanding the long continuance of unsettled weather, the quantity of rain that has fallen has been by no means large; but it being generally cloudy, with a low temperature, has greatly retarded the ripening of the crops, and harvest must consequently be at least three weeks later than last year. The circumstance of the harvest being late will of itself prove to a certainty, that the grain will not be of first rate quality, certainly nothing like the produce of last year, with perhaps the exception of oats, which are generally small in a very dry season. Haymaking has, since the middle of July, been a slow, tedious, and consequently expensive process. Yet the damage done to it has been nothing like so serious as in some of the late years, and most part of the sown grass was secured in excellent condition, and was upon the whole a pretty fair, but not an abundant crop. The meadows, especially those of a low wet character, produced the best crop they have done for years back; dry upland meadow has not been so productive, and there is still a considerable quantity abroad in the fields, with some to cut. Wheat is almost invariably bulky in the straw, but the want of sunshine and warmth will prevent its filling evenly, and there will be many defective grains. Although it has not changed its colour, but is still almost as green as when it first shot into ear, yet, on a close inspection, the blight, or what is provincially called "honey mildew," may be detected, Should the weather now take up, and become warm and sunny, much may yet be done in the way of improvement; and, from the great breadth sown, the fulness of the crop in point of straw, and the length of the ears, which is good, considering its thickness on the ground, there is good ground for calculating on an average quantity. Barley, on dry soils, is a full crop, but on wet and heavy lands of course deficient. Oats are not bulky, the straw being short, and such a thing as a field where they are at all laid is rarely to be met with, but they are likely to fill well in consequence, and the yield may be good in proportion to the bulk. Potatoes are very generally complained of as a deficient crop. Many came badly, from the seed being affected with the dry rot; and upon wet and retentive soils, they suffered much from the excessive quantity of rain that fell before they appeared above ground. The consequence is, that many fields are thin and patchy, with slender stems. A good crop may be here and there met with, but such is quite an exception. The season for turnip sowing was more than usually unfavourable; the heavy rains that fell about the time they ought to have been put in, not only retarded that operation, but much of the land that was quite ready for the seed, had to be reploughed. The great bulk was consequently late, and the fly, being uncommonly numerous, made such depredation that, in several instances, they had to sow a second time. Without the autumn be favourable the crop must necessarily be deficient. The late showery weather has been favourable for grass lands, and the pastures are therefore good, and the stock doing proportionably well. Both cattle and sheep continue low in price, and fat has not been quite so good as about five or six weeks ago. Grain, especially wheat and barley, has advanced during the last month; the former selling at from 24s. to 26s. the Carlisle bushel of three imperials, the latter at 12s. to 14s., oats 7s. to 8s. Guano has been very extensively used, and the result has been quite successful, when applied to either turnips, grain, or grass. The turnips sown with it are almost invariably represented as looking better than those sown with manure; should its effect continue more than one year, its value would be greatly increased. The opinion is very general that the importer could afford to sell it at a much lower rate. Though much cheaper than manure, when the labour of loading is considered, yet should its effect be only for one year, it will be found for general purposes to be too expensive. Could it be had at a considerably reduced price, it might be used to an unlimited extent.—*August* 10*th.*

DURHAM.

After experiencing one of the wettest and coldest springs ever remembered by the oldest person living, it has been succeeded by a summer remarkable for its vicissitudes of weather, awful and tempestous storms, and ungenial character. We have delayed this report so far as to afford us an opportunity of speaking with more accuracy with respect to the crops in general in this county. The wheats were remarkably healthy and vigorous until the spring, but from the state of the weather the greatest

anxiety and uneasiness began to be felt by the farmers for the safety and well doing of that most important crop. This alarm was but too well founded, for on all the retentive, clayey, and wet soils, the injury seemed most apparent; it began to assume an unhealthy, sickly, and yellow hue; and after the wet subsided, and the cold and parching drought set in the middle of June, it became root-fallen and died away, and is a very deficient crop. This has been decidedly most apparent where it was early sown, and too much seed deposited. We have always condemned sowing early, from a conviction that it is more liable to injury than when sown at a later period of the season. The bulk is great upon dry bottomed and loamy soils well cultivated, but not yielding. It is much lodged and twisted, and is in a hazardous situation. But it is fortunate that in consequence of the fineness of the weather last winter, farmers were induced almost in every instance draw their turnips and sow wheat. In this case our observations are congratulatory, and promise a fair yield and fine quality; it never lost colour in the spring, neither is it so much beaten down by the storms; it stands upon shorter and stiffer straw. The harvest will be very late, and in the higher and later districts it will never ripen. The crop will be under an average. The oat crop is very deficient on all wet soils, the head is short, and straw in many instances not above a foot long. This is decidedly the worst crop we have had for some years. A very small breadth of barley has been sown this season, and the crop is various. The hay crop has been very abundant, but the weather has been showery and critical, with a great absence of sun, consequently stacks in many situations have heated, so as to injure the quality of the hay. Stock of every description have done badly, pastures have not grown well, and the fogs or aftermaths are very bad. We are sorry in having to observe that the potato crop is a failure; many fields that were planted before the heavy rains set in were all rotten, and of those planted after, many took the dry rot; many farmers will have to buy for their own use, and all accounts agree in stating that there are very few at a root. Turnips are a late and patchy crop; the land after being so deluged and soddened with wet, that it was impossible to get it into a good tilth—so essential to vegetate that plant. A small breadth of turnips has been sown from the difficulty of preparing the land, and should early frosts set in this crop will prove miserably deficient. Out-door work of every description is considerably in arrear, and fallows have worked very stubborn and unkindly, and are in a backward state. Agricultural labourers have now full employment, but repeal the corn laws, and what will be their condition? We observe in one of Lord Chatham's speeches, the following passage occurs, which is very appropriate at the present moment. "Trade, indeed, increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land; in their simplicity of life is found the simpleness of virtue—the integrity and courage of freedom. These true, genuine sons of the earth are invincible, and they surround and hem in the mercantile bodies; even if those bodies, which supposition I totally disclaim, could be supposed disaffected to the cause of liberty."—*Aug.* 24.

NORTH-EAST OF SCOTLAND.

The period has now arrived when we can give some approximation to an estimate of the produce of the crop now on the ground, and we have delayed our report for some time on the present occasion in order to be able to do so. We regret to say that we cannot report so favourably of it as we could wish. The crop will certainly not be an abundant one, while on the other hand we do not mean to say that there will be any marked deficiency. That the produce will be much inferior to that of last year there can be no doubt. The corn stands pretty thick on the ground, but it will be deficient in length of straw, except on very good soils, and in many cases, even on good land, it will be far from rank. And a deficiency of straw must necessarily be accompanied by a deficiency of grain, for a feeble stalk will not produce a heavy ear. This partial deficiency is chiefly to be attributed to the long continuance of extremely cold and wet weather which we had in the month of May and the beginning of June, with the severe drought which followed. The plants came up rather feeble, and the cold and excess of moisture to which we have alluded, prevented them from gaining sufficient vigour in the earlier stages of their growth. The weather changed all at once about the 14th June to a severe drought, which brought the corn too rapidly forward to the formation of the ear on dry soils; while the sudden and withering drought had also an unfavourable effect on stiff soils by hardening the clay into a solid mass. For some weeks past, however, the weather has been all that could be wished—abundance of moisture, with generally a favourable temperature, which will tend, even at this advanced period of the season, to lengthen out the corn considerably, while at the same time, unless we have abundance of sun-shine, it will make it later. Oats, which are almost the only grain crop in this district, were in the ear about three weeks ago on the earlier soils, and about ten days ago on the later and colder soils of the district. Barley is just beginning to change colour; the crop altogether is more than two weeks later than it was last year. The turnip crop is a very unequal one this season; on some fields, and especially after an application of guano, they have at present a very promising appearance, while on others they look rather backward, and on many wet and stiff soils they may be said to be an entire failure. Indeed, considering the state in which such soils were at the time of sowing, a crop was scarcely to be expected upon them. The turnip season was extremely unfavourable, and it was with the greatest difficulty that the ground was got prepared for them in any shape. They were generally too late in being sown, and, taking the country altogether, we fear there is reason to believe that, unless we have very favourable weather in September and October, this valuable crop will not be so abundant as it usually is in this district. The usual season for sowing turnips in this part of the country is from about the 18th of May (Swedish turnips are sown rather earlier) to the 10th June. Turnips are occasionally sown later than that date—as was the case this season—but it is only when unfavourable weather or the quantity of work to be accomplished renders it impossible to get them sown earlier. They are perhaps as extensively grown and as heavy crops produced in this district as in any part of the island. We do not think that it would be a very difficult matter to astonish our southern brethren with weight of produce, if a few individuals who generally have good crops would take the trouble of getting an acre, or portions of an acre, weighed, after having them carefully topped and tailed. The universal practice is to sow them in raised drills, 26

or 27 inches apart. We observe that a writer in the "Journal of the Royal Agricultural Society," after having discussed this point at considerable length, comes to the conclusion that 18 inches apart is the proper size for turnip drills. It would be reckoned quite absurd to speak of such drills here—they would be quite unsuitable, for a variety of reasons. When turnips are manured with dung alone, 30 single loads (30 solid yards may be about the same quantity) is reckoned sufficient for a Scotch acre (1,261 ac. imp.); and when bones are used alone, 25 bushels per acre are reckoned a fair allowance, but 30 bushels are sometimes given. The general practice, however, is to apply about 12 bushels of bones per acre along with half the usual quantity of dung. An immense quantity of bones has been used in the N.E. of Scotland during the last 10 years. A considerable quantity of guano has been used in some parts of the district this season, generally for turnips and potatoes, but also occasionally by way of experiment on grass and grain crops. For turnips it has been applied in quantities varying from 1½ to 3 cwt. per acre, either along with half the usual quantity of dung or with 10 or 12 bushels of bones. It has also in some cases been used alone, in quantities varying from 3 to 5 cwt. per acre. In all cases it is proving itself a most active and efficient manure—the greater quantities, of course, producing the more luxuriant crops; but when applied even in very moderate quantity, its effects are soon visible on any kind of crop. Potatoes do not generally present a very favourable appearance, though here and there spots very luxuriant may be seen, and we fear they will not be a very abundant crop. In a *few* cases in the district they have failed entirely, the seed having rotted in the ground; and in some of these cases the ground has been ploughed up and sown in turnips. The failure of this useful crop has, it seems, been more extensive in the south of Scotland. The quantity of grass reserved for hay in this district is not very great. The crop may be said to be nearly a fair one. Both corn and cattle have risen in price of late; the price of the former has risen considerably, but the rise came too late to benefit farmers generally, the greater part of their stock having been previously disposed of.—*August* 16.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF AUGUST.

When our August number went to press, the wheat-crop had been placed in a critical position by the wetness of the weather, and some anxiety was then entertained for its eventual safety. The harvest at that period, even in the most forward districts, was fully three weeks later than is usually the case in favourable seasons; and in the more northern districts, Scotland included, it probably is at least fourteen days to three weeks later than it is now known to be farther south. The reports respecting its character in the end of July were not of the most favourable nature, but then it was too early to form any decided opinion on that highly important subject. That it was partially damaged at that date was perfectly ascertained, but the extent of the injury done by blight cannot even yet be perfectly known. During the greatest portion of the last month the weather, however, has generally been as favourable for harvest operations as the most sanguine wishes of the farmers could have by any possibility desired, and this circumstance has caused reaping to commence much earlier than, in the month of July, any person could have anticipated. In the latter end of August rather large supplies of new wheat were sent into the leading corn markets for sale, the quality of the great proportion of which being inferior by 5lbs. per bushel to the general runs at the same period in 1842. Indeed very few parcels fit for seed could be found amongst these supplies, and they were therefore with great difficulty disposed of at a serious decline in prices. These parcels, however, must not be considered as a fair average of the present wheat-crop; it being the universal practice of the farmers immediately to dispose of that portion of their crops, of which doubts may be entertained respecting its heating in the stack. It is also the custom of farmers in the home markets to send their finest samples early into the market, the demand for seed-wheat early in the harvest month rendering these descriptions more valuable than they are afterwards for mealing purposes. We therefore are inclined to believe from this circumstance, and also from the best information within our reach, that the present wheat-crop will eventually prove a deficient one in quality, and therefore that large quantities of the finest qualities of foreign wheat will be required by the millers for mixing with the new wheats for many months to come. This is a very unfavourable prospect for the agricultural interest in general throughout the United Kingdom; for the produce of foreign fields and of foreign labour must again interfere with our farmers' crops in our great markets of consumption, at a peculiarly unfortunate period of the year, when it becomes absolutely necessary for a great majority of the wheat-growers to thrash out large quantities of grain. To pay farming expences, and in many instances to repay loans of money, which the late depressed state of agricultural property has rendered necessary, must now require large deliveries of wheat, and the quantities necessary for these purposes must be increased by their depressed value in the markets of sale. In proportion to their inferiority in quality, to raise a given sum of money, must the deliveries be made larger; and foreign wheats of superior quality being rendered also necessary to the millers for mixing with these new damp and blighted wheats, must materially increase the present great difficulty in making sales, it is needless to say at remunerating prices, but even at destructive rates themselves to the farmers' property. It would be a most fortunate circumstance for not only the agricultural interest, but likewise for the great majority of the productive classes in our society, should some of our capitalists embark a part of their surplus property in agricultural produce of home-growth; for it would prevent that unnatural depression in prices which is sure to be in due time succeeded by an equally unnatural rise in prices. The corn laws, and the alterations made last year in our custom duties chargeable on many articles of foreign agricultural produce, have, however, entirely destroyed all confidence in the inland grain markets; for it

will require some years of experience of the workings of these new principles before the mean value of any description of agricultural property can be with any certainty ascertained. Sir Robert Peel's mean value for British-grown wheat last year was about 56s. per quarter. This was the price at which it could be grown profitably, according to the best information which the prime minister of the British crown could obtain on this vital subject. Experience, however, has taught us since that period that the value of wheat is not always to be estimated by the cost of production; for the average price was lately nearly 10s. per quarter lower than Sir Robert Peel's calculation. If, as it is generally asserted, the quantity of land under wheat-cultivation in the season 1842 and 1843 be larger than in any preceding season, it is fair to conclude that in quantity the present wheat-crop is proportionably larger than it usually is, and therefore the average price may yet be another 10s. below the lowest figures at which it was so lately quoted. Under this state of uncertainty it is utterly impossible to repose much, or any, confidence in the future value of British agricultural property, and therefore no steady capitalist feels any inclination to embark money in such uncertain speculations. Although, however, speculation does not, and indeed cannot relieve in any material degree the depression so long existing in all our agricultural pursuits, under our present most unsatisfactory system of legislative protection, still a considerable amount of capital has been again invested in foreign wheats by some of our most eminent capitalists. The corn law certainly holds out great encouragement for the cultivation of foreign fields, and for the employment of foreign workmen, with a view to the British markets, and at the expense of British agriculture, and of British productive labour. The arrivals of foreign wheat, since our last number, have been already very considerable, and the quantity yet to arrive is also large. These wheats have chiefly been purchased abroad at low prices; indeed so much so, that even after payment of our maximum duty, it is not easy to contemplate any pecuniary loss on these transactions. The importers have two channels to look to for probable profits on their foreign importations; they have first to look to any legitimate improvement which may occur in this country in the value of grain, and in the second place, they have likewise a reduction in the duty to speculate on. It is thus perfectly obvious, therefore, that under no circumstances is our agricultural interest sufficiently protected by the existing corn laws, and the wages of our productive labourers of all denominations are injured materially by this deficiency of agricultural protection. In fact the great arch of British society has its main foundation on agriculture, and the prosperity of agriculture therefore is absolutely necessary to every division in this arch. This abominable free trade system, and the modern principles of reciprocity, giving away all advantages and receiving nothing in return, are rapidly undermining the foundation of British prosperity, are bringing the property of the fundholders into great danger, and are operating in a most ruinous manner on the wages of all our productive labourers themselves; and in return for these national losses, a dozen or two of cotton weavers, and cotton printers, are to accumulate more than princely fortunes. For the prosperity of agriculture, and for the future improvement of waste lands, greater protection should be given to agricultural pursuits than is held out to them by the present corn laws; and for the sake of the revenue itself, and of the proprietors of our national debt, there should be a duty on the importation of foreign grain for consumption in this country, equal to the direct and indirect taxes paid by our growers of grain at home; and it is only fair, indeed only just, that the foreign land proprietors should contribute towards our public expenditure, on that portion of his agricultural produce which finds such favourable markets in this country. Unless, however, some alteration of this description be resorted to, idleness and wretchedness must annually increase amongst those classes in society who are perfectly willing to labour, but who, even now, can find no work. The many tens of thousands of workmen who lately found employment in the construction of railways and other public undertakings, are now depending entirely on the agricultural interest for employment, and thereby increasing the difficulties of the agricultural labourers. These men cannot fall back on the manufacturers for labour and wages, and therefore no means should be omitted to find for them their bread in the cultivation of waste lands. Of these there are many millions of acres within the United Kingdom, as perfectly useless at present as they are perfectly capable of cultivation. With legislative assistance, there is, in the greatest abundance, unemployed capital at the present moment amply sufficient for the conversion of these wastes into cultivated fields, and by the profits arising from their cultivation, double the number of the inhabitants now existing in the United Kingdom, may be supported with a degree of comfort and respectability unknown in any other community. Surely the illustration of theory should not be permitted any longer to interfere with the best interests of the state. The property which every person possesses in his own labour, which is the most valuable in the British empire, the property of our national debt, and the productive cultivation of the fields, should not be hazarded for the gratification of the vanity, or for the increase of the wealth of a few self-interested individuals. The farmers' friends should pay some attention in parliament to the farmers' wants. At present, the only chance for recovering the large capital which many of them have most liberally invested in the fields, now within their view, is that of increased improvements in their present system of farming; but these improvements require additional capital, nor can they be effectively prosecuted unless they be placed under that degree of protection which would prevent their produce from being undersold in our markets of consumption by the produce of foreign fields and of foreign labourers. The prospects of the agricultural interest are at present not very cheering, and we fear much that even a most abundant crop would be to them of very little consequence in the depressed state of the country. To the industrious and working classes also it would not restore general prosperity, for our home grain, under all circumstances, will continue to be undersold, at one time of the year or another, by grain of foreign production. But the crop this year is scarcely an average one, and therefore abundance need not enter into the calculations of the community for the present season, at all events; besides, many weeks must yet pass away before the gathering of the present harvest can be completed. Towards the close of the month, however, the weather became again changeable, and rendered the favourable conclusion of the harvest still as uncertain as it was at its commencement.

Since our last publication, the barley trade has, in a

very small degree indeed, commanded the public attention. Malting operations were this season concluded at least one month earlier than usual, and the consumption of malt is yearly now becoming less. This we conceive to be a national misfortune, to which only one remedy can be applied; but from late exhibitions in Parliament by the leading members of the Government, and of their political opponents, it is perfectly obvious, either that the application of this remedy is contrary to their plans for increasing the public good, or that their information respecting the best interests of the agricultural classes is founded on those principles of modern political economy, which cannot be understood even by the professors of the doctrines of theory themselves. Last year, as we already, oftener than once, used the liberty to impress on the recollection of the public, in this department of the *Farmer's Magazine*, the deficiency in the malt duty was nearly nine hundred thousand pounds, and we have shewn well-founded reasons for attributing this deficiency in the revenue of the British Empire, to the excessive rates of duty per quarter exacted from the manufacturers of barley into malt. An illustrious duke, however, in the Upper House of Parliament, adopting in part the principles of the free-trade theorists, without, we are persuaded, intending to patronize these worthies by his high authority, has attributed the deficiency in the malt duties at the close of the last financial year to the heavy duties received from the importations of foreign grain, made during the same period, for the consumption of the inhabitants of the United Kingdom. His Grace also stated, on the same occasion, that the malt duty hereafter would increase in proportion to the reduction which might take place in the amount to be paid into the treasury hereafter from the duties charged on foreign grain. If the consumption of beer, therefore, is to be increased hereafter in proportion to the decrease which may be effected in the import corn duties, surely the most rational and the most speedy way for increasing the consumption of pure beer, and consequently also for increasing the malt duty, is immediately to repeal the corn laws entirely; for then the duties collected under this head will disappear, and the malt duty, according to this new light, will be proportionably increased—although we are too blind, ourselves, to comprehend how the employment of foreign instead of British land and labour, free of duty, can be attended by this consequence. Foreign corn-producing countries already consume as much of our manufactures as their wants require, and therefore a barter trade of food for clothing, under the present system of civilized society is, we may most truly say, impracticable. As has been the case, therefore, heretofore, any supplies of foreign food which may be found requisite for our consumption, must continue to be paid for in the precious metals; and how our malt duty can be increased in amount by reducing, or rather entirely abrogating, the foreign corn duties, it is not easy for any, even for the Anti-Corn Law leaguers themselves, to comprehend. To transfer productive labour, and its wages, from British to foreign labourers is, however, the principle of these modern philosophers; although we see not how the Ministers can increase the consumption of unadulterated beer by means so extraordinary. At the close of this financial year, at all events, we venture to predict that the Chancellor of the Exchequer will not have any reason to congratulate himself and the public on any increase of the malt duty over the amount received in the previous season. On the contrary, he will be fortunate, indeed, should it not be his lot to mourn hereafter over a farther deficiency; for the crime of mixing beer with deleterious ingredients is weekly on the increase, and consequently the consumption of genuine beer is weekly falling away. Beer cannot, from any other articles, be manufactured so cheaply as from malt and hops; but the extravagant duties charged on both of these articles, render beer of pure quality dearer than the general means of the people can afford to pay. Hence adulteration becomes a profitable trade, and the public health itself suffers severely by the use of this abominably deleterious beverage. To protect our barley cultivators against those of foreign nations, and most materially to reduce the rates of duty at present charged on malt and hops, will in a few years remedy the numerous evils arising from the use of deleterious drugs, and unwholesome mixtures in beer—will raise the barley taxes to an equality with at least one quarter of the public expenditure—will greatly increase agricultural improvements in future, and will be the certain means of rendering the cultivation of many millions of acres of land necessary, which, under the present taxing pressure, must otherwise for ever remain useless to the human race. The malt revenue may be doubled; the comforts of the people may be increased four-fold, and the expences of these benefits may be fully provided for out of the profits which must be the result even of these partial agricultural improvements. But protection to agricultural property, we repeat, is absolutely necessary to the accomplishment of these great national advantages; and when the barley farmers are assured of an increase in the consumption of beer, by a considerable reduction in the rates of duties now imposed on the manufacturers of barley, they will give employment to many thousands of families in the cultivation of at least two millions of acres of sandy, and at present useless lands, and thereby greatly add to the real wealth of the British empire. It is not, however, in the malt duty alone that the British agricultural interest, the inhabitants universally of the United Kingdom, and the public revenue, are most severely injured, for the same baleful consequences attend the outrageously high duty charged in England on the manufacture of barley and oats into British spirits. This duty is a three hundred per cent. charge on the intrinsic value of grain spirits, and is the great encourager of the trade of the smuggler. By the illicit importers of foreign spirits, on which no duty whatever is charged, at least one-half of the spirits consumed in England are supplied. The quality of these smuggled spirits is of the worst description, is hurtful to the constitutions of their consumers, and corrupts public morality. The extravagant use of this description of spirits has mainly prepared the way for the introduction of teetotalism. To reduce the duty on spirits manufactured in England to 5s. per proof gallon will destroy smuggling, by rendering it unprofitable, and will double the amount of duty now paid into the Treasury from this source. The reduction of the malt and English spirit duties must likewise greatly promote the cause of temperance herself, by removing from her right hand the vice of drunkenness, and from her left hand that of teetotalism. The expense of the preventive service may also be reduced by half a million sterling annually, by the reduction of the English spirit duty. In fact, the benefits which must attend an equitable adjustment of the duties now charged on manufactured barley generally are numerous and important; nor can their

reduction be injurious to one class in the British community, with the exception of the smuggler, whose nefarious occupation it would speedily destroy. In this state of our barley markets, it is scarcely necessary for us to add, that the farmers are now annually reducing the amount of land under this description of cultivation, and this season the quantity sown is considerably less than it was last year. On light and sandy soils, the barley crop is looking well, and promises a fair produce; but this is not the case on heavy lands, where the straw is much too luxuriant to encourage the hopes of the yield being equal to that of an average growth. Our great markets of consumption have been chiefly supplied with foreign barleys since our last number; and in prices the variations have been betwixt 2s. and 4s. per quarter during the last month. But this is now of little consequence to the British barley farmers under our present excise polity, and our liberal corn laws. To them it imports little whether the barley supplies be large or small; whether prices be sometimes dearer, or occasionally cheaper. These events are now only important to the foreign landed interest, and to the foreign serfs, slaves, and boors, by whose labour much of the barley latterly consumed in Great Britain has been produced. They have had the profits arising from its production, whilst the British people have to pay the expenses attending its consumption. This state of the barley trade, however, cannot be of long duration, for its unreasonableness, and its absolute absurdity, must eventually cause a great amendment to be effected in it, in as far as the inhabitants of the United Kingdom are interested in the progress and prosperity of our agricultural pursuits at home, and as they will not willingly permit this great department for the employment of the industrial classes to be for any length of time deteriorated.

During the last month, the supply and the consumption of oats have been nearly equal to each other, but still the price of them, for the last six weeks, is nearly 2s. per quarter dearer; the import duty, at the same time, having been reduced by 1s. per quarter. As the value of this article, for many months previously, was too low to admit of any further reduction, this slight improvement had been calculated on generally by the consumers; but to our oat growers, particularly to those on the other side of the Irish sea, it furnishes but little hope of any future permanent improvement. To the producers of oats in the north of Europe, any rise in our prices is favourable, because it adds proportionably to their wealth. They can grow them, and profitably send them to Great Britain for sale, at prices much under our present currency for the best qualities. The maximum duty can scarcely ever prevent the injurious competition in the English markets betwixt foreign and Irish oats. From the continent the freight of oats is somewhere about 1s. per quarter, being more than one-half less than that charged on oats from the west coast of Ireland. Foreign oats are paid for in hard money, and the carriage of them increases the wealth of the foreign ship-owner. There certainly exists no reason whatever for the preference in this article which our laws give to the foreign cultivators of them. To encourage the production of them at home would be a far more patriotic policy. To the half-starved people of Ireland and Scotland, the cultivation of them would give food and clothing, and every complaint of distress would disappear when they found themselves profitably employed. The crop of this article is everywhere abundant this season, and favourable weather alone is now required for gathering it in good condition from the fields. The prices which may be obtained for our home crop of oats will never be abstracted from the circulation, as is the case when money is remitted to the continent for foreign supplies of them. The money paid to the British and Irish oat farmers is afterwards paid away in the employment of the industrious classes of all denominations; and if our markets were only properly protected, a large crop this season would be of the utmost advantage to the Irish people. The free-trade system, however, pays for the profitable employment of foreign workmen, and reduces our own population to misery and to idleness. However large our oat crop may be this season, still it cannot benefit the inhabitants of Ireland, so long as theorists are permitted to assume the situation of practical men, and so long as the doctrines of the quack assume a superiority over those of common sense. A large crop, under such circumstances, can neither increase the wealth of the farmer, nor improve the wages of labour. It may, however, add to the present scarcity of employment among the industrious, in proportion to the reduction which it may be the means of causing in the property of the oat grower, for the competition of the proprietor of foreign oats with a large crop at home must bring prices down again far beneath their intrinsic value.

The information received from the United States of America, since our last number, is to the middle of last month, and that from Halifax is three days later. In a mercantile point of view, this information is rather satisfactory than otherwise, but to our agricultural interest it brings extremely little comfort. The crops throughout the American Union were large, and the quality of the wheats in particular is represented as being fine. The sales, however, were at these dates dull, the supplies of flour and wheat in the principal markets being considerably larger than the home consumption required, and the only export demand being for the British colonies and our American possessions. Flour was quoted at from 18s. to 20s. per barrel, but a reduction in its value was then anticipated, and no doubt will occur, when the accounts of the favourable change which took place in the appearance of the wheat crop here towards the middle of last month, reach that republic. Our farmers, however, whether their wheat crops be large or small—whether they be of superior or of inferior quality, will in all probability find, during the coming season, their wheats in our markets for sale considerably interfered with by wheat and flour, the produce of the United States, imported here under our Canada Corn Bill, as the produce or the manufacture of our Canadian fellow-subjects. From our American possessions, the news received by this conveyance is equally important to the best interests of our farmers, and of those millers who have embarked much money in their milling pursuits. Through the medium of Maine, likewise, we shall receive all the surplus wheats grown in those parts of the United States of America which border on that highly favoured district, favoured probably by Great Britain for the sympathy shown by its inhabitants to Canadian rebels a short time ago. For some unintelligible reason, however, if this be not the correct one, the agricultural produce of

this now integral part of the American Union is hereafter to be admitted into this country, by the way of New Brunswick, on the same terms as the agricultural produce of our Canadian possessions, with this difference, that by this rout the importations may be effected either under the British or American flag, whilst American flour and wheat from the Western States—smuggled into Canada—can only be imported into this country under the British flag. Undoubtedly our ministers have good reasons for this preference given to the State of Maine over our American settlements, although we are unable even to guess at their import. In the meantime, every arrival from the westward confirms our previous predictions respecting the injurious consequences of our American treaties and corn-laws to our land proprietors, tenantry, and to our productive labourers of every description and denomination; and every year they are allowed to exist, must they increase the agricultural and commercial distress at present so heavily and so justly complained of by all classes within the United Kingdom. To the political doctrines of the Anti-Corn Law Leaguers, the commercial news latterly received from the United States gives a complete refutation. These theorists advocate the exploded principles of general reciprocity in trade, which, in the present manner in which society is constituted, can never be reduced to practice. Without a free corn trade however—for our Canadian Corn Bill has not yet come into force—the demand for British manufactured goods throughout the United States during this season was never larger in any previous period, and the supplies were at the latest dates not equal to the consumption. On the greatest portion of these goods the American Finance Minister has received no duties; for the trade has been conducted chiefly by the illicit importers, and the consumption would not be therefore materially increased by any reciprocity treaty which could be entered into between the two countries. The American people require a certain quantity annually of European goods, and no fiscal enactments can either decrease or materially increase the quantity or the value of this annual consumption. At Montreal, the arrivals of American flour continued to be considerable, but still prices were 4s. per brl. dearer than they were at New York or at Boston. The quantity then in progress of shipment to this country amounted to upwards of fifty thousand barrels; and as the season advanced, it was generally expected that the supplies would be much increased, particularly should the news from Mark-lane be encouraging. From Quebec the agricultural information is of a similar description. Flour and wheat were becoming plentiful; sales were dull, but the hopes of some failure in our crops here induced the corn merchants there to ask high prices for their property, and to show little anxiety for making sales at the latest dates. Great encouragement is thus held out for the unbounded cultivation of America; and to obtain this end, the Anti-Corn Law League considers the injuries inflicted on agriculture at home only a trifling national sacrifice.

From the Mediterranean and Black Seas the letters received are in due course of post. At Marseilles, and the lower ports of Italy, a demand had arisen for wheat, in consequence of the bad state of the weather having done some injury, although it was considered to be only partial. In the ports of the Adriatic also, a speculative demand for wheat and beans existed, arising from similar causes. The letters from Odessa contain nothing of mercantile importance. Grain there was plentiful, and buyers very cautious in all their operations. The intelligence from Egypt is equally uninteresting to the corn traders in this country. For British account, we do not find that any grain or pulse purchases of consequence have been made lately in any of the corn markets within these seas.

From the Baltic large shipments of wheat have been made to Great Britain, and plenty still remained in most of the ports there for future shipment, should our wants and the state of our harvest require foreign aid. Much prudence continued to be exhibited in making purchases, and the dull state of affairs in Mark-lane had reduced the prices to that standard which, even should our import duty be again raised to the maximum one of 20s. per quarter, must render speculation harmless, at all events, if not profitable. Nothing, however, but the bad quality of our home grown wheats can again raise the duty to the highest rate; and this circumstance, should it actually occur, must make foreign wheats, of the finest quality, valuable in proportion to the inferiority of our own. At Hamburg, and in all the ports without the Baltic, the demand for grain was likewise dull, the weather during the first three weeks of last month having been uncommonly favourable, and the news from England at the same time by no means encouraging. The stocks of all descriptions of grain and pulse in these ports were rather large than otherwise, and the least encouragement from this side of the German Ocean will be followed by large shipments to this country of all sorts of foreign agricultural produce. That our farmers must again this season stand in the gap, and lose more of their capital in opposing the wild and impracticable principles of a one-sided freedom in trade with foreign nations, is therefore reduced nearly to an absolute certainty, but the manufacturers also must reap their full share of the evil in due season.

CURRENCY PER IMP. MEASURE.

AUGUST 28.

WHEAT, Essex and Kent, new, red	—	—	White	50	53 57
Irish	52	54	Do.	50	—
Old, red	56	60	Do.	56	60
RYE, old	30	36	New	—	36
BARLEY, Grinding 32 34 Malting	34	36	Chevalier	—	36
Irish	26	28	Bere	26	28
MALT, Suffolk and Norfolk	60	62	Brown	56	58
Kingston and Ware	60	63	Chevalier	60	63
OATS, Yorksh. & Lincolnsh., feed	23	24	Potato	26	27
Youghall and Cork black	18	19	Cork, white	19	20
Dublin	18	20	Westport	—	20
Waterford, white	19	20	Black	19	20
Newry	21	22			
Galway	18	19			
Scotch feed	23	24	Potato	24 25	26
Clonmel	20	21	Limerick	21	22
Londonderry	20	21	Sligo	20	21
BEANS, Tick, new	32	34	Old, small	34	32
PEAS, Grey	32	33	Maple	33	34
White	30	33	Boilers	34	36

SEED, Rape..... 27*l.* 28*l.* Irish..22*l.* 26*l.* per last.
Linseed, Baltic....30 38 Odessa 41
English Red Clover.... — — per cwt.
White..... —
Mustard, White 7 10 brown 8 11 per bush.
Tares, old .... — — new — — per qr.
FLOUR, Town-made — 55 Suffolk 42 44 pr sk. of 280 lbs.
Stockton and Norfolk, 42 44 Irish 42 44

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	46	52			
Hamburg	42	46			
Rostock	44	46			
BARLEY	20	—			
OATS, Brew	16	18	Feed	14	17
BEANS	15	19			
PEAS	22	24			
FLOUR, American, per brl.	24	28	Baltic	22	24

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
July 15th	51 2	29 0	19 8	31 11	29 6	32 4
22nd	54 2	29 10	20 0	37 5	30 5	33 11
29th	57 7	31 2	21 0	36 2	31 1	33 9
Aug. 5th	60 9	32 4	21 5	37 1	31 9	34 4
12th	61 2	32 11	21 9	38 7	32 1	33 7
19th	59 9	33 11	21 5	37 1	32 6	34 9
Aggregate average of the six weeks which regulates the duty	57 5	31 6	20 10	36 4	31 2	33 9
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London ..	15 0	7 0	6 0	6 6	10 6	9 6
Do. on grain from British possessions out of Europe.....	2 0	0 6	2 0	0 6	2 0	1 0

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Aug. 25th, 1843.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Aug. 27th, 1842.	s.	d.
WHEAT	59	9	WHEAT	55	0
BARLEY	33	11	BARLEY	27	3
OATS	21	5	OATS	18	7
RYE	37	1	RYE	31	6
BEANS	32	6	BEANS	33	11
PEAS	34	9	PEAS	32	6

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Aug., 1843; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption.	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat, from British Possessions	268 3	682 2	2367 5
Barley	4 7	4 7	—
Peas, from do.....	2042 4	394 3	2036 2
Indian Corn, do....	0 1	321 3	893 3
Wheat, foreign	68224 4	2909 1	329801 3
Barley, do.....	26567 6	5755 0	63901 6
Oats, do.	2371 2	—	37504 3
Rye, do.	—	—	57 6
Peas, do.	260 3	501 7	23139 4
Beans, do.	—	2655 3	112859 6
Indian Corn, do....	7 4	1525 0	6711 4
Buck Wheat, do. ..	—	—	—
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour and Meal from British Possessions	31776 2 13	30820 0 0	21749 3 18
Flour & Meal, foreign	692 0 19	38 1 2	45435 2 22

STOCK OF GRAIN, &c., IN BOND, IN THE PORT OF LONDON, ON THE 5th AUG.

Wheat.	Barley.	Oats.	Beans.	Peas.	Rye.	Flour.
qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	cwts.
147,345	12,797	15,634	43,479	5,295	—	29,713

Cloverseed, 13,361 cwts.

PRICES OF SEEDS.

AUGUST 28.

The prices of Cloverseed, both red and white, continue to have a tendency upwards. In Trefoil no change. Canaryseed very scarce, and held for quite as much money. In other articles not much passing. New Tares in fair supply, and obtainable at 6s. 9d. per bush.

Clover English, red	42	63	white	none.		per cwt
Flemish, pale	42	48	fine..	50	60	nominal
New Hamburgh ..	none.		do..	50	66	
Old do.	42	48	do..	50	64	
French	42	51	do..	none.		

Linseed, English, sowing	50	60			
Baltic	—	—	crushing	36	41 per qr.
Mediter. & Odessa	40	44			
Large, foreign....	—	—			
Coriander.....	10	16	old....	16	20 per cwt.
Mustard, brown, new ..	9	11	white..	9	10s 6d p. bush
Trefoil, none	—	—	old....	14	27
Rapeseed, English new..	27*l.*	28*l.* per last.			
Linseed Cakes, English..	9*l.* 10s. to 10*l.* per 1000				
Do. Foreign..	5*l.* 10s. to 6*l.* per ton.				
Rapeseed Cakes.....	5*l.* 5s. to 5*l.* 10s.				
Hempseed, small.....	34	36	large ..	36	38 per qr.
Rye Grass, English.....	20	25	Scotch	12	21 nominal
Tares, winter	6s. 6d. to 7s.				
Canary, new.....	—	80	fine	85	88 per qr.
Carraway	—	—	new	42	46

PRICES OF HOPS.

BOROUGH, MONDAY, August 28.

We have again to notice but a quiet demand for Hops, which support about last week's rates. The duty is 135,000*l.* to 140,000*l.* for the Kingdom, and 10,000*l.* for Worcester. The advices from the Plantations are rather favourable. We quote as follows:—

Pockets, 1842,	Wealds....	108 to 118	per cwt.
...	East Kent..	118 — 138	..
..	Mid. Kent.	118 — 134	..
..	Sussex....	105 — 114	..
Pockets, 1841,	Wealds....	68 — 78	..
..	East Kent..	84 — 98	..
..	Mid. Kent.	78 — 94	..
..	Sussex....	68 — 78	..

POTATO MARKET.

BOROUGH AND SPITALFIELDS, Aug. 28.

The supplies of Potatoes from Essex and Kent, during the past week, have been good, and of considerably improved quality. Although the quantity brought forward is large, the demand is tolerably active, at full prices, or from 3s. to 5s. 6d. per cwt. Scarcely any imports have taken place from abroad.

WOOL MARKETS.

BRITISH.

AUGUST 28.

The trade continues about the same; only a moderate amount of business doing, which arises from a temporary glut in the north country markets. The general state of the trade may now it is thought be pronounced healthy. The manufacturers are well employed, and a great quantity of Wool is consumed, and it is only the almost unprecedented supply that prevents it from being more in demand at the present moment. Business is now transacted in a legitimate manner—speculation is almost out of vogue—buying "from hand to mouth" is quite the order of the day. The late bad times have scattered the men of straw to the winds, and the great bulk of those now employed in this department of commerce are respectable and stable, and not likely to adopt any wild or ruinous mode of action to divert the trade from its present straightforward course; the inference is, that although any very sudden rise may not take place, yet a regular and satisfactory trade may be expected, which in the long run is far more advantageous to all parties.

LIVERPOOL, AUGUST 26.

SCOTCH.—We have still to report a limited demand for Laid Highland Wool, at our quotations. There are several cargoes daily expected, and as the new wool is reported very good, we may expect a little more doing when they come to hand. White Highland is still scarce, and enquired for. There is rather more inquiry for Crossed Wool, but nothing but the best will go off. There is less demand for Cheviots, but no alteration in prices.

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

OCTOBER, 1843.

No. 4.—Vol. VIII.] [Second Series.

PLATE I.

A SHORT-HORNED BULL.

Our first Plate represents a Short-horned Bull, three years and three months old, bred by Earl Spencer, at Wiseton, near Bawtry, Nottinghamshire. The animal was exhibited at the late Meeting of the Royal Agricultural Society of England, at Derby, and obtained a prize of thirty sovs., adjudged to W. Barnard, Esq., M.P., of Gosfield Hall, Halstead, Essex.

PLATE II.

BEE'S-WING.

Bee's-wing was bred by Mr. Orde, 1833, at his seat, Nunnykirk, and is by Dr. Syntax, dam by Ardrossan, grandam Lady Eliza, by Whitworth, great grandam by Spadille—Sylvia, by Young Marske—Ferret, by brother to Sylvio—Regulus, &c.

Dr. Syntax was bred by the late Mr. Riddell, in 1811, and was by Paynator (by Trumpator) out of a Beningbrough mare; dam, Jenny Mole, by Carbuncle—Prince T'Quassaw—Regulus—Partner.

Bee's-wing's dam was also bred by Mr. Riddell, in 1817; she only ran once, winning a Stake at Doncaster, in 1820. At Mr. Riddell's death, Mr. Orde bought her for something like £20, when in foal by Jerry, the produce being Tomboy, the best, barring one, she ever dropped. She had in all fifteen foals, four while in Mr. Riddell's possession, and the remainder thrown at Nunnykirk, where she died in 1840.

In 1835, then two years old, Bee's-wing ran three races: was beaten for the Tyro, at Newcastle-on-Tyne (won by the Black Diamond); won the Champagne (Cartwright) at Doncaster; and a Stake (Nicholson) at Richmond.

In 1836, she ran five races:—Was beaten for the Claret, at Catterick Bridge (won by Jordan); for the St. Leger and Cup, at Doncaster. Won the St. Leger (Lye), and the Gold Cup (Lye), both at Newcastle-on-Tyne.

In 1837, she ran eight races:—Was beaten for the Gold Cup, at Liverpool (won by Gen. Chasse); and for the Craven, at Newcastle-on-Tyne (won by Wedge). Won the Gold Cup (Cartwright) at Newcastle; the Cleveland (Cartwright) and the Gold Cup (Cartwright) at Doncaster; the Gold Cup (Cartwright) and Queen's Plate (Cartwright) at Richmond; and the Gold Cup (Cartwright) at Northallerton.

In 1838, she ran nine races:—Was beaten for the Northumberland Plate, at Newcastle (won by St. Bennett); and for the Gold Cup, at Doncaster (won by Don John). Won the Gold Cup (Cartwright) at Catterick Bridge; the Craven (Cartwright), a piece of Plate (Cartwright), and the Gold Cup (Cartwright), at Newcastle; the Fitzwilliam (Cartwright) at Doncaster; the Queen's Plate (Cartwright) at Lincoln; and the Gold Cup (Cartwright) at Northallerton.

In 1839, she ran twelve races:—Was beaten for the Gold Cup, at Doncaster (won by Charles XII.) Won the Craven (Cartwright) and the Gold Cup (Cartwright) at Catterick Bridge; the Craven (Cartwright) and the Gold Cup (Cartwright) at Newcastle; the Gold Cup (Cartwright) at Stockton; the Queen's Plate (Holmes) at York; the Gold Cup (Holmes) and the Queen's Plate (Holmes) at Richmond; the Fitzwilliam (Cartwright) at Doncaster; and the Queen's Plate (Cartwright) and the Gold Cup (Cartwright) at Lincoln.

In 1840, she ran twelve races:—Was beaten for the Gold Cup at Newcastle and the Gold Cup at Kelso (both won by Lanercost). Won the Gold Cup at Catterick Bridge; the Craven at Newcastle; the Ashton and Gold Cup at Lancaster; two Queen's Plates at York; the Fitzwilliam and the Gold Cup at Doncaster; £90 (after running a dead heat with Lanercost); and £100 at the Caledonian Hunt, Kelso.

In 1841, she ran ten races:—Was beaten for the Craven at Newcastle (won by Charles XII.) Won the

Trial and the Stand Cup at Chester; the Gold Cup at Newcastle; the Gold Cup at Stockton; the Doncaster, the Hornby, and the Gold Cup, at Doncaster; and the Gold Cup and the Queen's Plate at Richmond.

In 1842, she ran five races:—Was beaten for the Vase at Ascot (won by St. Francis). Won the Queen's Plate at Chester; and the Gold Cups at Newcastle, Ascot, and Doncaster. She was ridden in all her races for the last three seasons by Cartwright.

Bee's-wing ran sixty-four races, of which she won fifty-one, including twenty-five Cups and nine Queen's Plates. She beat, among others, the following good runners:—The Black Diamond, Wedge, Cardinal Puff, Bellona, Slashing Harry, The Potentate, Sampson, Melburne, Epirus, Interlude, Calypso, The Provost, Charles XII., Maroon, Lancecost, The Doctor, Dr. Caius, The Shadow, the Nob, St. Francis, and Attilla.

THE INSECT VERMIN OF VEGETATION.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The predatory vermin which haunt the farmers' crops, and the best mode of checking or preventing entirely their ravages, are questions which have long engaged the attention of some of the best friends of agriculture. Mr. Duncan, in the few last volumes of the *Quarterly Journal of Agriculture*, Mr. Curtis, in those of the Royal Agricultural Society of England, with several others, have, within the few last years, considerably enlarged our stock of knowledge relating to the insects which prey upon the cultivators' crops; and although their labours have not yet succeeded in producing for these ravages any remedies, which are applicable upon the large scale, in which agricultural operations, are commonly carried on, yet this is no reason why we should cease to examine into their origin and habits. One thing, however, has been pretty clearly established by the discoveries of the entomologist, that each insect preys upon some peculiar plant—that those which are wont to haunt one crop starve upon that which succeeds it; hence, then, we must be impressed with the importance, of varying, and lengthening, the rotation of crops as much as is practically possible. We find, in fact, that some insects are found to remain dormant in the soil for months. It is therefore of the first importance that, when these burst into life, that they shall not find on the soil in which they are born, a crop on which they can subsist.

Let us therefore, in order that the chief habits of the insect tribes in general may be more generally understood, collect together a few facts which have been determined with regard to their habits, and the easiest mode of destroying them; and to this end I shall to a great extent repeat and enlarge upon what I have in another place already had occasion to remark.—(*Farmers' Encyclopædia.*)

"The great characteristic of this vast assemblage of animals," says Mr. Swainson (*On Insects*, p. 1), "is the total absence of internal bones: hence, their hardest parts are always external, and the muscles are usually attached to the under side of the substance which forms the covering of the animal. The body is always divided into rings or transverse joints, from which circumstance naturalists have agreed to call them *Annulose*, or ringed animals. This name is peculiarly applicable, since it expresses a marked distinction from such as have an internal skeleton, analogous to that of man, and thence called vertebrate (*vertebrata*). So diversified, indeed, are the different groups of this immense assemblage, or sub-kingdom of the animal world, that it is impossible to assign to them any other character, as a whole, than that just mentioned."

I shall however, in this paper, not attempt to remark upon many of these insects; I shall only briefly allude to some of the chief of the insect depredators, for "to enumerate," says Davy, "all the destroying animals and tyrants of the vegetable kingdom, would be to give a catalogue of the greater number of the classes in zoology; almost every species of plant is the peculiar resting place or dominion of some insect tribe; and from the locust caterpillar and snail, to the minute aphis, a wonderful variety of inferior insects are nourished, and live by their ravages upon the vegetable world."

Of the considerable extent to which the various insect tribes commit their depredations, no farmer will for a moment doubt, and yet he forms his judgment only upon the ravages of the larger insects. Of the smaller tribes—the minute trespassers—the animalculæ, of those only discernible through a microscope, he forms no estimate. Yet of those that he does see the catalogue is fearfully alarming. "There is," says Mr. Duncan, "scarcely one of our most useful plants which is not assailed in some way or other, and the forms of insects, and their modes of living, are so infinitely diversified, as to enable them to continue their depredations in all the different states of these plants. The various kinds of corn, for example, have a host of enemies in the subterraneous larvæ of the beetles which consume the roots: various kinds of caterpillars feed on the blade; some particular species attack the ear; and even when laid up in apparent security, a small beetle is often found to scoop out the interior of each grain, and convert it into an abode for itself. The turnip in a like manner is equally exposed to these depredators. If the seed of this useful plant escape the attack of a minute weevil, another enemy awaits the unfolding of the cotyledon leaves, and a third buries itself in the bulb and rootlets, which become diseased and covered with unseemly excrescences, while the mature foliage is often consumed by caterpillars. But even when there is no remarkable augmentation of their numbers, there is reason to believe that the injury occasioned to vegetation by insects is at all times greater than is generally supposed. Their operations are often carried on under cover, either beneath the surface of the soil, within the substance of the plant, or in other situations where they escape observation. Many kinds, again, feed only during the night, and conceal themselves during the day in holes and crevices. In consequence of this latent and insidious mode of attack, there is no doubt that we are often led to ascribe the unhealthiness and decay of plants to badness of soil, unfavourable weather, and other causes, when in reality they are produced entirely by insects." (*Qrt. Journ. Agr.*, vol. viii. p. 97.) "The only course," adds Mr. Duncan, "which is likely to lead to the discovery of proper remedies is to investigate care-

fully the habits and natural history of insects in connection with the structure and general physiology of the plants which they attack. In prosecuting this object, the attention should be directed to ascertain the time when, and the manner in which, the eggs are deposited, as well as their composition, and that of the enclosing membrane, with a view to determine in what way the vital principal might be most easily destroyed. The habits of the larvæ call for particular attention, as it is generally in this state that the mischief is committed : the period of their appearance, their times of feeding, plants on which they feed, and (if attached to more than one) the kind they seem to prefer, the part of the plant attacked, duration of the larvæ stated, should be carefully noted ; an acquaintance with the places to which the larvæ usually retreat when about to change to pupæ, and with the structure, duration, &c., of the latter, might probably suggest some easy means of destroying many in that dormant state. A knowledge of the economy of the perfect insect is, of course, of the utmost importance ; if we could become acquainted with the retreats in which they pass the winter, or find means to destroy the few that generally survive, when they first appear in the spring, and before they have deposited their eggs, the injuries which are sustained by their means might be altogether prevented." (*Ibid*, p. 99.)

Let not, however, the farmer, when he is thus warmly engaging in the destruction of the annoying insects of the field, omit to consider whether many of these are not in some shape or other productive of benefit—whether they do not serve to keep within reasonable limits other insects, or perhaps perform some other wise purpose in the works of the creation. This has been proved to be the fact in the case of the common earth-worm, whose casts so often annoy the gardener and the farmer. For these not only assist in the continual admixture of different strata of earths, but by their borings of the soil they promote in it the circulation of the atmospheric gases, and even the drainage from it of its superfluous moisture. And as White of Selborne remarks in his Natural History, "The most insignificant insects and reptiles are of much more consequence, and have much more influence in the economy of nature, than the incurious are aware of. Their minuteness renders earth-worms less an object of attention, but their numbers and fecundity, though in appearance a small and despicable link in the chain of nature, yet, if lost, they would make a lamentable chasm." Even the turnip fly, which haunts the stock farmers' fields, has been noticed to devour the young plants of the weed charlock, or cadlock, (*sinapis arvensis*) to a very materially beneficial extent.

Insects commonly change their form several times in the most apparently magical manner; but a few, the Aphis, for instance, are viviparous, that is, the eggs are produced in the body of the mother. "The female," says Kollar, "lays her eggs (which are often stuck on and covered with a kind of glue to protect them from the weather) shortly after pairing, instinctively in the place best adapted for their development, and which offers the proper food to the forthcoming brood. The whitethorn butterfly, and the golden-tail moth, lay their eggs on the leaves of fruit trees, or other leafy trees, and the latter covers them over with a gold-coloured covering of silk. The common lackey-moth (*Gastropacha* (*Bombyx*) *Neustria*) fastens them in the form of a ring, round the stem of the fruit trees, and the gypsey-moth (*Bombyx dispar*) fastens them in a broad patch on the stem of a tree or paling, and covers them with a thick coating of hair. The winter-moth (*Geometra brumata*) lays them singly on the buds of the leaves and flowers ; the printer-beetle (*Bostrichus typographus*) introduces them between the bark and the albumen, &c. Most insects issue from their eggs as worms or larvæ ; those of butterflies are provided with feet, and are called caterpillars ; those of beetles and other insects, larvæ ; and when they have not feet, they are called grubs or maggots. In this state, as their bodies increase, the insects often cast their skin, and sometimes change their colour. Many winged insects, such as the grasshoppers, dragon flies, &c., very much resemble in their larva state the perfect insect ; they only want the wings, which are not developed till after the last change of the skin. The larva state is the period of feeding ; and insects are then usually the destructive enemies of other productions of nature, and objects of persecution to farmers, gardeners, and foresters.

The nympha or pupa state succeeds that of the larva. Insects do not then require nourishment (with the exception of grasshoppers and a few others), and repose in a death-like slumber. To be safe from their enemies and the weather, the larvæ of many insects, particularly butterflies, prepare for themselves a covering of a silky or a cottony texture. Many form themselves a house of earth, moss, leaves, grass, haulm, or foliage. Many even go into the earth, or decayed wood, or conceal themselves under the bark of trees, or other places of security.

After a certain fixed period the perfect insect appears from the pupa. It is usually furnished, in this state, with other organs for the performance of its appointed functions, as for the propagation of its species, &c. The male insect seeks the female, and the female the place best suited for laying her eggs : hence most insects are furnished with wings. Food is now a secondary consideration ; consequently, in many, the feeding organs are now less perfectly developed than in the larva state, or very much modified, and suited for finer food, as, for example, in butterflies, which, instead of the leaves of plants, now only consume the honey out of their flowers.

The food of insects is indeed procured from an extensive pasture. "From the majestic oak," observes M. V. Kollar, "to the invisible fungus or the insignificant wall-moss, the whole race of plants is a stupendous meal to which the insects sit down as guests. Even those plants which are highly poisonous and nauseating to other animals are not refused by them. But this is not yet all. The larger plant-consuming animals are usually limited to leaves, seed, and stalks : not so insects, to the various families of which every part of a plant yields suitable provender. Some which live under the earth, attack roots ; others choose the stem and branches ; a third division lives on the leaves ; a fourth prefers the flowers ; while a fifth selects the fruit or seed. Even here a still further selection takes place. Of those which feed on the roots, stems, and branches, some species only eat the rind, like the bee-hawk moth ; others the inner bark and the albumen, like the *Tortrix Wœberiana ;* and the bark beetle, a third division, penetrates into the heart of the solid wood, like the goat moth and the family of the long-horned beetles. Of those which prefer the foliage some take nothing but the juice out of the sap vessels, as the Aphides : others

only devour the substance of the leaves without touching the epidermis, as the mining caterpillars; others only the upper or under surface of the leaves (leaf rollers), while a fourth division (as the larvæ of the *Lepidoptera*) devour the entire leaf.

Of those feeding on flowers some eat the petals (the mullein moth, &c.), others the farina (bees, rose-chaffer, &c.); a still greater number consume the honey from the nectaries (wasps, flies, &c.); other insects injure the plant by puncturing it and laying their egg in the wound, and with it an acrid matter, which causes a peculiar excrescence, in which their young are hatched and live, until it is able to eat its way out, to perform the functions of its parents, such as the gall-fly, &c. The death-watch or ticking beetle (*Anobium*) feeds on dry wood long used, as portions of our dwelling-houses.

Those insects which tenant and feed upon animal matters have an equally varied taste; of these are the different kinds of bird and sheep lice, ticks, mites, &c., gnats, midges, breeze flies, bugs, fleas, &c. Some of the carnivorous beetles, devour their prey entire; others only suck out their juices: others live upon the food they obtain in water, and devour swarms of the infusoria. Many live on carrion and the excrements of the larger animals, such as the blue-bottle fly, horse-beetle, dung-beetle, and carcass-beetle; others live in the stomachs of animals; many moths live entirely upon hair, leather, wool, and feathers.

The food of insects varies strangely with their transformations: the caterpillar requires very different food from the butterfly; the maggot from the beetle and fly. The larvæ of *Sirex gigas* feeds on wood, the perfect insect on flies. That of the May bug or cockchafer lives on roots and tubers, the beetle on leaves. The quantity of food consumed by different insects varies very much; many consume more than their own weight in a day. The maggot of the flesh fly, according to Redi, becomes two hundred times heavier in the course of twenty-four hours. Caterpillars digest, every day, about one-third to one-fourth of their weight: hence the ravages they commit in a few days. Others, however, such as the day flies (*Ephemeridæ*) and the breeze flies, and even amongst the *Lepidoptera* which spin cocoons, some appear to abstain from nourishment. Many eat only during the day, others in the evening, and others, such as the caterpillars of the night moths, during the night. Most of them provide their own food; but a few which live in communities, such as the wasps, bees, ants, &c., are fed by the perfect insect. Many provide a store of food, but the greater number die unprovided with a store: others feed their larvæ."—(*Trans. by the Miss Loudons.*)

Destruction of Insects by Artificial Means.—Various have been the successful recipes suggested for the destruction of the insects which destroy the cultivator's crops: thus *ants*, it is said, may be easily destroyed by toasting the fleshy side of the outside skin of a piece of bacon till it is crisp, and laying it at the root or stem of any fruit tree that is infected by these insects—put something over the bacon to keep it dry; the ants will go under; after a time lift it up *quickly* and *dip* it into a pail of water. For the destruction of slugs, warm in an oven, or before the fire, a quantity of cabbage leaves until they are soft, then rub them with unsalted butter, or any kind of fresh dripping, and lay them in the places infected by slugs. In a few hours the leaves will be found covered with snails and slugs; this plan has been successfully tried by Mr. Loudon at Bayswater. Earwigs and wood-lice are destroyed in the same way. For field operations, perhaps, the best means of destroying slugs and worms is common salt, an agent too little known for this purpose, yet its powers are undoubted.

No person has employed common salt for the purpose of destroying worms, to a greater extent than Jacob Busk, Esq., of Ponsbourn Park, in Hertfordshire. His valuable experiments extended over some hundreds of acres of wheat. To use his own words—"In every situation, and at every time, the effect appeared equally beneficial." The quantity per acre—"about four or five bushels sown out of a common seed shuttle." The period—"In the evening." The effect—"In the morning each throw may be distinguished by the quantity of slime and number of dead slugs lying on the ground. In some fields it has certainly been the means of preventing the destruction of the whole crop." Six bushels of salt per acre were applied by hand, in April, 1828, to a field of oats attacked by the slugs and worms, on the farm of Mr. John Slatter, of Draycote, near Oxford. The crop was completely saved by this application, although an adjoining field, *not salted*, was completely destroyed by this sort of vermin.

Salt, too, is a complete prevention of the ravages of the *weevil* in corn. It has been successfully employed in the proportion of a pint of salt to a barrel of wheat.

The *black and green fly* may be killed by dipping the points of the young shoots of plants infected with them into a thin cream, composed of stiff yellow clay mixed with water; the clay will, it is true, look dirty upon the trees for a few days, but the first shower of rain washes it off, and the shoots will look more healthy than before the application; "there is no fear," says Mr. Loudon, "of the return of the insects that season." The scale in pines may be destroyed by the same mixture. The bug (*Aphis lanigera*) upon fruit trees may be killed by the use of the same clay and water, made as thin as whitewash, and mixing with every 6 gallons of it 2lbs. of cream of tartar, 1lb. of soft soap, and half a peck of quick-lime. "When you think," adds Mr. Loudon, "that the weather is likely to continue dry for some time, take a bucketful of this mixture, and with a large brush wash over the bark of the trees, wherever you think it has been infected with the bug. A man will dress a number of trees over in a few days with a whitewash brush and this liquid; it is only necessary to be careful to do it in dry weather so that the rain may not wash over the mixture for some time. *Flies and wasps.* A mixture of pepper, sugar, and water, will speedily attract and destroy them. (*Gard. Mag.* No. 37; *Quart. Jour. Agr.* vol. iii. p. 1071). *Moss and insects.* Mr. Thomas recommends that the trees infected should be sprinkled with a fine powder in March, and again in October, on a foggy day when the trees are damp but not dripping, and I have no doubt of its efficacy. The powder may be composed as follows: slake five bushels of lime, hot from the kiln, with common salt and water (say 1lb. of salt to each gallon of water). When the lime has fallen to a fine powder, add, by small quantities at a time, a bushel of soot, stirring it until completely incorporated. Mr. Thomas has found that one man can dust over with the powder fifty trees in a day, and that the moss, in the turf under fruit trees thus treated, is also completely

destroyed by the application. (*Trans. Soc. Arts*). *Worms* in grass plots may be readily destroyed by copiously watering the turf with lime water (half a pound of the hottest quick lime well stirred in each gallon of water), or by sprinkling common salt (20 bushels per acre) over it, or by strewing it on gravel walks in rather larger proportions. Lime is recommended for the destruction of the worm which sometimes injures young larch plantations, by Mr. Menzies (*Com. Board of Agr.* vol. vi. p. 163); coal tar and tar water, to preserve hop poles and other wood from the ravages of insects. (*Ibid*, p. 166). The caterpillers on cabbages may be readily destroyed by sprinkling them with fine powdered lime; and when, some years since, a black caterpillar attacked very generally and extensively the turnips, in some instances they were very successfully destroyed by turning into the fields considerable numbers of common ducks. Heavy rolling, especially during the night, is in many cases destructive of slugs. Salt, and also rape powder, are pernicious to the wire-worm. On many soils, the wheat crop sown after a summer fallow is never attacked by these vermin. Mr. Hillyard thinks he has escaped their ravages of late years, by ploughing his clover lays for wheat after the first year (*Prac. Farm.* p. 115). And it is certain, that by occasional material variations in the rotation of crops, the number of predatory insects may be very considerably reduced (by depriving the larva of their particular and essential food), in cultivated soils.

Mr. Knight recommended the use of carbonate of ammonia for the destruction of the insects upon the pine and other plants. (*Sel. Papers*, p. 245). Mr. Baldwin, in effect, does the same, when he commends the use of the steam from hot fermenting horse dung. (*Prac. Direct.* p. 30). Mr. Robertson found soot (which contains ammonia), when diffused in water, to be an excellent application. (*Gard. Mag.* vol. ii. p. 18). When speaking of the use of fermenting horse dung, in the destruction of insects, Mr. Knight remarked, "I conclude the destructive agent in this case is ammoniacal gas, which Sir Humphrey Davy informed me he had found to be instantly fatal to every species of insect; and, if so, this might be obtained at a small expense by pouring a solution of crude muriate of ammonia upon quick-lime; the stable or cow-house would afford an equally efficient, though less delicate fluid. The ammoniacal gas might, I conceive, be impelled by means of a pair of bellows amongst the leaves of the infected plants, in sufficient quantity to destroy animals without injuring vegetable life; and it is a very interesting question to the gardener, whether his hardy enemy, the red spider, will bear it with impunity." Ammonia seems peculiarly distasteful to insects. Carbonate of ammonia is often successfully placed in meat safes to prevent the attacks of flies.

Such then is a very brief glance at that immense and important class of animals which form the insect vermin of vegetation. This rapid sketch however must be considered, to use the words of Mr. Swainson, only as suggestions and stimulants to further inquiry. The review, however, cannot but fill us with astonishment; for although we see only a very limited portion of the insect world (and even the microscope, it is probable, does not enable us to see all), yet that view, limited as it is, is fraught with instruction to the cultivator. It will lead him perhaps to a clearer understanding of the often-repeated truth that nothing is created in vain. It may suggest to him also the means in some cases of arresting their ravages, when by their excessive numbers they become a nuisance, and it may perhaps be instrumental in saving from destruction many a crow or other useful bird when the sportsman is made aware of the number of predatory insects which they so unceasingly destroy. The astonishing number, habits, and instincts of the insect tribe too, are facts which afford ample materials for the most serious, and the most instructive studies—truths which can only be explained in one way. These phenomena did not escape the notice of the great Paley. Thus he observes, "Moths and butterflies deposit their eggs in the precise substance, that of a cabbage for instance, from which not the butterfly herself, but the caterpillar which is to issue from her eggs, draws its appropriate food. The butterfly cannot taste the cabbage; cabbage is no food for her; yet in the cabbage, not by chance, but studiously and electively, she lays her eggs." (*Nat. Phil.* p. 306.) And when referring to this immense mass of animal life, he says, in another place, "To this great variety in organised life the Deity has given, or perhaps there arises out of it, a corresponding variety of animal *appetites*. For the final cause of this we have not far to seek. Did all animals covet the same element, retreat, or food, it is evident how much fewer could be supplied, and accommodated, than what at present live conveniently together, and find a plentiful subsistence. What one nature rejects, another delights in. Food which is nauseous to one tribe of animals, becomes, by that very property which makes it nauseous, an alluring dainty to another tribe. Carrion is a treat to dogs, ravens, vultures, fish. The exhalations of corrupted substances attract flies by crowds. Maggots revel in putrefaction." (*Ibid*, p. 345).

ON THE PROPOSED REMEDIES FOR THE PRESENT DEPRESSION IN THE AGRICULTURAL AND COMMERCIAL INTERESTS OF THIS COUNTRY.

PAPER VI.

BY GEORGE THOMPSON, JUN.

It must be startling indeed to the enlightened mind, to be informed that there are those in Great Britain, even at her present advanced state of civilization, who contend that the great improvements in and perfection of machinery have materially assisted in producing the present prevailing distress. But, startling as the circumstance may appear in the abstract, it is too true that numerous enlightened members of society entertain the ridiculous idea that, to remove the depression of the present period, all progress in the improvement of machinery must be suspended. How they would attempt to accomplish their object we know not; suffice it for us to observe, that it is a difficult task to withstand the torrent of human advancement, and that he must be a powerful man who could deprive genius of its wonted acti-

vity. "Knowledge is power," and we hope, for the credit no less than for the happiness of mankind, that it will ever prove more powerful than ignorance or prejudice.

We have previously observed that several *enlightened* members of society entertain the conviction that the progress of machinery is injurious, but we do not thereby intend that persons enlightened with respect to the effects of machinery are opposed to its advancement; we mean that many individuals, well-educated, and possessing an extensive knowledge of subjects in general—men conversant in commercial and agricultural transactions—frequently give utterance to, and attempt to support, this opinion. We are convinced that no living individual, who is well versed in the history of mankind—who is acquainted with the progress of machinery—and who has observed the palpable connection that exists between the progression of the human species and the successive improvements in machinery—can possibly trace a cause for a depression in human affairs to the increasing command of man over inanimate matter.

The Creator has thought fit to endow man with mental powers—firstly, that he may discharge efficiently his several duties; and secondly, that he may, by the proper exercise of them, promote his own comfort and happiness. As well might we be told that our Maker wished us ever to exist in a state of slavery, as that man should be limited in his employment of inanimate matter.

It is machinery which has placed Great Britain at the top of the national scale; it is machinery which has effected the difference between the native barbarian and the refined European. Machinery has been the great and fundamental instrument in the all-important work of human progression; machinery has built vessels wherein the blessings of knowledge and revealed religion have been communicated to every nation; machinery has been the instrument by which knowledge has been easily and economically conveyed to the minds of the poor as well as the rich. Ten thousand blessings has machinery conferred on mankind, and ten thousand more will it yet, by God's blessing, confer. It would be nonsense—yea, worse than nonsense, it would be madness—to attempt to stay the progress of machinery. If genius cannot find full scope in England, it will in some other nation, and therefore its progress will never be stayed. "Forward!" is its watch-word, and those who chiefly assist in promoting its onward course will assuredly chiefly reap the benefits of its progression.

But we must enter into detail, for mere assertion is no proof. And, as in other cases, so in this, experience is our best and safest guide. In calculating the future effects of improvements in machinery, we can only rely on the results of the past. If history informs us that those ameliorations which have been effected to the present time have been promotive of the wealth and happiness of man, then there cannot exist any reasonable grounds for supposing that future improvements will have a contrary result.

It is essential, before we proceed with this enquiry, or rather this proof, that we should expressly understand what constitutes a machine. Some there are, who misinterpret the term as signifying an exceedingly complicated implement, such as a thrashing-machine or a flour-mill; but the true meaning of the word is an *instrument* or *invention*. Hence whatever instrument is invented to effect any certain object is a machine: the flail is as much a machine as the thrashing-machine, and the gimblet as the lathe.

As agriculture is the most important of human occupations, we shall first endeavour to show the benefits accruing to it from the introduction and improvement of machinery.

We are informed that so late as three or four hundred years since, this country frequently suffered from famine; numbers of the people perished from actual starvation, and those who survived did so only by subsisting on acorns and other equally unwholesome diet, the bark of trees being frequently used to satisfy the cravings of hunger. Now why was this? Was the land too thickly populated? Was the climate more severe? Did blights or other visitations destroy the crops to a greater degree, at that period, than the present? No. The population is greater, the seasons similar, and blights prove as destructive now as then. But there were few machines at that time, and those that were in use were of the rudest description. The consequence of this was, the land was badly prepared, much seed wasted in sowing, the harvest indifferently collected, and much grain lost in thrashing and preparing it. But by degrees machines were introduced; the plough was improved, the harrow made use of, the roll applied, and numerous other implements were invented for the more effectual conduct of agricultural operations. Did this produce an evil effect? No. For, whilst in the fifteenth century Great Britain was suffering from famine, with a small population and the best soils to cultivate, in 1821 (four hundred years afterwards), when the population had been more than quadrupled, and immense tracts of poor land brought into cultivation, there was plenty in the land, and that with an importation of foreign corn exceeding the exportation by only two quarters, in the two years '21 and '22.

Let us draw comparisons between more recent periods, and trace the effects of machines introduced at a later date. It is calculated that one-twenty-fifth is saved by substituting the thrashing-machine for the flail—that is to say, one-twenty-fifth the quantity of grain is saved. Supposing twenty millions of quarters of wheat to be grown in Great Britain annually for consumption, the saving effected by the use of the thrashing-machine would be eight hundred thousand quarters, or sufficient to feed the present population a fortnight. The introduction of the drill has also proved a great saving in the quantity of seed necessary to be sown. We are well aware that very few of those farmers who use the drill have attended sufficiently to this, some applying as much grain now as they did under the old broadcast system. But some experiments alluded to by Mr. C. W. Johnson, in his communication to the August number of the "Farmer's Magazine," prove clearly how great a saving may be made in this particular. He states that the experiments were instituted by Mr. Hewitt Davis, of Addington, in Surrey, on light, gravelly land, with wheat. Mr. Davis has for several years drilled but three or four pecks per acre, and has invariably obtained a luxuriant crop. Indeed, those who are acquainted with the multiplying properties of the wheat plant, will not be in the slightest degree surprised at this. Then what an important saving will the use of the drill effect, by substituting four

pecks for the old quantity of three or three-and-a-half bushels. The quota of the old crop necessary to sow again will thus be reduced from one-eighth to one-twenty-fourth. And, taking our first estimate of the gross production, we have a saving, by the proper use of the drill, of one million six hundred thousand quarters, or more than sufficient to feed the people of Great Britain one month.

Numerous other instances might be cited of the increased agricultural production of equal surfaces, from the introduction of novel machinery, as, for instance, cultivators, scarifiers, subsoil-ploughs, improved surface-ploughs, &c., &c.; but it would be unnecessary to enter upon a minute description of the effects of each particular implement, as but few deny their properties of economising labour, and cheapening the produce.

There are two grand arguments urged by those who attribute the present distress, in a great degree, to the increase and improvement of machinery: the first, that the produce is thereby made to exceed the demand; the second, that manual labour is thereby dispensed with, and great numbers of the labouring classes thrown out of employment. The first cannot be applied to agriculture; we shall therefore reserve our remarks upon it until we come to consider the influence of machinery on the manufacturing and commercial classes; but the second may be so applied, or rather it may be so *mis*-applied, for we dispute the inference *in toto*.

In support of our argument, that the introduction of machinery has not reduced the number of labourers, we beg to appeal to those individuals who knew what farming was thirty or forty years since. Is there a less number of labourers employed on any one farm you can name, at the present time, than at the period referred to? We know what the impartial answer to this question must inevitably be; for, in the course of numerous and lengthened conversations with many old farmers, we have frequently submitted it, and the reply has generally been to the effect that there are more hands employed now, on equal surfaces, than there ever yet were. Moreover, it is not absolutely essential that a proof of this argument should be drawn from a comparison between times past and times present. It is quite sufficient, and affords a more satisfactory illustration, to draw a comparison between different farms and farmers at the present period. There is scarcely a single district or parish throughout England, into which some (we will not say improved, but) novel system of farming has not been introduced, or where new agricultural implements have not been brought into operation. In the same districts will be found plenty who are slow in the adoption of either new modes of cultivation or new implements. Wherever this is the case, it will be found that the farmer who uses the greatest number of, and the most improved machines, invariably employs the greatest number of labourers. We could quote several instances, but it is unnecessary; every one has the opportunity of witnessing it in his own neighbourhood. But some may wish an explanation of this, and, as far as our humble abilities will allow us, we will give it.

Firstly, as all know, the use of machinery economises the production; this is the case in manufactures as well as in farming operations.

Secondly, this enables the farmer to sell, and consequently the labourer to buy, the necessaries of life more cheaply. And the farmer is not a loser by the reduction, because his increased production is proportionately greater.

Thirdly, the farmer's profits not being reduced by the change, he can, with advantage to himself, have manual labour done which must otherwise have remained undone, to the diminution of his crops, the increase of general expenses, and to the national loss.

Those who have observed the rapid and visible improvements in the cultivation of farms within the last few years—those who are acquainted with the gradually diminishing expenses attendant on equal productions, will not be surprised that the introduction and improvement of agricultural machines should have been attended with an increased employment of manual labour. We now see roads, not only passable, but in excellent condition, which were once impassable; and where the farmer once sent his grain to market, or fetched his manure, with five horses, he now does it in less time with three. We see hedges trimmed, sometimes once and often twice annually, that were, years ago, allowed to grow high, to the great deterioration of a considerable portion of the crop. We now see land drained and rendered fertile, which once was not only unproductive, but decidedly obnoxious to animals and vegetables in the neighbourhood. We often see the industrious modern farmer excavating the subsoil and applying it as a manure to the surface, where once the land was declared unprofitable because of its distance from manure. We have already seen land absolutely declared profitless by those who occupied it, and rendered fertile, through being trenched to a considerable depth by modern *machine-using* farmers; and these are not a tithe of the improvements that have been brought about solely by the introduction of more perfect machines, whereby the agriculturists have been enabled to produce cheaper food, and at the same time to employ more manual labour in the cultivation of soils generally. None of those improvements which we have pointed out would have been effected, if machinery had not been introduced.

Every day's experience affords ample proof that those who employ the greatest number of the best implements, also employ the greatest proportion of manual labour; and we have shewn that it is a natural consequence. Hence, as machinery has increased manual labour—as it has cheapened agricultural produce—and, which is of paramount importance, as it has wonderfully increased the national production, we think it is very evident that agriculture and agriculturists, be they landlords, tenants, or labourers, have received no injury from machinery. And, experience being our best guide, we may rationally conclude that the future progress of machinery will prove equally productive of good results with the past.

In manufactures the beneficial effects of improved machinery are still more manifest than in agriculture, and this not only in the production of cheaper and better articles, but in the increased employment of manual labour occasioned thereby.

One William Lea invented a stocking-machine in 1589, previous to which all the stockings that were worn were made by hand. The anti-machine mania raged to a much greater extent at that remote period than now. For years was the invention prevented from being used, under the plea that it would throw many out of employment; but history tells us that its introduction, and all suc-

cessive improvements of it, have wonderfully increased the proportion of hands employed in the trade.

Perhaps the most striking instance of the increased demand for human labour occasioned by the introduction of machinery, exists in the history of that insignificant but useful little article—the pin. At one time pins were so expensive and scarce, that each lady of a household was allowed a certain sum per annum as *pin-money*—that is, for the purchase of those articles. At that period they were made by hand, and chiefly of wood. Hence but few could wear them, and therefore few were required. But machinery was introduced, and, after various successive improvements, it appears that fifty thousand pins may now be made in one hour, by one machine, and one hundred may be bought for a penny. Are there fewer persons employed in the trade now, proportionately with all other classes, than when they were made by hand? No. The poorest in the land can purchase hundreds of pins per annum, made by machines; the consequence of which is, that where one was once engaged in making the article, there are now fifty to the same number of people. Machinery, then, has not produced depression in this trade.

The iron trade affords another and a most convincing proof of the futile nature of the argument that machinery destroys or displaces manual labour. Perhaps no manufactured article has received the assistance of machinery to a greater extent than iron. Yet, if we look through the country, we shall find a greater number of persons employed in this trade than ever were before. Of course we are aware that, in the present unprosperous state of the iron trade, this number is materially reduced; but, taking a series of years, it will instantly be seen that the number of hands employed has increased in proportion with the successive introductions of improved machinery. Some there are who will contend that the present depression of the trade is owing to machinery, whereby too much has been made in a certain time, and thus the market overstocked; but we hope to show, in a future paper, that there are other causes for this—indeed, that the one we allude to is no real cause whatever. If it is a cause, how comes it that in the year 1788 the quantity of iron manufactured in this country was but seventy thousand tons, and but a small portion of the population employed in it, whilst in 1835 the production had exceeded ten times that quantity, and a very large portion of the population employed in it? And, it must be remembered, the chief improvements in the machinery used in the manufacture of iron had been made prior to the last-named date, at which period the iron trade was never known to be so flourishing.

It is manifest that machinery has increased the number of hands employed in the iron trade—the pin trade—the stocking trade; and why? Because it reduces the cost of production, thus increasing the consumption, and that in direct proportion to the cheapness effected. This must always be the case where the trade is uninfluenced by other and more potent circumstances. Printing, travelling by steam, the cotton trade, the button trade, and the needle trade, are all so many examples of the improvements in machinery creating a demand for manual labour. Indeed, there is no trade whatever but the use of machinery in it has increased the number of hands employed. A greater fallacy cannot be entertained, than to suppose that economy of production in any department will injure a nation. The evil of over-production is not occasioned by improved machinery; it is solely produced by over-speculation—by the working of *too many* machines. In a time of undue prosperity, such as that which occurred in this country between the years 1832 and 1838, a false and mushroom-like state of society exists. Capitalists freely lend, and men destitute of money, experience, or the necessary talent, are enabled to commence business. The day is not long enough, but night must also be employed in producing. New mills are erected, and machines constructed, without limitation. No wonder that this should speedily produce a re-action. "After a storm comes a calm;" and like a man running a race, "over-exertion begets fatigue." But it may be urged, that this is a proof machinery exists to too great an extent, since those machines which were in operation at the prosperous time we have alluded to must have been worked by the necessary number of hands; and the fact that a great portion of those machines are now lying idle, with thousands of people out of employment, is a confirmation of the opinion. To give a complete refutation of this argument, it would be essential that we should enter into all the particulars of the real causes of the present distress—a course which we are not yet prepared to take; but we will give a few of the leading causes, by way of disposing of this unsound argument.

At the time we have already referred to, unseasonable hours were occupied in producing; children of all ages were made to work at the lowest possible rate of wages; and at the present time we can see strong, able-bodied men craving relief in hundreds, whilst children who ought to be under the schoolmaster's care are employed in manufacturing. This is an unhealthy state of things, and, combined with over-speculation, has been the chief cause of the present depression.

That there are times when certain classes suffer by machinery, we well know; but if this is to be admitted as an argument, then the steam-engine, the power-loom—in fact, any machine—may be condemned, because the introduction of nearly every new machine has been attended by a displacement of those hands that were employed under the old system. Yet it all tends to the advantage of the majority: and those who are thrown out of employment may, if they will learn, speedily obtain it again under the new system.

It is not required that we should prove the *advantages* of machinery—it is sufficient, to the due discharge of that we have taken in hand, that we should enquire whether or not machinery is the cause of the present depression. We have preferred, however, to consider the subject in its most extensive light; and the result of our enquiries affords a decided proof that improvements in machinery cannot prove injurious to mankind.

Newly-invented or highly-improved machinery is not the cause, or even a cause, of the present depression.

Lion-street, Kidderminster,
August 9th, 1843.

ON THE DRILL HUSBANDRY OF TURNIPS.

BY BARUGH ALMACK, LATE OF BISHOP-BURTON, YORKSHIRE.

Prize Essay.

(From the Journal of the Royal Agricultural Society of England.)

The great importance of the turnip crop is now generally admitted, not merely as food for our flocks, but as the best groundwork hitherto discovered for the improvement of such soils as are calculated for its growth. He therefore who can add the smallest mite to the general stock of information regarding the cultivation of turnips is, in my opinion, bound to come forward and let others have the benefit of it.

The following observations are founded on several years of extensive practice on real turnip soil, on the wolds of the East Riding of Yorkshire; and where my remarks seem general, they must only be taken as applicable to real turnip land, whether of the first quality or not. My observation has not been confined to different effects arising from different causes on land that was similar to that I had to cultivate; but having, from a very early age, a decided fancy for the cultivation of arable land, and particularly good opportunities of indulging it, I was a tolerably close observer of the modes of cultivation practised by my brother farmers, and the different effects produced, whatever the practice might be, or on whatever soil it was tried. I will leave others to inquire as to the time when turnips were first grown in England as a field crop, and go at once to the more important question—How—now that they have been introduced—they can be grown to the greatest advantage? I propose arranging my observations under the heads required by the Society.

1.—*The Time of Sowing the different Varieties on different Soils, and at different Elevations and Latitudes.*

1st. As a general rule, turnips may with advantage be sown at an earlier period in the north than would be suitable for the same species, with other circumstances equal, in the south. Thus, although in the East Riding it is common to commence sowing Swedes the second week in May, and to finish white turnips by the 21st of June, in Suffolk it is usual to commence Swedes near the end of May, and white turnips a month later.

2nd. The effect, however, of difference in latitude is partially counteracted by a greater or less degree of elevation, as well as by a difference of soil, where other things are equal.

3rd. As a general rule, the greater the elevation of the ground, the colder is the climate; therefore, if this is not counteracted by a difference of soil or situation, the high ground of the south will have a climate somewhat similar to land in a more northern latitude, at a less degree of elevation, and should be sown accordingly.

4th. Some soils are naturally of a colder nature than others, and a difference in this respect will counteract what is known to be the common effect of any given elevation or latitude.

5th. Any peculiarity of the soil or situation which tends to promote rapid growth and quick maturity will render the land less suitable to be sown early. Thus we see that, although there is said to be a general difference of about three weeks in the proper time for sowing, between the north and the south of England, the occupiers of the hills in Gloucestershire find it desirable to sow about as early as those of the wolds of Yorkshire; also those of some of the rich and low grounds of the East Riding sow about three weeks later than their neighbours on the wolds not ten miles from them, and consequently nearly three weeks later than those on the hills of Gloucestershire.

Similar deviations from those general rules may be met with in most districts where the soil, aspect, or elevation, vary as above alluded to.

The proper season for sowing all the common varieties of turnips does not usually extend over much more than six weeks in any given district.

Swedes are generally sown first, "Hybrids,"* being partly of the same nature, are usually sown next, and white turnips the last, especially if they are intended for late consumption. When for early use, they, as well as the other species, may with advantage be sown at an earlier period.

The more solid the texture of the turnip, as compared with others of its own particular species, the more suitable it will be for late consumption, and consequently for late sowing.

To exemplify this, it is only necessary to say, that the "white globe," which, from its quick growth and large size, is highly valued for early consumption, is, by the same peculiarities, unfitted for standing over winter.

In districts where about one-fourth of the arable land should each year be sown with turnips, there is necessarily more work for the horses than could be done within the period best calculated for producing the heaviest crop. Therefore the occupiers, through fear that they might be driven into a late season for part of their land, and then perhaps be almost compelled to sow in unfavourable weather, with scarcely the chance of obtaining a productive crop, will seize on the earliest period, when the weather is favourable, at which a given species of turnip has been sown in that situation with success.

The chances of a heavier crop are so far in favour of what is considered early sowing, as to justify in this case a little risk of being too early, in order to secure the positive benefit of a commencement under favourable circumstances.

In districts where the occupiers are most dependent on their turnip crop, from want of good grass-land, it is of great importance to spread the advantage of having turnips over as long a period as possible: thus, some will sow part of their white turnips before Swedes.

This very early sowing of white turnips might be ruinous to the crop, were it intended to stand over the winter, but for early consumption may have every recommendation. I say may, because everything must depend on the weather of the season in question. Thus, until we have an assurance that successive years will be counterparts

* The cultivation of "hybrid" turnips has extended rapidly within the last few years, especially on deep, light wold land; such land is not well calculated for white turnips, and, if sown with seeds, it would require a greater quantity of manure to produce an equal crop. "Hybrid" turnips retain their nutritious qualities longer than white turnips, and although not so long as Swedes, they are better adapted for consumption immediately after white turnips.

of each other, no man can accurately foretel what period of sowing will have the best effect in any given situation.

That climate which by its warmth enables the occupiers of land to sow "stubble turnips" with success has the drawback of rendering turnips more liable to mildew from too early sowing.

When turnips are sown too early, there will also be danger of their growing too much "into top" during the autumn; and, if they are sown too late, the crop will be light; even a few days will make a great difference in this respect.

II.—*The Mode of Preparing the Land and of Drilling the Seed, with a Description of the Implements used.*

Although there are many intelligent persons in different parts of England, especially in the southern counties, who, after having given what they considered a fair trial to drilling, both on ridge and level, have returned to the old broadcast system, yet drilling is now generally admitted to have advantages over broadcast of sufficient importance to justify the additional expense attending it; and these advantages appear to be—

1st. By drilling the seed with the manure, they at once come in contact, and must be more likely to insure a crop, than when the manure and the seed are each spread at random, to take their chance of falling sufficiently near each other for the former to benefit the latter.

2nd. The land can be more effectually cleaned, and at a cheaper rate, by the use of the horse-hoe.

3rd. The land will be much benefited by the use of the horse-hoe, independently of the cleaning before alluded to.

4th. The seed can be put in more uniformly at what may be considered the proper depth.

5th. When drilling is neatly performed, it shows good cultivation to the best advantage. He, who has once had his fields pointed out as models of garden cultivation on a large scale, will spare no labour to maintain his character; and his neighbours generally will soon be ashamed of appearing to disadvantage by the comparison.

I believe few of the advocates of drilling are aware how many have tried the system (as they thought fairly), and given it up; but in my opinion, this has arisen, in almost every instance, from their not having tried it on its own peculiar principles.

To manure on level, broadcast, and then drill the seed in rows, is no fair trial of the drill system; but some have laid drilling aside after such a trial. The most ardent advocate for drilling could not reasonably expect to grow the best turnips merely because the seed was sown in rows: that to a certain extent, is an advantage, but the drill system is not fairly tried, unless the manure and the seed come in contact in the rows, and such means are adopted, in other respects, as tend not only to prevent these advantages being counteracted unnecessarily, but enable us to make use of all other advantages *peculiar to drilling*.

As I shall in some cases recommend the system of drilling on level, although in Scotland ridging is almost invariably practised, I feel it due to the character of the people of that country, so eminent as a body for their intelligence and good sense, to go fully into my motives for so doing,

In July of the very dry summer of 1826, the prospect as to the turnip crop was indeed melancholy; there were few persons in my neighbourhood who were likely to have, or, as the event proved, who had, any. *At that period the ridge system was almost invariably followed on the wolds of Yorkshire*; and, out of about 200 acres of turnips, in which I at that time was more particularly interested, all except about five acres, had been ridged; as these would have been also, had not a fortunate chance interfered to prevent it. The piece of land in question was of a triangular shape, with a deep valley running through it, rendering it very unsuitable for ridging. From these and other circumstances it was drilled level; and the crop *on it* proved a very good one, whilst the remainder of the field bore scarcely any turnips at all. The ridging system was so little more successful in the other fields, that it was calculated there had been about 300*l*. worth of bone and other manure thrown away.

This was rather a sharp practical lesson as to effects, and it was not necessary to look far for causes. The soil was thin, and rested on chalk; therefore particularly liable to be injured by drought. The ridges, by constantly having the sun on three sides of them, had become as dry as if they had been baked in an oven. Any person, who examined them closely, would as soon expect to get a crop of turnips out of the mud-walls of past ages, as from ridges in that situation during such a season as the one I speak of.

Having thus seen what serious consequences might in some seasons arise from practising the ridge system, in addition to loss by sheep getting laid on their backs betwixt the ridges, as well as the extra trouble attending it, it became necessary to consider whether there were any advantages arising peculiarly from that system, sufficient to justify running the risk of the ill effects just mentioned. After much consideration, I became of opinion that, for white turnips, on thin and dry soils generally, and particularly in such high and dry situations as the wolds of Yorkshire, where the soil is generally thin and resting on chalk, the balance of probable advantage was decidedly in favour of the level* system, if it was only intended to apply under either system such manure as could be done by drill.

The advocates for ridging said, "If we are to apply farm-yard manure, we must ridge, or we cannot derive the full benefit of having so manured: in addition to which, turnips are so much better to clean when ridged."

Now, where is the advantage of having manure within ridges, if the soil above it is so dry as not to allow the plants to grow to such an age as to benefit by that manure?

Suppose we admit that, if you were sure of plenty of plants surviving until ready to hoe, you might in some cases get a heavier produce by ridges than on level, through applying farm-manure, &c., it does not follow, as a matter of course, that it would be a more valuable crop per acre; because, when white turnips get beyond a certain size, they deteriorate in feeding qualities, especially if not consumed early in the season. At the same time it was argued, and since then has been abundantly proved, that white turnips may be got as large as it is desirable to have them

* The level system has been also partially adopted these twenty years on the light lands of the south, from the causes here mentioned; and swedes and white turnips, raised by artificial manure, alone deposited by the drill.—G. KIMBERLEY.

for sheep, by drilling level, with the rows from eighteen to twenty-two inches apart, without farm-yard manure, whereas ridging is generally performed at about twenty-seven inches. It therefore follows, that if at about twenty inches apart you can get rows of as good turnips, as under the ridge system at twenty seven inches there is a bonus of seven acres in twenty-seven in favour of the former, in addition to the greater certainty of a sufficiency of plants.

As to the advantage in cleaning the land, this may be attained for the level-system by clearing it of weeds, and the seeds of weeds (as I shall hereafter show,) previous to the turnips being sown. Besides, by having the level-drilling performed in a straight and workmanlike manner, the land will be nearly as good to scuffle as if it had been ridged; therefore, none of the numerous benefits derived from the frequent use of the horse-hoe need be lost by having the rows thus drilled on level.

From that time the use of farm-yard manure for white turnips was abandoned by me and some of my neighbours, as a consequence of adopting the level system of sowing,

Swedes require not only a greater depth of soil than white turnips but richer land, or more manure; therefore, the chances in favour of the level or flat system of swedes are not so great; and I am prepared to admit, that a heavier crop of swedes may be got by ridging (in favourable seasons for that system) than on level. But, after well weighing the chances, I generally sowed swedes on level; and some of the best farmers I know yet do the same—preferring what amounts to almost a certainty of a good crop to taking a more expensive and tedious process for a small chance of a better, with the risk of no crop at all.

For land of rather a wet nature, ridging has recommendations which it has not for that which is naturally dry—the spaces between ridges become a species of surface-drainage, and the farm-yard manure within them will have a similar tendency, which not only accounts in some degree for the ridge being more suitable for wet than for dry soils, but partly explains why longer manure may be used with advantage, on the former, than such as is considered proper for the latter. Again, the spaces also serve as a sort of railway for the carts, &c., used in sowing the crop, as well as consuming it; thereby partly preventing the injury which such land is liable to, from being "poached" in wet weather.

The same process of treading the ground whilst consuming the turnips, which is so beneficial to thin light soils (except in extraordinarily wet seasons), is generally injurious to strong soils; so that, in every case, our practice must be regulated to a great extent by what is peculiar to the situation.

He who lays down general rules as applicable to every variety of situation, will in my opinion only mislead those who place implicit confidence in him. I think we are only justified in stating such general principles, as extensive observation may have pointed out, and offering them for the consideration of those who may have had less experience, accompanied with the caution to reflect well, how far they are applicable to their own particular soil and situation, and to regulate their proceedings accordingly.

The turnip crop being considered not only as a means of supplying our cattle and sheep with food, but as a preparation for future crops, by cleaning the land and enriching it; these several objects must always be borne in mind whilst preparing the land for turnips.

As complete a pulverization of the soil to the depth at which the plough usually goes as the season and the nature of that soil will allow, so as to admit the free circulation of the air to that depth, is one of the first essentials. Where the soil not only admits complete pulverization, but will at the least expence grow the heaviest crops of the most valuable varieties of the turnip, with the greatest permanent benefit to the land by the preparation for the crop, and the consumption of it, whether on the land where it was grown or otherwise, we call this the best turnip land.

It might appear almost unnecessary to state this, were it not, that, in preparing any land for turnips, we must constantly bear in mind in what it differs from "the best turnip land," and let our preparation for the crop, and our consumption of it, be regulated accordingly. Real turnip soil, although not of the best quality, may by high cultivation produce crops approaching, if not equal, to the best turnip land.

I have always recommended the first ploughing to be done as early as possible, whether immediately after corn, or where old grass is broken up for turnips. I have broken up grass on more than one occasion, and my experience has tended to convince me, that in many cases, where the land is in such a state as to be capable of being thoroughly broken up and pulverized, without first paring and burning, it would be best to lime the grass immediately before ploughing, not only that the lime might assist in decomposing the vegetable matter, and thereby turn to manure what would otherwise to a certain extent be wasted, or reduced by the process of burning, but that the lime, by becoming incorporated with the soil, might cause the land to work more freely, and thereby mechanically assist in all the future operations. For similar reasons I have used lime on corn stubbles before ploughing for turnips, and think that it is generally the best period for doing so, especially if the land is foul, or if animal manure is intended to be applied for the turnip crop. Were the lime and the animal manure to follow each other too closely, the former might counteract the beneficial effects of the latter, instead of being, what I think in most cases it ought to be considered, rather a preparation for them.

We now come to the point where it is necessary to consider whether the land is subject to weeds, especially "charlock." I can remember the time when every one I talked to on the subject used to say "it was quite impossible to guard against having charlock in your crops, because you never could get rid of it. If you dug into the earth 20 feet, to make a canal, &c., the soil coming to the surface from that depth would immediately be covered with it."

I must confess that this fact for some time seemed to throw an almost insurmountable obstacle in the way of effectually preventing the growth of the weed; and I believe that to this day there are many who therefore never think of guarding against it, except by destroying what grows in their corn, &c., considering it a hopeless task.

From the magnitude of the evil I feel justified in calling particular attention to this subject. Having once accounted to myself satisfactorily, for the charlock-seed not growing at 20 feet deep, and growing at once when brought near the surface,

by the simple reflection, that of course it could not grow where it was entirely out of reach of the circulation of air, and that the same absence of air which prevented seed from vegetating, might still tend to preserve its vegetating quality, until brought under more favourable circumstances for calling it into action, I at once came to the conclusion that, if I cultivated the land so as to cause all the seed to grow that was within the circulation of the air, or usual ploughing depth, and, after the seed had grown, destroyed the weeds by ploughing the land, I should by that means get rid of all cause for apprehension on their account until I ploughed deeper. I therefore invariably acted on this idea, experience convincing me of its correctness; and I can now say that, under favourable circumstances of the turnip-fallow season, for getting the seed grown, it is a most effectual remedy.

In the summer of 1830 a most favourable opportunity presented itself for putting my theory to the test. One of the fields I had to sow with turnips that season had always been much subject to growing charlock, therefore I determined to make the whole of the seed, within the depth of the first ploughing, grow, and, having grown, to destroy it of course before the time I wished to sow the turnips.

The first ploughing was done early in the autumn, as I have before recommended. The next in the first period after Christmas, in which the land seemed sufficiently dry for the purpose; this was of course across the other, it being well known that on light soils with dry substrata, it is better that each succeeding ploughing, or dragging, should be taken in a contrary direction from the preceding one. In a short time the land became sufficiently dry to harrow and roll; it was therefore immediately harrowed with common harrows, closely followed by the drag-harrow with its broad set of teeth, there being no couch in the land; then alternately harrowed and rolled, each operation following as closely on the other as practicable, until the soil was as thoroughly pulverized as possible, so that the seeds of the weeds might thus be more likely to grow.

After a few days the charlock sprung up so thickly, as nearly to cover the whole surface of the land. I allowed it to grow to about 2 inches in length, and then had the land again dragged with the drag-harrow as before, the common harrows and roller again following each other as closely as possible; and the field was soon prepared for a second crop of charlock. A second certainly soon came, but it was a very thin one in comparison with the first; I had evidently caused the greater part of the seed to grow at once.

This process was repeated for the third time, the crop of charlock still diminishing; and when, after the *fourth* working, I sowed the turnip-seed, it sprung up quickly; and I had the satisfaction to find these weeds were so effectually destroyed, that it would have been difficult to find two within 50 yards of each other, although in the first crop there had been so many. I do not mean to say that, if this field were ploughed deeper than it was in the season I allude to, or soil brought to the air that had not before been within its reach, charlock would not grow, but I can say, it never has grown since, although there have been several charlock years. However, no doubt, there are occasionally seasons so unfavourable for getting the seeds of these weeds grown, that no man could at once get rid of them; therefore, we must not throw discredit on those who have not had a fair opportunity of preventing what is probably a source of great annoyance to them.

When the proper moment is seized for performing each opearation, of harrowing, rolling, &c., which, in dry weather, and on dry soils, will generally be found to be by causing them to follow each other closely—that is, before the land gets too dry—the work of pulverization and cleaning will be found to take less labour than might at first be supposed.

I have thus, partly stated my method of preparing land for turnips, when clear from couch, and yet subject to charlock. Considerable experience on land much subject to couch taught me that the best time to get it out is after the second ploughing, and then by the drag-harrow. If you plough oftener before you make the attempt, the couch will be cut into such small pieces that it will be very difficult to get rid of the whole.

When the land has been made fine, the couch of course must be raked off, and either burnt or turned into manure without burning.

If it is burnt, the ashes should be drilled with the other manure when sowing the turnips, in order to accelerate the growth of the young plants, which they will do in a remarkable degree. But, whether the couch ought to be burnt for this purpose, will depend on whether we have any cheaper means of attaining the same end.

Were it not for the advantages from drilling the ashes as above, I think it would be better not to burn the couch.

Where the soil is very full of couch, it will be necessary to have the small teeth in the drag, or it would not pass through it; but, when larger teeth can be used, they are much more effectual.

The couch will not all be got out by one dragging, but, if the season is then favourable, it is best to cross-drag it until you have got rid of the whole.

The system of close working with harrows, rollers, &c., may not be equally applicable to all soils, but as there is a "tide in the affairs of men," so there is a time for performing each operation, on every variety of soil, which ought to be watched and turned to advantage.

When the soil is most completely pulverized, it is in the best state for retaining moisture, whilst clods are so soon dry that they are almost emblematical of dryness. It is very generally admitted that the land must be well pulverized to have a good chance of a crop. I venture to say, that in dry weather it cannot be made too fine; but, where there is a probability of rain *on land recently tilled*, we should leave it rougher, or, in some cases, in whole furrows, that the rain may penetrate it without the injurious effects that would follow a heavy rain on recently powdered soil.

For the same reason it will be necessary to be cautious in the use of very heavy rollers; they are occasionally useful, but I have known them injurious. It will also be necessary to avoid harrowing the land when wet. Some, to prevent the time of the men and horses being wasted (as they call it), employ them in doing what, *at that time*, is worse than useless.

The point to aim at seems to be clean ground, and as complete pulverization as the nature of the soil will admit, with the least risk of being caught by heavy rains, in such a state as to cause the land to set and run together, which would at once check the advantages derived from the circulation

of air, &c., in the porous soil, and render it necessary to repeat the work of pulverization. To attain this on some soils, and in some seasons, is a very difficult task. We sometimes see very good turnips, on what cannot be called turnip-land; and more, that they are consumed on the land with evident advantage to it, whilst an attempt has been made by a different person, on similar soil in the adjoining field, and proved a complete failure. Chance may occasionally have something to do with this, but the difference generally arises from the degree of skill possessed by the cultivator.*

The manner of making turnip-ridges is so well known to every intelligent ploughman, and has been so often described in the Society's Journal and elsewhere, that it is not necessary to repeat it here. It may however be as well to state, that, in making turnip-rows, it is requisite to have a light straight piece of wood between the heads of the two horses, by being fastened to or near the bit of each; it keeps them at a regular distance from each other; and if the horses are accustomed to draw together, and are of the same speed, they may thus enable the ploughman to do his work in a superior manner, the importance of which will be hereafter seen when I speak of the drilling.

Although in the East Riding it is more common to use waggons in laying on farm-yard manure, I am inclined to think carts, when used as described by Mr. Grey in our Journal, answer better, because likely to save time, a matter of the utmost importance. I account for this supposed inferiority of the East Riding, as compared with Northumberland, by their now ridging so little. Where a certain work is most practised it is probable it will be best understood; and many of the East-Riding farmers having almost given up ridging (as I have stated,) it is a matter of comparatively little importance to them how manure is best put on ridges. If the cart method described by Mr. Grey usually tends so economize labour, the more tedious one certainly ought not to be followed, because it is universally admitted by all good farmers, that it is desirable the whole of the operations—from the forming of the ridges to the covering of the seed—should be completed in as short a space of time as possible. Whether on ridges or level, where many turnips are sown, the large drill (or drill for general purposes) is used in sowing turnips in the district I have named, although in some instances, where no manure is drilled with the seed, the small "barrow," or Scotch drill, is used for ridges. It has often been stated, that the latter only is applicable for ridges, but that is a mistake. Where the ridges are not at regular distances, or not straight, of course it would not do to drill more than one row at a time, for the obvious reason, that the spout of the drill would not always be on the centre of the row. But, if the rows are perfectly straight and at the same distance from each other, that distance being such as will allow the drill to cross two of them, the wheels running exactly in the centre of the channel, and one wheel returning on the same place (already marked out by itself), whilst the other goes on the outside of two more rows, the large drill will be found applicable, and it has the advantage of enabling you to drill some manure with the seed. However, the small drill, being more under command of the man who follows and guides it, is certainly more adapted to putting the seed at a proper depth. Whether sown with the large or small drill, ridges are usually rolled before and after drilling, to secure a fine mould and more uniform depth In using the small drill, only one horse is necessary for the roller and the drill, the horse being attached to the former; the roller covering two rows at once, each row is rolled both before and after drilling.

These preceding operations having been regulated with due regard to retain moisture, and to cause a full and rapid growth at the first stage, it may not be amiss to remark, that, the more thickly you sow the seed (other circumstances being equal), the more rapidly the young plants will run each other up, as it is with young trees in a plantation, If we were certain all the seed would grow and arrive at the state for hoeing, it would only be necessary to sow a very small quantity; but, as there are numerous risks before the plants are ready for hoeing, prudent men will adopt the most secure method, and not risk their capital, even if they know some instances of fortunate results on soils of a peculiar nature, or in particularly favorable seasons, by using only a small quantity of seed. I used to sow from four pounds to five pounds per acre for Swedes, and from three pounds to four pounds for white turnips, and even greater quantities where I sowed early in the season.

For level sowing it is also desirable to have the seed covered as closely after the drill as practicable, in order to retain the moisture then in the soil, and to prevent the risk of less favourable weather. Some do this by rolling; but if heavy rains follow, especially immediately after the land is sowed, the flattened and compressed surface will not admit it so freely, but cause the soil to set and run together. Some harrow with common harrows, but these, even in favourable weather, are apt to remove the bones or other drill manure which may have been used. Others, knowing the danger of adopting either of these methods, leave the seed to take its chance of being covered by the loose soil that may (or may not) fall upon it after the drill, thinking that, if the seed get covered, the more thinly the better. This would be very plausible, if hoeing had not to follow, which must remove some of the surface soil; therefore, if the manure lies close to the surface, the turnips cannot be *hoed* without removing it also. After observing the disadvantage of each of these methods, I had some new harrows constructed. That they might be light, the "bulls" or parts to contain the teeth, were made of dry foreign pine, and the "slots," or cross-pieces, of thin ash of the best quality; the teeth being short and light—in fact, not much larger than "tenpenny nails."

Two of these harrows, hooked together when, in use by common gate-loops and hooks, were very easily drawn by one horse, and took a breadth of about eight or nine feet; thus only one horse's foot-marks came where, by using common harrows, those of three horses would have been, which in damp weather is of great importance.

* Since the publication of the valuable accounts of experiments on yard and house feeding of sheep, by Lord Western and Mr. Childers, M.P., showing that these animals will not only do as well on turnips brought from the land, but may by that means produce a much larger proportion of mutton for the food consumed, one great objection to an extended cultivation of turnips on soils liable to be injured by the treading of sheep is removed; therefore it is desirable that all occupiers of such soils should have their attention drawn to these reports.

These light harrows not only answered my expectations, but proved that they had advantages I had not anticipated: they left the land with a more even surface than other harrows had done, causing it to resemble a flower-bed when newly broken by a garden-rake. This tends much to promote the growth of all the seed at once, and proved so advantageous to turnips, that I afterwards adopted the use of these harrows when sowing grass-seeds in corn.

I soon had an opportunity of witnessing other advantages of these light harrows, as compared with common ones. I had drilled several acres of turnips without making the harrows follow the drill, as the ground was then rather too wet; but, instead of becoming drier, a heavy rain came on, and nothing could be done to the land for two or three days. At the end of that time I had it harrowed with the light harrows, and, as this did not take out the drill-marks, it was again harrowed with them the next day, which put it into a very good state; and from that time the turnips grew so well that they eventually were considered the best crop in the neighbourhood that season. An adjacent field, treated in every way similar to mine, save that it was harrowed by the common harrows instead of the light ones, had so few turnips in it that it could scarcely be considered one-fourth of a crop. The superiority of the new harrows was thus so apparent, that the use of them spread in the neighbourhood.

Another means of causing the plants to grow more rapidly at first is, to roll the land the first time it is in a favourable state *after the turnips are out of the ground*, taking care, of course, to do this *along* the rows, and not across them, or you would bury part of the plants.

When ridging was more common with my neighbours than it is now, one of them had got some land ridged for Swedes, and was caught in this state by rather damp weather—that is, not sufficiently wet to stop the manuring, splitting the rows to cover it, &c., nor to prevent the turnip-seed being drilled, although too damp to allow the land being rolled after the drill: he therefore went on drilling, with the hope that the weather would clear up and become dry, thinking that, if it did, he would have had an excellent turnip season. But, during the second day, the rain came down in torrents, making the land so wet that nothing could be done to it for several days, and when it had become dry it was too late to adopt the usual means of covering the seed—part of it had grown. About a fortnight was allowed to elapse after the plants appeared, to see the result; because, during that period, it was very difficult to say what would be the best course to pursue. The land having been very finely pulverized before ridging, and the seed drilled rather deeply, the furrows or channels in the ridges seemed like the bottom of a dried-up pond, with scattered turnip-plants, few and far between, no larger than they had been the last ten days, but less likely to grow, because there were flies on them, basking in the sun, and sheltered by the walls of hardened soil on each side of them. The land was cracking with sudden drought, and thus tending to retard the growth of the turnips; but weeds, being of a more hardy nature, were both abundant and flourishing. In this state, as nearly as I can describe it, I found the field when my friend did me the honour to ask my advice as to the best means to adopt with respect to it. By my direction a number of men were immediately set to chop off the sides of the ridges with turnip-hoes, so as to reduce them to a level with the turnip plants. The turnips were then *rolled*, which broke the soil around them to powder, and made the plants stand out clear of the ground, and *exposed to the wind*. The spaces between the rows were then scuffled, and the field at once presented a neat and clean appearance. The beneficial effect of the plan here adopted exceeded my most sanguine expectations, and certainly was a matter of great surprise to all who witnessed it.

The rolling (which could not have been done before the banks of the rows were taken off, without burying the young turnips) not only put the soil in a better state, fastening the roots of the plants in a fine mould, but *exposed the turnips to the wind*, which accelerated their growth not only by blowing them about, but by *removing their greatest enemies, the flies*, which, I have observed, are generally found *in sheltered situations or hollows in the soil*.

After the process above named, it was evident that the means used would be highly beneficial, and in the two following days the plants grew more than in ten days before: in short, they were soon ready to hoe, and by choosing a short period of damp weather to transplant a few, the field became a very excellent and full crop.

From having seen the great and various benefits derived by this almost accidental *rolling of plants* on ridges, I adopted the practice of rolling them on level, when the season was favourable for that purpose, and can strongly recommend it for the above reasons, not only as having been my own practice, but as now followed by others, whose opinions are entitled to the highest respect. The roller used for this purpose was of oak, and about nine inches diameter, divided into two pieces, to render it suitable for turning about, as well as to press the land more uniformly. It had shafts, and was drawn by one horse, although made as long as could go through a common gateway. The *description of roller* used is of great importance, for our object is to obtain *a decided and uniform effect on the surface, without fastening the soil too much below*.

Previous to hoeing, it is desirable to have the land horse-hoed, as closely to the rows of plants as practicable, that the hoers may have directions to clean all the ground of weeds which has not been cleared already by the horse-hoe.

When the weather is favourable, horse-hoeing will not only be useful in clearing away the weeds, but will *make the turnips grow more rapidly*, both before and after hoeing; therefore whether there are weeds or not, where it is of great importance to have the crop as forward as possible, this operation can scarcely be too often repeated so long as the work is properly done.

III.—*The kind and quantity of the Manure employed.*

Bones have been the most common manure of late years for turnips on the wolds of Yorkshire and Lincolnshire; and probably few have better reasons for speaking highly of their effects than myself; but, as it is now well known there are several other manures which may be substituted, it is not my intention to particularly recommend them. Their price has regularly advanced from 2s. to 3s. per bushel; and if the demand for them thus yearly increases, it will soon become ques-

tionable whether their beneficial effects may not cost more than they are worth. I therefore most sincerely hope that some out of the numerous manures mentioned as substitutes for bones may prove as valuable as their patrons expect or wish. It is here necessary I should observe, that I cannot say how many tons of turnips per acre I have grown, simply because I never weighed any, nor had any weighed. There are, I know, many who have been celebrated for growing good crops of turnips, but yet never weighed a bushel. I consider the question I ought to enter on now is, not how much weight of turnips land *fresh to them*, and with other circumstances *peculiarly* favourable, *may* produce, nor what manure has the most beneficial effect on the turnip plants, as so many new manures are introduced almost daily, that the question of their comparative value would be sufficient for an endless essay in itself. The great question for present decision is (or I think ought to be), *what modes of cultivation* are the best adapted for insuring such crops of turnips as are desirable for the broad fields of Britain, in order to afford the *greatest and most certain value* in nutriment to cattle, sheep, &c., and to render the land best capable of producing valuable future crops. I have got excellent crops of turnips by bone manure; also by mixing pigeons' dung and half-inch bones of equal quantities, and drilling twenty-four bushels on ridges twenty-seven inches asunder, for swedes. From 1826 to 1834 I used to drill white turnips on level, using half-inch bone manure at the rate of from sixteen to twenty-four bushels per acre, mixing with the bones the ashes of couch, &c., for the reasons before stated, the rows being generally eighteen inches asunder. Swedes are well known to require more manure than white turnips, and it is usual to give them about half as much more. In 1839 I had an opportunity of observing the effect of a small quantity of rape-dust mixed with the bone manure. I intended to sow a field of forty-seven acres with white turnips—the rows nineteen inches apart—to test my previous opinion that I could get nearly as good rows of turnips at that distance as at a greater; the manure per row being equal. Therefore, as it was then common to sow eighteen bushels of bones per acre where the rows of white turnips were twenty-two inches apart, for my nineteen-inch rows I added three bushels of rape-dust, and drilled this mixture of twenty-one bushels per acre, being in proportion to the increased number of rows. When about two-thirds of the nineteen-inch field were sown, I found I could get no more rape-dust, therefore the remaining part was drilled with bones only, at the same rate—twenty-one bushels per acre. Where the rape-dust had been used, the nineteen-inch rows of turnips were decidedly better than the twenty-two-inch rows, and so much better than the part of the same field drilled with bones only, that it was quite unnecessary to mark the division. It will be observed that the proportion of rape-dust to bones was small, and I do not recommend a larger quantity of rape-dust.*

(To be continued.)

* In that part of the East Riding called the North Wolds, an opinion is rapidly gaining ground in favour of applying bones in smaller quantities than formerly, from observing that this may be done without any apparent injury to the turnip or succeeding crops. As an instance of the evidence to this effect, a gentleman used bones for several years *on his own land*, at the rates of twelve, fourteen, sixteen, twenty, and twenty-four bushels per acre; and, *during the same period*, on land which he rented, he used only ten bushels per acre: yet he could not grow any greater weight of turnips on his own farm than on the other, where he used the smaller quantity of bone manure.—B. Almack.

This may be accounted for by the fact that bones contain only one or two of those constituents that compose the food of plants, and that a much less quantity of them than above mentioned would give to the land a sufficient quantity of those constituents for the turnip crop. We may as well expect to support all animated nature on one substance, as to expect to arrive at perfection either in the quantity or quality of our crops by manuring them with any material that contains only one or two of those ingredients that constitute the food of the vegetable world.—G. Kimberley.

WILBRAHAM SHEEP SALE.—THIRTY-SECOND ANNIVERSARY.—The thirty-second anniversary of Mr. Teverson's Annual Sheep Sale was held on Friday, on the farm at Wilbraham. The company was not so numerous as on former occasions. After partaking of a substantial lunch, laid out with Mr. Teverson's usual liberality, they proceeded together to the ground, where the sheep were penned, and which if possible exceeded in quality those exhibited in previous years, and which have raised the reputation of Mr. Teverson so high. There were upon the ground Messrs. R. J. Eaton, M.P., R. G. Townley, Batson (2); A. Cotton, jun., Hicks, Smith; Rev. T. B. Syers, J. Graham, Edward Fisher, (Linton,)— Watson, — Holcombe, (Brinkley,) and Watson; Messrs. Burrows, Mayor of Walden, W. Chalk, (Linton), S. and Jonas Webb, S. Jonas, T. King (Bottisham,) Frosts (2), Slater, Weston Colville; Claydon, Linton; Woodley, Stansted; Oslar, Witt, Denny Abbey; Cambridge (Lord Hardwicke's agent); Horton (Lord Braybrooke's agent); Holmes, Buckenham; Palby, West Wratting; James Scotcher, Yeldham; Goodchild, Keddington; W. Ladds, Hemington, Martin Slater, and many others whose names we could not learn. Whilst lunch was going on in the barn a large party of shepherds and servants were regaled in another part of the premises. When the body had been duly fortified for the fatigues of the day, Mr. Nockolds gave the toast of "The Queen and Prince Albert, and may they safely return to England," and, at the suggestion of a neighbour, added another—"A good sale,"—after which the party proceeded to the place appointed for business. Mr. Nockolds, after a slight eulogy, proceeded to sale, and the lots were disposed of in quick succession, but few being passed. The sheep were sold in lots varying in numbers up to twenty, and the average prices which they realized were as under. We have appended the averages of the sale of last year:—

Shearling ewes	26s. 0d.	—	25s. 6d.
Stock do.	27s. 9d.	—	22s. 9d.
Crones	19s. 0d.	—	15s. 6d.
Wethers	34s. 0d.	—	36s. 0d.
Ewe lambs	17s. 0d.	—	18s. 9d.
Wether do.	18s. 6d.	—	20s. 0d.

The following were the largest purchasers:—Lords Hardwicke, Sandwich, and Braybrooke; Revds. Graham, Hinxton, and T. B. Syers, West Wickam; J. B. Allix, Esq., M.P.; Alex. Cotton, jun., Esq.; Messrs. Goodchild, Keddington; Holmes, Buckenham; Ladds, Hemington; W. Slater, Weston Colville; S. Jonas, Ickleton; W. Claydon, Linton; S. and J. Webb, Babraham; J. Scotcher, wool merchant, Yeldon; M. Woodley, Stansted; and W. Pallby, West Wratting. The sale realized about 2000*l*.

AGRICULTURAL OBSERVATIONS.

Much complaint having been made this season that the pea and bean lands—wheats *in particular*—were so broken down or root-fallen, I will endeavour, to the best of my judgment, to state the general cause, and the best preventive. Now mark! it frequently occurs, *from the too early planting, your land gets full of blackgrass* and other winter weeds, that so exhaust the soil—especially *in a mild* autumn—that it invariably injures the crop, frequently *very materially*.

Instead of early planting, let me recommend *very early* preparation, and late planting—say from a week to a month after Old Michaelmas. I know a heavy-land farmer who made it his general rule never to plant until this time. He had, for the most part, good crops *to harvest*. His plan was, if any of his pea or bean lands were foul, as soon as the crop was off—or it might be sometimes before—he would plough it, and manure it as soon as possible with from 10 to 12 good tumbrel loads per acre, which was usually mixed with clay or ditch earth. This he considered would produce him a better yield than nearly double the quantity put on and ploughed in in the usual way. If he could not get this land sufficiently clean to his mind for the wheat crop by giving it its proper earths, he would let it *lay round* for barley or oats, and plant a piece of fallow in its stead, mucked, as before stated, and ploughed the second time on the stetch—perhaps a month before planting, as he preferred *a stale furrow* for wheat, and a flat stetch, the land being well under-drained. On his other bean stubbles, &c. that were sufficiently clean to his mind—for he would never sow any but those perfectly eradicated from weeds with wheat—he would manure as above, or a little thicker if he had it to spare, plough it up on one earth as soon as he could, and let this lay, so that he had many acres prepared in readiness. When the time came, he would go to work with all his strength, and dibble in these prepared fields up to the plough, as they came in rotation, and follow the plough close from that time. An objection by some may be raised against ploughing heavy land forward; but there can be no fear of getting it in, as old ploughed land at this season will generally bear a great deal of rain, and be the better for it. Now for the best and most economical way of planting—although on tilled land, as is not usual—*he used to dibble it in* sixteen rows on a twelve furrow stetch, leaving only sufficient room in the furrow for a very narrow double plough to strike up. All his farm laid on stetches of this size; the dibble holes were about 4 inches apart, with from 3 to 6 kernels in each. I name this number, for if he found less than 3, or more than 6, he would find *much fault* with his dibblers, and threaten to sow or drill the remainder. This used to put them much on their guard; but there is no work on the farm that requires the master's eye more than this, to see that the men make *good holes*, and that the seed is not scattered outside, which is too frequent. This not only wastes the seed, but injures the crop; it requires only 6 pecks per acre, instead of 8, which were formerly drilled. The cost price per acre is 7s—this includes beer. Now deduct for 2 pecks of seed spared, at 28s. per coomb, 3s. 6d.; this leaves 3s. 6d. The wear and tear of the drill, horses, &c., to work it, are quite equal to the other 3s. 6d.; so that, taking all things into account. I consider it the best and cheapest way to plant wheat, independent of finding good and healthy employment for our labourers and their families.

Finding it answered so well on the above lands, his clover leys he has planted latterly in the same way, but directly after the plough, and prefers it to what is called *whole setting*, as less likely to be root-fallen.

SALE OF THOROUGH-BRED HORSES AT STOCKTON.—The following are the prices obtained by Mr. Wetherell, at the sale by him, on the 30th ult., of the thorough bred and other horses, late the property of George Blakelock, Esq., deceased, of Hart:—Lot 1. Chestnut mare, Black Diamond's dam, by Catton, dam by Hambletonian, with a filly foal by Inheritor, and stinted to him again, 26*l*. 2. Fancy, by Osmond, dam lot 1, with a colt by Inheritor, and stinted to him again, 255*l*. 3. A British Yeoman (own brother to Commodore), by Liverpool, dam lot 2, 560*l*. 4. Brown colt, Temperance Tom, two years old, by Inheritor, out of Black Diamond's dam, lot 1, 200*l*. Temperance Tom is engaged in the Champagne and Two-year-old Stakes at Doncaster in 1843; and in the North Derby at Newcastle in 1844. 5. Brown filly. Miss Sheraton, two years old, by Inheritor, out of A British Yeoman's dam, lot 2, 31*l*. Miss Sheraton is engaged in the Champagne and Two-years old Stakes at Doncaster in 1843; the Leger and Parkhill Stakes at Doncaster, and the Leger and Sefton Stakes at Liverpool in 1844. 6. Bay mare, three years old, by Voltaire, dam Black Diamond's dam, lot 1, 17*l*. 7. Grey filly, two years old, by Windleston, dam by Physician, out of Black Diamond's dam, lot 1, 11*l*. 8. Chesnut horse, six years old, got by Reaper, dam Fancy, by Osmond, very powerful, goes quiet in harness, and a good hack, 31*l*. 9. Brown pony, aged, perfectly quiet, and goes in harness, 5*l*. The following horses, the property of neighbouring gentlemen, were disposed of at the same time and place:—Grey filly, one year old, by Tomboy, dam Nell, by Blacklock, 33*l*. Grey colt, rising five years old, by Volney, dam by Don Cossac, grandam by Young Highlander, g. grandam by Old Windleston, 26*l*.

THE RIGHT HON. CHARLES ARBUTHNOT'S STOCK SALE.—On Wednesday last, the sale of the Right. Hon. Charles Arbuthnot's stock took place at Woodford, near Thrapstone, by Mr. Wetherell, of Durham. The sale was attended by several hundreds of noblemen and graziers, attracted by the fame of the stock. The following list will show at what prices, and to whom the several lots were disposed of:—

Cows and Heifers.				Cows and Heifers.			
No.		yrs.	£ s.	No.		yrs.	£ s.
1.	Mr. Ladds	12	23 2	28.	Mr. St. Marie	2½	53 11
2.	Mr. Parkeson	11	36 15	29.	Mr. Smith	2½	16 16
3.	Sir G. Robinson	10	35 14	30.	Mr. Mackintosh	2	36 15
4	Mr. Mackintosh	8½	22 1	31.	Ld. Huntingfield	2	42 0
5.	Earl Spencer	8½	42 0	32.	Mr. Weston	2	27 6
6.	Mr. Stewart	8	29 8	33.	Mr. Potterton	2	17 17
7.	Mr. Burnett	8	19 19	34.	Mr. Potterton	2	18 18
8.	Mr. Parkeson	7½	37 16	35.	Mr. Inks	2	27 6
9.	Mr. St. Marie	7	30 9	36.	Ld. Huntingfield	2	47 5
10.	Mr. Wetherell	7	46 4	37.	Mr. Potterton	1½	26 5
11.	Mr. Beasley	6	17 17	38.	Mr. Strafford	1½	36 15
12.	Mr. Greetham	5	44 2	39.	Mr. C. Flesher	1½	16 16
13.	Dead.			40.	Mr. Percival	1½	12 12
14.	Ld. Southampton	4	53 11	41.	Mr. Sergeant	1½	18 18
15.	Mr. Briggs	4	25 4	42.	Mr. Potterton	1½	28 7
16.	Mr. Greetham	4	49 7	43.	Mr. C. Flesher	1½	26 5
17.	Lord Sandwich	4	54 12	44.	Mr. Potterton	1¼	28 7
18.	Captain Spencer	4	21 0	45.	Ld. Huntingfield	1	32 11
19.	Mr. St. Marie	4	43 1	46.	Mr. Potterton	¾	28 7
20.	Mr. Wetherell	3½	39 18	47.	Mr. Lovell		7 7
21.	Sir G. Robinson	3½	36 15	48.	Mr. Watson	1½ (Bulls.)	84 0
22.	Captain Spencer	3½	26 5	49.	Mr. St. Marie	1 (Bulls.)	42 0
23.	Mr. Yorke	3	18 18	50.	Mr. St. Marie	(Bulls.)	10 10
24.	Mr. St. Marie	3	31 10	51.	Mr. C. Flesher	(Bulls.)	14 14
25.	Ld. Huntingfield	3	73 10	52.	Mr. Harris	¾ (Bulls.)	13 13
26.	Mr. Moore	3	26 5				
27.	Ld. Southampt.	2½	42 0			Total	£1,642 4

ON DRAINING.

A few observations on draining, from one who in early life took the management of an estate in Stirlingshire, shortly after the parallel system of draining commenced (then called wedge draining, from the shape they were cut and the way they were covered), may not be altogether uninteresting nor unprofitable. Should the opinion of one, of upwards of twenty years' experience (some years laying more than eighty miles of drains), in the smallest degree tend to confirm any doubting drainer as to the best system, the writer's trouble would be considered well repaid. These practical hints are entirely given with the view of advancing this greatest of all agricultural improvements.

Although various persons in different parts of the kingdom had drained a spot here and there, yet in such an unsystematic way that the present parallel system could not be said to exist until it was brought into active operation by two or three extensive landed proprietors and spirited agriculturists in the county of Stirling, in 1816. These gentlemen (one of whom I had the fortune to engage with in the above capacity) commenced operations by covering their drains with a tough turf, so shaped as to firmly wedge into the drains, leaving a vacuum of about eight inches for the water to run. This method of covering with turf, although it had the complete effect of drying the ground, did not impart to the mind that idea of permanency which was necessary for the continuance of that plan of covering. A number of different ways were tried and abandoned, such as covering with turf, bricks, peat, flat-stones, wood, brushwood, and clay, called plug-drains. At last stone and tile were hit upon, which gave complete satisfaction; spreading first to the neighbouring counties, and ultimately all over the country. Although the first stone drains were laid in 1822, and at the present time are running well, I yet give a decided preference to tile, as being equally durable, if not more so, and especially in enabling the operator to get over a much larger space in a given time. I have shown the ordeal through which the Scotch drainer has passed merely to prevent those who may not yet have tried any of the above named discarded plans from splitting on the same rock, and that they may at once fix upon the most approved and universally adopted plan of tile draining. This need not lull genius to sleep, thereby preventing a better method being found than any yet adopted for getting rid of those noxious and superabundant waters which prove so good a foster-mother for rushes, and other unprofitable productions of a watery soil.

There is another error into which the English agriculturist frequently falls, that is, cross or diagonal draining, which I will venture to predict, ere a few years go round, shall have a light thrown upon it, so that none but the very obstinate will fall into the mistake; but of this I shall speak more particularly afterwards. I shall now, as briefly as I can, notice the different things connected with tile draining. I say tile draining, because I consider it the only plan advisable to follow where tiles can be got at a reasonable rate, which now in many places cannot be complained of, being manufactured at from 15s. to 17s. per thousand (some may say this is not fair to expose the trade, but I consider the subject so vitally important to the community at large, that the smallest possible profit ought to satisfy). This is a subject especially for the landowners to look to, being their own self-interesting concern, as well as a national advantage; they ought for a judicious drainage to give tile free, but if that cannot be done let them give leases, and advise two or more of their tenants to join together in erecting tile works for themselves. A small work can be put up in a substantial way, capable for the manufacturing of a hundred and twenty thousand tiles in a season, for about 50*l*.

Every means should be used for reducing the price of an article of so much importance, not only to the individuals immediately concerned, but to every one in the country. Men can now be got to undertake the manufacturing of good and well burned tiles almost any where. Tiles being procured, the next thing to be done is to go over the field that is to be drained; examine by digging a number of pits three feet deep in different parts of the field to ascertain the nature of the subsoil, whether open or a close clay; then go to the lowest part of the field, and see what level is to be had for your drains. If sufficient fall can be obtained, and your field of an open, porous nature (I here mention porous, because upon the nature of subsoil depends the depth and distance of drains), at the lower corner of the field begin cutting your main drain three feet four inches deep, along the inside furrow of the end ridge, for receiving the water of the parallel drains of the field. This drain must be laid with tile large in proportion to the quantity of water it has to receive. The drains of four or five acres are enough to run into one main drain; the quantity of ground a little depending upon the degree of fall the field may have. The greater the declivity of course the more rapid the water, consequently the fewer drains must be collected into one channel. The main drain thus formed, commence running your parallel drains straight up the furrows at equal distance from each other, of three feet deep, and thirty feet apart, if the subsoil be open, as above described. Although the depth and distance of drains cannot be so well described on paper as in the field, yet the following sketches and observations will show very nearly what would be proper in almost every case. I would observe that land which requires draining, and where no extraordinary circumstances are connected with it, the greatest distance between drains should not exceed thirty feet, and depth three feet; and the shortest distance not less than fifteen feet, with depth twenty-six inches. And for subsoils which are neither very open nor yet stubborn clay, depth and distance must be fixed upon by the drainer in nearly the following proportions: for every foot and half in breadth, above fifteen, add an inch in depth; above twenty, six. For example, suppose the subsoil to be a shade more open than the closest clay, the distance between drains would be sixteen and a half feet, and depth twenty-seven inches, and so progressing in the same proportion. This will bring you on as the subsoil gets more porous, till you arrive at the greatest distance and depth. In the following fig. 1, is a sketch of the greatest depth and distance; and fig. 2 shows the lesser depth and distance, also the direction in which the drains run. It has a farming-like appearance, and is also conducive to effectual drainage, as well as convenient for the ordinary operations of the farm, to have the land in butts or ridges (not flat) of the same size as the distance between drains, with the drain in the furrow be-

tween ridges, and the ridges with an easy round on the surface, which naturally divide the rain as it falls, sending it towards the drains.

Fig. 1.

Feet 30, depth 36 inches.

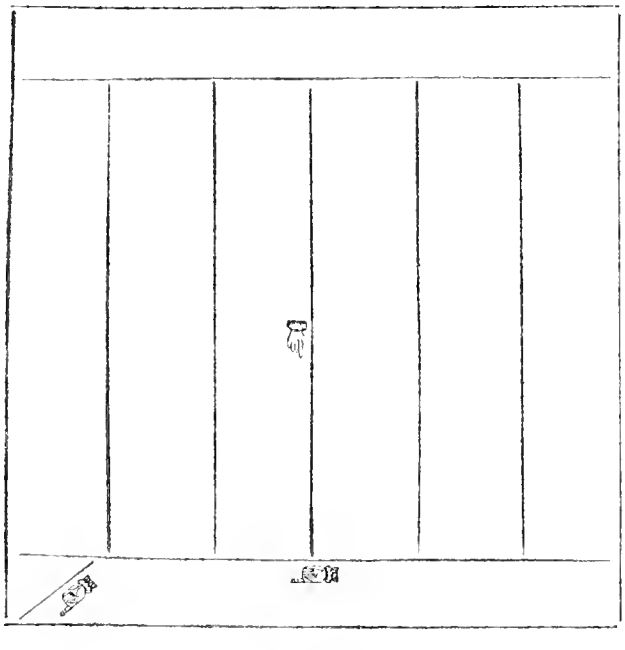
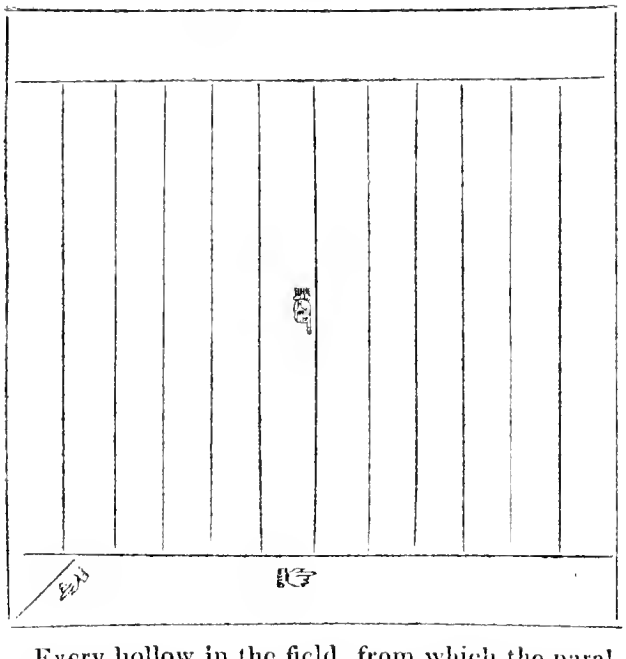


Fig. 2.

Feet 15, depth 26 inches.



Every hollow in the field, from which the parallel drains will not carry the water, must have a submain run across in the lowest part, as far as necessary for the water to find a passage down one of the common drains. A small grid on the mouth of every main drain will prevent vermin from getting into them. Where the bottom of the drains are of such a nature as to waste with the action of the water, sods must be laid under the tile; but where it is a hard clay bottom, that expense may be safely spared; small chips of any sort of wood, about six inches long, laid across below each end of the tile, answer very well in most cases.

The width of drains from top to bottom should be no more than what will allow a common spade to work freely.

The drain is now made, and tile laid; the next process is the filling, which is a subject of considerable controversy. Different people hold the various opinions of stone, gravel, sand soil, and clay, as being most proper to lay next to the tile; stone or gravel is good, but the advantage to be derived will not warrant the outlay; sand or sandy soil will not do, because the water filtering down from above the tile will carry the whole or part of that sand with it into the drain, thereby tilting the tile up, and rendering it useless.

The covering immediately over the tiles must be clay or clayey soil, or at least have as much tenacity in it as to prevent the water from running perpendicularly down upon them. If the tiles are carefully laid, and the above plan of filling the drains strictly attended to, there is no necessity for straw or other such material being laid upon them, although in no case would I sacrifice permanency to penurious economy in such a work.

I have many a time seen drains acting well, and yet the water standing in the horses' footsteps for a time above the drain. One summer's drought after draining makes the subsoil to rend into so many little fissures, that no danger is to be apprehended of the water ever losing its way horizontally to the drains, if the field be otherwise properly done. Cross subsoiling facilitates the drying of the land, but that operation ought not to be done sooner than one summer after draining, and when the land is in a dry state.

Those unwieldy teams necessary for the draught of some subsoil ploughs now in use, have hitherto been a great barrier to the extensive use of that valuable improvement in farming; now two-horse subsoil ploughs are in use, which do the work very satisfactorily. Where two horses are sufficient for subsoil or other ploughing, it is preferable, as the greater number of horses in one team the less work is done in proportion.

As to the expense of draining it is impossible to lay down any general rule, so many contingencies tending to vary the price of tile, cutting, &c. Where coals can be laid down on the spot at from 10s. to 12s. per ton, kiln-drying, spades, and other necessary apparatus in working order, as before stated, tiles can be made at from 15s. to 17s. per thousand. According to the distance of drains in Fig. 1, it will require, including tiles for main drains, 1,600, costing 1*l.* 10s., and cutting, laying the tiles, and filling in, about 1*l.* 18s. more per acre; so that where the soil and subsoil works freely with the spade, draining can be completed according to the above distance at 3*l.* 8s. per statute acre. The closer distance, as in Fig. 2, the expence of tile will be 2*l.* 17s. 6d., and labour 3*l.* 5s. 6d., making the cost per acre, 6*l.* 3s.; intermediate distances and depths in proportion, as shown in the annexed table.

Dis. in feet.	Depth in ins.	Cost of Tile.			Labour.			Total.		
		£.	s.	d.	£.	s.	d.	£.	s.	d.
30	36	1	10	0	1	18	0	3	8	0
28½	35	1	12	9	2	0	9	3	13	6
27	34	1	15	6	2	3	6	3	19	0
25½	33	1	18	3	2	6	3	4	4	6
24	32	2	1	0	2	9	0	4	10	0
22	31	2	3	9	2	11	9	4	15	6
21	30	2	6	6	2	14	6	5	1	0
19½	29	2	9	3	2	17	3	5	6	6
18	28	2	12	0	3	0	0	5	12	0
16½	27	2	14	9	3	2	9	5	17	6
15	26	2	17	6	3	5	6	6	3	0

The above prices do not include the carting of tile to the field.

Even further from a fixed rule must be the expense of stone drains, so much depending upon cartage, quarrying, and breaking. I have set the making of those drains myself, that is, cutting drains, quarrying, breaking stones, and putting them into drains at an average of twelve inches deep (ten inches at upper end and fourteen at lower end of drains) filling up, depth and distance according to Fig. 1, at under 2*l.* per acre, exclusive of cartage; but this was under very favourable circumstances, so that in general the expense of those drains will run considerably higher. The fall or level for stone drains should not be less than a foot in three hundred yards, but tile will do with a foot fall in six hundred yards. The smallest fall possible will be no sufficient excuse for neglecting tile draining where it is required.

Let the fall be ever so great, no deviation must be made from the direction of drains running up and down hill. By that plan you cut through the different strata of subsoil, thereby opening a passage for the water at a lower level into your drains, which otherwise bursts out on the face of the slopes.

In cutting drains across the hill, they may be so placed as not to touch those veins where the water flows. Supposing those water veins or layers of subsoil in which the water chiefly flows, and bursts out on the surface, to be three feet perpendicular from each other, with a stratum of clay between, the cross drains may be so cut in that clay, as neither to touch the one nor other of those water veins.

Another great evil attending cross-draining is that the water falling on the surface naturally flows all the way from the very side of the drain above till it comes to the one below; the ridges running a contrary direction to the drains, divide and throw the water into the furrows, accelerating its course, so as sometimes to force it over the top of the drains. This system not drawing the water from the centre between drains, as in the other plan, but allowing it to flow all the way from one to the other, virtually makes the distance between drains double to what it really is; even supposing cross drains were answering as well in drying the land (which is far from being the case), that of requiring nearly double the quantity of drains is enough to condemn the practice.

The advantages of a judicious and well-directed drainage are well known to most people, but as there may be some where draining has not made much progress, and who may not be fully alive to all the immediate and great advantages, it may be encouraging to tell them that I once saw a trial made on a field, summer-fallowed for wheat, the one half drained and the other half not; the field in every other respect was treated alike. The crop on the two halves of the field was carefully kept separate, thrashed, winnowed, and measured, when it was found that the drained half just yielded fourteen bushels of wheat per Scotch acre more than the undrained did. The Scotch acre is nearly a fourth part greater than the statute. I have frequently been told by the tenants when draining fallows for wheat, that "it was no use to run the drains further," pointing to the spot where to stop at, "because that part of the field is quite dry." "Very well," said I, "measure and mark the spot, that we may lengthen the drains at a future period, if necessary, when other wetter lands have been gone over." When the wheat came to be reaped, the crop upon the formerly wet—now drained—parts, showed such a superiority over that on the undrained, and formerly thought dry, that the farmers were frequently heard to say that "draining dried their wet lands, and wets their contiguous dry lands."

Another great advantage attending draining is the saving of labour. An old friend of mine when he had gone over all his lands, parted with his fifth pair of horses, and found from experience that he could work his farm as well with four pair, as he formerly did with five. My opinion is that effectual parallel drainage will save about a fifth part of horse labour.

There is also a saving of seed. In wet seasons, on wet lands, much of the seed sown, often rots before it vegetates, and a great part of the manure is lost by being buried under water, thereby preventing the flow of those gases so essential to the growth of plants.

One may glance at a few of the advantages attendant on draining, in addition to the above, such as early sowing, early reaping, and in changing the nature of the soil so much as to admit the growing of turnips and sheep on lands formerly unfit for either. Another of its great advantages is the giving employment to that spare labour so over-abundant at this time in a way beneficial to every individual in the country, either directly or indirectly. But who can tell all the advantages of an effectual parallel drainage, or describe any of them to the full extent?

In conclusion, I have no hesitation in saying, that, were all the wet lands of this country properly drained, and that improvement followed up by the necessary accompaniments of cleaning, manuring, and a proper cultivation, a third more profit would be realized from the soil, and England become a grain-exporting country for many years to come.

ON THE RELATIONSHIP BETWEEN LANDLORD AND TENANT.

A LECTURE DELIVERED TO THE MEMBERS OF THE ST. GERMAN'S FARMERS' CLUB, CORNWALL, BY MR. JOHN WILLS, OF SOUTHPETHERWYN, ON THE 10TH JUNE, 1843.

MR. PRESIDENT,—Nothing less than the importance of the subject I have now the honour to offer to your notice could induce me to stand before you in the position I now do. The relationship between landlord and tenant has for a very long period pressed itself on my attention, and from the opportunities I have had of witnessing the manner in which a large portion of land is cultivated, I feel it almost a duty as an Englishman—one who wishes to see the productive qualities of the soil brought into action on the one hand, and a fair remuneration for the outlay of capital and labour on the other—to suggest this important matter for our consideration.

I am convinced this relationship, this connection, requires only to be better understood, and the existing suspicious fear, the mistrust—in a word, all these little jealousies, would quickly pass away, and it would lead to the prosperity, comfort, and happiness—first, of the landlord, by seeing his lands respectably tenanted and cultivated on the best principle; secondly, the occupier, feeling he has an interest in the soil, is induced to expend more money in manure and labour, thereby increasing the produce; thirdly, the labourer, the smith, and the carpenter, are very materially benefited by the increased demand for labour; and lastly, the community at large partakes of the ge-

neral improvement that naturally follows this state of things, first, by the increased marketable produce of the land, and next, by enabling the working classes to go to market with money in their pockets to purchase the necessaries of life.

The interest of the owner and occupier of the soil is so mixed up, so inseparably mixed up, that all practical men most readily admit it to be one and the same thing. Whatever tends to the prosperity or adversity of the one, will surely be the fate of the other; and my object is to show you that —"United they stand, divided they fall." It is unfortunately too well known that the land of this country is heavily burdened, and its produce at this moment depreciated in value to a considerable extent. It is equally true we have seen the produce quite as low, and in some cases lower in price than at present (1822), and things have mended again; but the competition we now have, and most likely shall have, to contend with, is such as the English farmer under existing circumstances never experienced. Sir, the time is fully come that the landed interest should take this vital question into their serious consideration, and calmly devise such means as will best enable them manfully to meet, and to look the obstacles and difficulties full in the face. There is a private relationship between landlord and tenant; *here must be the remedy;* to that—turn and shift it as you will—to that they must come at last. That alone would relieve them effectually, and over that relationship no legislature can or ought to have any control.

The energy, skill, and perseverance of the British farmer, and the feelings and materials of the hearts of the owners of the soil of England, will most surely be put to the test. Now, sir, looking at this subject calmly and deliberately, as I have many a time done when walking over and valuing land, perchance I come to a field miserably cultivated, and contrasting it with another on a neighbouring farm I had just valued in a high state of cultivation, I have been forcibly struck with the almost incredible difference in the value, and that difference, too, chiefly owing to the treatment the land has received. I have thought within myself, could landowners or their agents be made sensible of this highly important matter, they would eagerly seek and quickly ascertain the cause.

There is no rule without an exception. I am not now to know, that give some men what encouragement you may, they never will—in truth, they never can—farm well, and for the best of all reasons—because they do not know how to do so. But take a general view of this question, and we shall find bad farming is occasioned by the tenure on which farms are held. Here is the rock on which I wish to rivet your attention, and which, if not removed, will wreck the stately vessel. It is well known that the great competition for land is the cause of its high market price. Men have been found to take farms almost on any terms, in order to get possession, to reduce and pillage them. Whenever land is let beyond its fair value, it will ultimately tend to the injury of the land as well as the occupier. By way of strengthening my observation, I here beg to read you a letter on this subject (viz. *Mark Lane Express*, February 27, p. 9).

That a great deal of truth is contained in this letter, no man acquainted with agriculture will deny, and the correction of the evil is worthy the attention of all good men. The rent of land should be so adapted as to give both landlord and tenant fair proportions; and to effect this requires great discrimination, foresight, and judgment, not only to fix the amount to be paid, but to draw the covenants applicable and best suited to the cultivation of the description of land in question. All practical men well know that no one mode of cultivation or rotation of cropping can be laid down for all descriptions of soils. That should ever be guided by soil, climate, localities for manure and markets. The amount of rent, the term of the lease, and mode of cropping, form a most prominent and important feature for the consideration of both landlord and tenant.

Now whether a man that has a practical knowledge of agriculture, or one that has not, is best qualified for this vital business, is a matter that has lately been ably discussed between Mr. George Webb Hall and a host of land surveyors; one party contending that it is not necessary for a valuer of land to be an occupier, or to know cultivation or practical farming, while the other says that a man that professes to know the value of land without this knowledge, might as well attempt to take the command of the channel fleet with an equal chance of success. Let this matter be as it may, I think it must be admitted that science and practice combined are more likely to come to a correct conclusion than either alone. We hear much of Scotch farmers and Scotch farming. I had the opportunity of witnessing for some years the management of a very extensive estate by a Scotch farmer, a gentleman of no small repute. His manner of cleaning and cultivating the land was highly creditable, but his management of stock was far behind the English farmer; and I feel bound to say many of our countrymen would and do farm equally well, and make far greater returns from the same estate than he did.

I am ready to confess that the English farmer may learn many useful lessons from the Scotch, and I believe the Scotch may also glean information from the English that will tend to his improvement. But that the Scotch farmer (as by some is supposed) will succeed better than an Englishman under similar circumstances remains to be proved. I here give you one instance, out of the many that might be adduced, that he will not (viz., *Mark Lane Express*, April 3rd, 1843, p. 11).

We find in this letter witnesses stating before the Agricultural Committee in 1836, that the landowners saved them (*i. e.*, the Scotch farmers) from ruin by converting money rents into corn rents. I am satisfied the day will come when this principle of fixing the rents on the arable land of England at least will have its proper weight and influence. The mode of letting farms in Scotland is worthy the attention of the landowners of England. Let them let their lands on the same principle, and they will soon find the English farmer equal in enterprise, talent, industry, and economy to our northern brethren, who are very justly held up as patterns, and their farms as examples to the united Kingdom. Nothing can be clearer than is shown in the first letter I read to you, that the indiscreet manner now in practice of letting farms, and, I may very justly add, the mode in which they are cultivated, tend to the great injury of all classes of the community; and until there is a general system of leasing land for a term of twenty-one years, and that on the right principle, too, the

land will be badly cultivated, and the farmers on the verge of poverty; for how is it possible for land to be improved, or the occupier to prosper, with short and uncertain terms?

That the distress of our country is great, poor-rates increasing, and the rate-payers worse able to pay them, is self-evident to every man acquainted with business. I am not now to know that many causes may be assigned for these evils. One cause amongst many others is the want of employment for the poor. Yet we see thousands of acres of land uncultivated, although naturally calculated to yield profitable employment to the dense masses of population starving around it. The soil offers inexhaustible resources, which, when properly appreciated and employed, must increase our wealth, our population, and physical strength. There is one great barrier that has for ages stood in the way to the improvement of land, happily now removed. I allude to the Tithe Commutation Act. In however unfavourable a light it may now to the tithe-payer appear, depend upon it, it will ultimately be of the greatest benefit—on the one hand giving to the tithe-payer the sole advantage of his skill, capital, and industry, to increase the produce of the land, and to the receiver a better security for his income; and what is very desirable, remove those little bickerings that have done so much mischief to the pastor and his flock. It will also lead to the enclosing and cultivating common or waste lands—a subject that must come home to the bosom of every man capable of reflection, when we have so many thousands of our fellow creatures starving for want of employment, and sending our money abroad for the very articles these lands would at once give us, "employment and food." It is pleasing to observe that this subject is commanding attention, and Lord Worsley will bring this matter before Parliament. His lordship is perfectly correct in saying, "Such a measure will, I think, be found advantageous to the commoners, afford additional employment to a great number of labourers, and contribute materially to the production of food for the wants of a rapidly increasing population."

I have told you that whenever land is let beyond its value, however pleasing an increased amount in the rent-roll may appear, it is sure ultimately to lead to the injury of the land as well as the occupier; while on the other hand, if let at a fair rent (which every landowner is most clearly fully entitled to receive) to an industrious man that understands his business, both owner and occupier will prosper. It may very justly be said that many such assertions are made; without proof the public is not bound to credit them. I believe all who know me will give me credit when I say I am no theorist; and I trust I shall never be so wanting in duty to myself and the public as to advance any subject that cannot be substantiated by facts. Many years ago, two farms were let in the parish in which I reside, one at an extravagantly high rent, the object of the taker being to get possession in order to rob it, well knowing that promising to pay and paying are very different things. The result was, that after accomplishing his object he cheated his landlord of one and a half year's rent and the tithe-owner of one year's tithe, and reduced the farm full thirty per cent. The other was let at a fair rent, is still farmed by the same person in a manner highly creditable to him, his rent punctually paid, and to what advantage to the owner I will clearly show by the statement I hold in my hand, which I received from the tenant himself not many days ago. This estate about two years ago was sold, and at such a price that the vendor was satisfied his estate must have been improved by the tenant; and on enquiry it was found that the tenant had expended 63*l.* in draining and other permanent improvements. Now this was a touchstone to the heart, and the effect it had on the noble-minded owner I will give you in the tenant's own words. (You will be pleased to recollect that 63*l.* is the sum expended in improvements.) He says—"In addition to which I received as a present from his lordship 50*l.* for the general improvement of the farm." This, sir, is a matter of fact; and who do you suppose this noble-minded landowner is? Why, it is no less a personage than your neighbour, your friend, and the friend of the public, the Right Honourable the Earl St. Germans, and the tenant Mr. W. H. Essery, of Southpetherwyn. Sir, if the matter were to rest here it would only affect the interest of certain individuals, but when we take into the account the immense and very serious difference in the marketable produce of the soil that would accrue from the different managements, the very well-being of society is materially affected by it. I trust this instance is sufficient to convince any unprejudiced mind that "United we stand, divided we fall." Sir, I feel that I am addressing an audience of high respectability, men of intelligence and practice; and I am fully sensible of my inability to do justice to the subject I have had the honour to introduce to your notice. I have done so with the view that it may be more ably handled. I know also that I stand almost at the door of the mansion of a nobleman well known as a large landed proprietor, and one of the best landlords in the west of England; his kindness, generosity, and the interest he and his noble house take in the welfare of all classes, but more particularly the poor, is not confined. I am proud to be enabled to bear testimony that it is sensibly felt and duly appreciated in the parish in which I reside. Looking also at the members of your club, and the extensive and really delightful district over which it extends, much useful information may naturally be expected from it. I would ask, if it is not to be gathered here, where will you find it, supported as this club is by noblemen and gentlemen of the first order, in conjunction with such numerous influential, intelligent, and practical agriculturists? I can only add that I have lived long enough to see similar societies called into existence and become extinct. To make a club of this kind really useful, every and each member must take his part. Make a long pull, a strong pull, and a pull altogether, and you are sure to accomplish the improvement of agriculture, the object I conceive you have in view.

In conclusion I would say to my brother farmers, you should go hand in hand with your landlords; meet them fairly and generously on the road of improvement, and prove yourselves worthy of having your estates at moderate rents and for long leases. This must stimulate you to increase production, which is your best and only security. If I might venture a word to the landowners, I would say, give the tenant a sort of co-partnership in the soil he cultivates, raise him in the scale of society, inspire confidence in the outlay of capital; and what is of no small consideration, by so doing you will secure the employment of an otherwise redundant population, and provide food in our own country for almost an indefinite increase of mankind.

NORTON FARMERS' CLUB.

The following paper was read by Mr. A. Wright, at a meeting of the above Society, on the 12th June, 1843.

MANURES.

The sources upon which the farmer mainly depends for his stock of manure, are the dung, litter, and refuse which is constantly accumulating in the farm yard. Our object is to increase the quantity, and at the same time to improve the quality. To do away with the necessity of purchasing, and provide at home good and appropriate tillage for our crops.

Of the ordinary management of manure in the farm-yard little need be said, excepting in the way of comparison; that it has been greatly neglected, all are aware. In alluding to the means of increasing the quantity of manure, the thing which appears to me of the first importance, is to prevent the great loss which takes place by the draining away and entire escape of the greater part of the liquid portions. To retain this is of the utmost importance, and unless it is done, at least one-half of the quantity made in the yard is lost, and that too which contains the greatest virtue—for it is now well known that animal and vegetable matter must be in a state of solution before it can act as food for the plants. It is also proved that one of the most fertilising ingredients in the shape of manure is ammonia—the nitrogen required by plants being furnished by it. The urine of animals is by far the most productive source of this ammonia which a farmer has at command; yet but little care is taken of it, and like all other liquid is allowed to run off or be exposed to the air and sun, and almost entirely dissipated by evaporation. We have lately heard a deal about the good effects of guano, but if farmers will only pay attention to their own farm-yard, the manure which they produce can never be surpassed (for general purposes) by any other. They need not look abroad for assistance. Urine contains the essential ingredients upon which guano depends for its fertilising powers. Therefore every drop ought, if possible, to be preserved—by attention to this point will soon be seen what good management could do. Every cow is said to yield more than a gallon of urine daily, each gallon containing nearly a pound of solid matter. This in the course of a year amounts to an enormous quantity, and would yield at that rate about $3\frac{1}{4}$ cwt. of solid matter of the most valuable of all known substances as manure.

The good effect of soot is chiefly dependent upon the ammonia which it contains. I have recently heard of some experiments on grass land with various sorts of manure, and that dressed with the diluted ammoniacal liquor from the gas works far surpassed any other.

From these facts will be seen the importance of preserving the urine and drainings from the yard. As the construction of tanks for the purpose may not always be practicable, or would at least be attended with considerable expense, other means may be practised. A very simple one is covering the farm yard with a layer of soil to the depth of 12 or 18 inches, in order to absorb the greater portion of the liquid. This, in all cases, and under all circumstances, I would recommend; still a considerable quantity will drain off. If practicable, a hole or pool should be dug to catch it; and when full, if not wanted for immediate use for watering grass or other crops, a heap of soil or compost should be placed close by, and the contents regularly ladled upon it. In this way a large quantity of compost of the first quality may be obtained, even excelling in efficacy the dung itself. When soil has been treated in this way it assumes a black rich appearance, and is fully saturated with nourishment. A very excellent compost for drilling with turnips or other crops can be made in this manner. By forming a heap of dry porous earth, fine ashes, saw-dust, malt coombs, pigeon and hen dung, gathered horse-manure, and similar substances, and frequently turning over so as to get well mixed. After it has been two or three times well saturated with urine, and the contents of the tank, allow it to remain in a dry shady place. The whole becomes sufficiently heated and pulverised to permit of riddling and readily passing through the drill. As urine so soon decomposes in warm weather, and as the active principle, the ammonia escapes, it will be necessary to prevent this as much as possible. Pitching upon a place as little exposed to the sun as may be, and keeping the tank or pool covered, will, in some measure, prevent it; but to do it effectually, a small quantity of sulphuric acid should occasionally be thrown in, in order to fix the ammonia. Gypsum has been recommended for this purpose, as well as some other salts; but the oil of vitriol would not only be the cheapest, but the most effectual. The time and frequency of applying it to be guided by the escape of ammoniacal vapour, which the sense of smelling will at all times detect.

Another means of augmenting the quantity of manure most considerably, is the keeping up horses and cattle during the summer months, instead of turning them out to graze. This system ought to be adopted by all, for their dung being dropped in the field, and exposed to the drying and exhausting influence of the sun and air, yields but comparatively little benefit to the soil. When they are kept up and fed on green meat, this loss is not only avoided, but a very large heap of manure is the consequence. Every farmer consulting his own interest, will at once put this practice into operation, as it is one of the essentials of good management. To still further carry out this object, care should be taken of all sorts of rubbish, likely, by its decomposition, to become food for future plants. If the whole of the twitch, ketlocks, thistles, and other weeds which are annually destroyed were collected into a heap, instead of being thrown into the hedge bottom together with stubble and the cleansing of fallows, a great many loads of manure would be obtained. In fact, everything in the shape of vegetable matter ought to be made available. Care, however, must be taken to collect the weeds before the seed has arrived at anything like perfection, otherwise the probability is that many would germinate when again spread upon the land. Mixing salt and quick lime with the heap is said to destroy all power of vegetation in the various noxious seeds. During the formation of a heap of manure in the farm yard, care should always be taken to mix the cow and other dung with that from the stable; for if it be not done so, the heat engendered in the latter is so great, and the decomposition so entire, that some portions become almost valueless, and it assumes a dry mouldy appearance, which, by this precaution, is prevented. Where cows are not kept, water, or some liquid, occasionally thrown on the heap will have a good effect.

In making dung heaps in the field, the same attention should be paid to it as in the yard. Let no

drainage take place; for this purpose you should again place a layer of soil in order to absorb any liquid which may form. We, however, ought not to be satisfied with merely catching the drainage. In the decomposition of manure, particularly in warm weather, excessive evaporation takes place from the surface of the heap. Clouds of vapour may be perceived flying off, and reducing not only the bulk, but the value of the manure. By coating the top and sides with earth, in order to absorb the vapour, will greatly aid in the increase of the general stock of manure. Before being used, the whole should be turned over once or twice, and well mixed, and a heap of well-rotted manure will be obtained, adopted for general agricultural purposes. In forming a heap of manure, attention should be paid to the degree of lightness or firmness with which it is put together. The lighter it is the more speedy is the decomposition, and the reverse. If it will not be required for use for a considerable time, treading or even carting upon the heap may be required to prevent the too rapid decay and loss. At all times particular attention must be paid to prevent drainage and evaporation.

By this plan of managing the manure, another object may at the same time be gradually carried out, viz., the gradual alteration and improvement of the character of the soil. The land of this district is for the most part of a stiff retentive nature —clay preponderates; the moisture is not only retained on its surface, but within its texture, and the draining acts but imperfectly—circumstances which not only affect the produce, but the very climate. By forming the layers placed in the farm-yard, and under the dung heap of some light and porous earth, such as road scrapings, sand, ashes, and similar materials, the clay will at each dressing become more porous and less retentive of moisture, and could it be fully carried out would eventually be converted into as good land as could be wished for. By adopting this system of management, rest assured the necessity of purchasing manure will be done away with. Not only will your land get more than under the present circumstances it does, but it will be of a far better quality. Not only will better crops be the result, but an immense expense will be annually saved.

THOUGHTS ON DRAINING.

BY MR. THOMAS DODS.

(Read at the last Meeting of the Swansea Farmers' Club.)

The good effects on vegetation of thorough draining, followed up by deep ploughing, to the full extent of the Deanston system, can hardly be over-rated. Tracts of land, accounted comparatively worthless, and rented accordingly, have thereby been put in train to contend in productiveness with others, classed among the best in the kingdom. Whether the improvement repays the cost of effecting it or not, is a further and distinct enquiry. Undoubtedly it has been found to do so in numerous instances; in times, however, when the profit of farming was not quite so low as it is at this moment, and in places where other improvements connected with the advancement of agriculture, had prepared the way for enjoying the full benefit of this. It is unnecessary for the present purpose to pursue the enquiry, as, admitting the ultimate reimbursement to be certain, it is still beyond probability that a practice which requires the outlay of 5*l*., 7*l*., or 10*l*., on an acre of land, preparatory only to the further ordinary expenses of cultivation, will be extensively adopted in the western parts of Glamorganshire. The occupiers of land in this neighbourhood in general have not the power, if they had the inclination, to make so great a present sacrifice for the sake of future profit. And, yet, as is known by every one, there is neither comfort nor advantage in attempting to cultivate wet, undrained land. Manure is thrown away upon it: when under the plough, its produce is scanty, precarious, and of inferior quality; when in grass, the herbage is, at best, coarse and unwholesome. It is much to be wished, that the cheap and easy methods which occasionally offer for removing superfluous water, were oftener used. A large piece of ground is sometimes rendered swampy by water from a single spring,—a single cut, well directed, might carry off the whole of this; instead of being expensive to fill, the trench might often be found a convenient receptacle for stones turned up by the plough along its side, or already piled in heaps over the surface of an adjoining good field; the surface stones of our fields, rounded as they are by the action of the elements, are fit to be tossed into a drain without breaking, and almost without selection; there is no fear of their leaving an insufficient water-way, even if they approach to the size of a man's head, provided the width of the cut at bottom is proportional, and at a certain depth it is less laborious to make a wide cut than a narrow one. With a little attention to placing a few smaller stones over the larger ones, so as to make the top somewhat even, and especially to covering the stones with a firm and close sod, the performance of such a drain might be depended upon. But this, it may be said, is partial and improper draining. It is so in extent, but not in effect. To draw off a portion of injurious water from a spot of ground, leaving enough behind to chill and starve the roots of plants, is imperfect draining in the true sense—it is an idle waste of time and labour; but, if one acre of land be fairly dried, the benefit is real, and ought not to be despised, because it does not extend to another acre adjoining. The improvement is complete, as far as it goes. Where stones cannot be procured easily, brushwood perhaps, from an over-hanging hedge, might be substituted. This mode of filling drains has been objected to, as not lasting. The point is doubtful. But too much consequence may be attached to the permanency of a drain. Drains and manure are employed with the same intention, to increase the produce of the land. The longer their effect lasts, without repetition, the better: but from necessity we manure again and again. Where marl is not to be obtained, lime is used; in default of lime we use ashes, though their effect may pass away in the second year. On the same principle it does not appear that, when perpetual drains are not within our reach, we ought to decline the employment of simple and cheap ones, because they may require to be replaced or removed at the end of five or ten years. It is the saying of an old practical agriculturist (Kent), that when improvements on arable land pay a crown, improvements on grass land pay a guinea. This probably holds good in draining. When the surface of a meadow or pasture is composed of a thin stratum of peat,

resting upon clay, the shoulder drain, a channel being cut in the clay and covered by the inverted surface sod, is of the easiest construction, and without any filling, will probably carry off water for an unlimited time; when the stratum of peat is thicker, a narrow cut is easily made in it, to be filled for two feet from the bottom with faggots of brushwood. The wedge drain, the easiest of all, will not be found entirely inefficient, and it has the advantage of being firm, without present injury to the surface of the ground. A shallow open cut with the spade, or even a furrow made by the plough, might occasionally be of some service. All these, and other methods with the same object, are universally known, and yet much neglected; partly, perhaps, because they are so well known. A novel scheme, if it were possible to devise one, would have the best chance to be tried. But insensibility to the pernicious effects of superabundant stagnant water is the root of the evil. No farmer is unacquainted with the advantage of laying his wheat land dry, by surface furrows; yet a writer of repute (Brown) has said, that it is possible to determine at a glance whether the general management of a farm is good or bad, by looking at the wheat head-land furrows; an observation which marks at once the importance of attending to this species of draining; and how often it is neglected. Every wet land farmer knows that it is for his interest to keep the existing water courses on his land open, even if he does not make new ones; yet, who can walk through the fields round Llangevelach, without seeing ditches choked up, and feeling the water that ought to be carried off by them, springing from the ground under his tread? Whenever the library of the Swansea Farmers' Club is formed, it will be easy to furnish references to detailed instructions for every species of draining, and to whatever can be said in the way of incentive to the general practice, or of advice as to the particular plan to be adopted.—*Abergelly, July 7*, 1843.

WHITFIELD EXAMPLE FARM.

Most of our readers are aware that the Earl of Ducie, in the year 1839, placed a farm of two hundred and thirty-two acres, called "Whitfield Farm," situate in Gloucestershire, under the superintendence of Mr. John Morton, to be cultivated as an example farm. This farm was covered with timber and unnecessary hedge-rows, required draining, and other improvements, involving a considerable outlay, but was believed to be capable of making a profitable return for a judicious outlay. The rent paid by the last tenant was two hundred pounds per annum. A farm in such a condition would necessarily require some time before it could be brought into a regular course of cropping. The alterations and improvements proceeded with such rapidity, that Mr. Morton published a report at the end of the year eighteen-hundred and forty-one, giving an account of the mode of procedure, the proposed system of cultivation, the outlay, and the probable returns. The expenditure appeared startling to many practical farmers, and gave rise to a repetition of the common remark when a considerable outlay is made,—"Ah, my Lord has plenty of money," inferring that he Earl Ducie could afford to throw his money away. Now, the sole object of the Earl of Ducie in establishing an example farm, was to shew, by admitting farmers at all times to view the farm, and by keeping the books open for inspection, to prove by the balance sheet, that land, properly cultivated, would make a profitable return for a much larger outlay of capital than is usually expended. The doubts thus entertained, rendered all those who took an interest in the subject anxious for the appearance of the report for the second year, eighteen-hundred and forty-two. This report has been published by Mr. Morton, together with a fourth edition of his work on soils. We cannot here go into any statement which will render a perusal of the report itself unnecessary, and we therefore strongly recommend our readers to possess themselves of it. There are, however, some very interesting facts, to which Mr. Morton bears testimony, and which we cannot pass by, as the notice of them may induce a desire in our readers to examine the report with a practical eye. It appears that, up to July 1842, upwards of one thousand landlords and farmers had visited the farm, the majority of whom came from within twenty miles of the farm. This fact evinces a laudable spirit of enquiry, which, if once aroused, will not fail to profit from seeing improvements, if such exist.

The results appear to be, that many new and improved agricultural implements are now used by the farmers in the surrounding district. The ridge system in the cultivation of Swedes and turnips, and the tying oats and barley in sheaves, have become more general and that many mere TENANTS-AT-WILL are so satisfied of the beneficial results of DRAINING, as to undertake it at their own cost. The benefit of leases both to landlord and tenant, will be seen from the following statement:—"A farm of four hundred acres lately purchased by Lord Ducie, which is now much in the same state as that in which 'Whitfield Farm' originally was, has been let for twenty years, to a tenant who enters upon it at the rental on which the purchase-money was calculated, and who becomes bound to farm it upon the alternate system of cultivation, and undertakes, in consideration of the length of lease, all the expences of its drainage, roads, and the other branches of its permanent improvement." We are glad to see that a judicious relaxation of the stringent rules as to cropping usually insisted upon is adopted. Mr. M. says—"The farmer is bound down only to the alternate system, and with regard to the corn crop, it is left to his own judgment whether he shall take a crop of wheat every alternate year, or whether he shall vary this by an occasional crop of oats, or beans, or barley in its place." The FARMING CAPITAL employed is 4069*l*. The result is thus stated in Mr. Morton's own language:—"It appears from the foregoing statement of accounts, that at the end of the third year after the commencement of operations on this farm, the returns from it are sufficient to pay the rent, which indemnifies the landlord for his portion of the outlay upon it, and are also sufficient to make good all losses sustained by stock subject to tear and wear; and that, besides all this, there

appears a profit of 161*l.* 16s. 3½d., besides the interest then due, at 10 per cent., on all money spent by the farmer in its cultivation." We shall be anxious to see the report for the year ending the 25th of March, 1843, as, from the accuracy with which the accounts appear to be kept, the effect of the reduced prices of last year will be seen. Mr. M. states that an old arable field produced, in 1841, of Sherriff's wheat, forty-five bushels per acre: forty other acres, in ten acre fields, varied from forty-one to forty-six bushels per acre. The root crops averaged about twenty-three tons of clean roots per acre. We trust we have said enough to induce our readers to obtain and carefully peruse the report, and, if possible, to visit "Whitfield Farm," and examine it. We will promise them every explanation and information from Mr. Morton or his representative.

We cannot refrain from quoting the following extract from Mr. Morton's report:—"Government should give the same impartial protection to the agricultural community which it gives to the manufacturing and commercial interests; and the taxes, both parochial and parliamentary, on the capital employed in agriculture, should be after the same rate as those on capital employed either in trade, manufactures, commerce, or government security. Those, too, that are now called money capitalists—a new branch of society, sprung up since land, parochial, and commercial taxes were enacted—should also be taxed in the same ratio as any other class of the community."—*Mark Lane Express.*

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I read with much pleasure the judicious remarks in your paper of Monday last, respecting the example farm of Lord Ducie. I had lately the pleasure of personally inspecting that farm, and in common with the majority of those who visit it was much pleased with the result of my visit. Although the system of farming established there, presents little that is new to a native of those districts where the alternate system of husbandry is practiced, such as the Lothians of Scotland; yet in the details of practice, the management of Mr. Morton differs considerably from that of most farmers where the alternate system is pursued. Amid much that is deserving of the highest commendation, Mr. Morton's method of managing his liquid manure appears to me to be deserving of especial praise. The whole of the animal urine and drainage of the yards, is collected into two cesspools, which communicate with each other, and from one of these the liquid is pumped upon heaps of compost, composed of alternate strata of earth and dung. Judging of the results of this system, as exhibited in the condition of Mr. Morton's crops, as well as from my own experience, I am satisfied that this is the most economical, as well as the most judicious method of applying this substance, as where it is applied as a watering to the surface of land in grass or other crop, much of it finds its way into the atmosphere; whereas, when applied to heaps of the description mentioned, the whole solid matter suspended in the water is retained, and that held in a state of solution being absorbed by the heap, is rendered entirely available for the purposes of vegetation. Generally I believe throughout England and Scotland, the liquid manure is by no means treated with that attention it deserves; and this perhaps is one point in the practice of the farmers of both countries which merits particular censure, and in which the practice of Mr. Morton presents them with an example in the management of this substance, they would do well to imitate. An inspection of the farm buildings of Whitfield farm will well repay the trouble, and many good hints may be gathered therefrom respecting the general economy and convenience of such erections. But while thus concurring with you respecting the judicious character of the general management of Whitfield farm, I cannot regard Lord Ducie's management of his sheep stock in the same light. The system of house-feeding sheep established at Whitfield, appears to me, and is generally regarded, as opposed to the native habits of the animal; and however well it may answer to have sheep-stock provided with shelter, in the severe weather of a stormy climate, they ought universally to be kept in the open fields, and allowed to roam in search of their food unmolested and at pleasure. And when I contrasted the appearance of the animals indoors with those in the fields at the date of my visit, I came unhesitatingly to the conclusion, that the stock in the fields were in their natural and most healthful condition, and to all appearance in that situation best fitted to promote their welfare.

A farm belonging to Lord Ducie, in the immediate vicinity of his example farm, and recently taken on lease by Mr. P. Shirriff, from East Lothian, is equally deserving of a visit. The crops of oats, tares, and turnips, on this farm, are a source of wonder to all who behold them; and when I state that the plants in all the oat fields average seven feet in height, and are calculated to yield at the rate of twelve quarters per acre, the wonder of those who inspect them will appear well founded. The tare grown by Mr. Shirriff is one of his own propagation, and is distinguished by white flowers, while the tare in common cultivation is characterised by blossoms of a purple hue. Some of these tares I found five feet in length, and this I consider not above the average length of the crop. Upon Mr. Morton's farm the ploughmen, implements, and horses, are all from Scotland, and the same is the case on the farm of Mr. Shirriff; the ploughmen I leave to the care of the "lasses" in their vicinity, and I may say with reference to the horses and implements, that they are as well deserving of inspection as any other department of the two farms.

I am, your most obedient servant,

HEADLAND.

THE PORK TRADE OF CINCINNATI.

The history of the pork business in this city is interesting, when one contemplates its present magnitude. Twenty years since, we are told, it was so insignificant that no one house was engaged in it exclusively, and the whole number of hogs then cut in one season did not exceed 10,000. At that period, the hogs were killed (as isolated farmers now kill them in the country) out of doors, and then hung upon a pole. The butchers charged the farmer 12½ to 20 cents per head for killing them, and

the offal as at present. From this insignificant beginning the business has increased, so that the number of hogs killed this year will probably reach 250,000, and the butchers now frequently pay 10 to 25 cents premium per head for the *privilege* of killing them. And instead of a few houses incidentally engaged in the business a part of the year, there are now 26 pork houses exclusively engaged in it, and which use a capital of nearly two millions of dollars, which, by the way, has been mostly foreign this season, owing to the disasters of the last three years.

The district of country in the West devoted to the raising of pork as an article of commerce, includes Ohio, Kentucky, Indiana, Illinois, Missouri, Iowa, and a part of Tennessee; but the bulk of the business is done within a circle of 300 miles in diameter, with Cincinnati as its centre, including the contiguous parts of Ohio, Kentucky, and Indiana. Hogs are, however, frequently driven to this market from a distance of 200 miles, as notwithstanding large numbers are killed at various places in the Wabash and Miami valleys, at Madison, Ia., Portsmouth, Chillicothe, &c., this business will concentrate in the largest cities, where labour, salt, barrels, and other facilities are naturally most abundant. In a populous city, also, the steaks, spare-ribs, &c., not used in packing, can always be disposed of for cash, without loss; and in this city, also, if anywhere in the West, active cash capital is always found.

In the above district the number of hogs prepared for market this season will not fall short of 500,000 (and this is not a larger number than usual), besides the vast amount detained for domestic consumption. Of this number 250,000 are probably packed in Cincinnati, 150,000 more will probably come here for a market or re-shipment, and 100,000 more may be set down as the estimate for those that will be shipped from various other towns on the river, without being landed here. Of the above number 75,000 are raised in the Wabash Valley alone.

Our hogs are fed on corn exclusively. They are never "fed on *mutton*," as an English nobleman lately stated at an agricultural fair. The stock is well crossed with imported animals from Europe, of the various Chinese, Irish, English, and Russian breeds, and is probably exceeded by none in the United States. Hogs have been raised here weighing over 1200lbs., but the average weight runs from 200 to 250 pounds—the latter size being the most desirable.

In Kentucky, the drovers frequently buy the hogs alive of the farmers by gross weight, as is sometimes the case in Ohio and Indiana. But generally the farmers club together (each one having his hogs marked) and drive them to market themselves in droves of 500 to 1,000, and seldom less than 500, except in the immediate vicinity of the city. During the first day or two, the hogs cannot well travel more than four to six miles; but after that they travel eight and sometimes ten miles per day, depending upon the condition of the roads. The Yorkshire are said to be the best travellers.

Having reached some of the extensive slaughtering establishments in the neighbourhood of the city, a bargain is made with the butchers to kill and dress them, which is done for their offal, and the hogs after being dressed are also carried to town at the expense of the butcher. But as we have described all the minutiæ of this part of the business in the *Gazette* of the 3rd inst., we here omit it.

The hog is bought by the pork packer, completely dressed by the butcher, and delivered at the pork house. The first thing is to weigh him. He is then passed to a block eight feet long, four feet wide, and two feet high from the floor, at which two cutters stand, one on each side of the block, and each armed with an exceedingly sharp cleaver, about two feet long and six inches wide. Two other men pass up the hog on to the block, placing him upon his side. One cutter cuts off the head, the other the hams, each at a single stroke. The hams are passed to the ham-trimmer at an adjacent table, who trims them ready for salting. The head is sometimes sold to the soap boiler, in which case it is thrown into a heap near the door to be handy for him—at other times it is used in making prime pork, and it is then passed to a hand to split, clean, and wash, ready for the packer. The sides and shoulders, still left on the block, are split in two lengthwise of the hog through the centre of the backbone. The leaf lard is then trimmed out—the shoulder cut from the side, and passed into the cellar to be cured in bulk in dry salt. The side, if from a heavy fat hog, is split each side into four parts lengthwise with the rib, the pieces or strips thus cut being about six inches wide and 22 long. The thickest strips of the sides have the butt end of the rib and back-bone taken out, and made into clear pork; the lighter, thinner sides are sometimes cut up for prime pork or thin mess, but are most commonly cured with the shoulders, and made into bacon. The usual day's work for a set of 50 hands is to cut up in the above manner 500 hogs on one block, but 800 have been cut up on one block at Duffield's pork-house, equal, of course, to 1,600 on two blocks, which can be cut in one day of 12 working hours; and in fact three hogs have been cut up in one minute.

Such is the system and expedition observed in the more extensive pork-houses, that 500 hogs received into the pork-house one day are all ready for shipping the next day (within 24 hours), including the weighing, cutting, packing, rendering the lard, and branding, and all in as neat, clean, handsome style, as is done any where in the world. This has been done in Cincinnati.

The different grades of barrelled or pickled pork known to the trade, and to the inspection laws, are —first in order and quality, clear pork, mess, prime, chine (or rump, it being only one end of the chine), and joles. As to the minutiæ of these different sorts of pork, we are not familiar enough with the business to give them; besides, it might be prying too much into the secrets of the trade to inquire. We can, in general terms, however, say that the barrel pork packed by our Cincinnati packer will compare with the best packed in the United States, as to quality, weight, sufficiency of salt and cooperage, and for keeping almost any length of time—not excepting the Irish pork.

The mode of rendering lard is very simple, the leaf and trimmings being merely cut up with cleavers into pieces two inches square, and thrown into large iron kettles, of 100 gallons each. After it has cooked about three hours, it is strained, and pumped up into coolers of 300 to 400 gallons, cooled to about 100 degrees Fahrenheit, and then drawn into kegs or barrels as wanted.

Most of our large pork-houses are capable of disposing of 1,000 hogs per day (although they seldom desire so many), employing for that purpose about 75 hands at an average of about 100 dollars per day. Some houses have cut and packed this season over 20,000 hogs.—*Cincinnati Gazette.*

REVIEWS.

THE IMPLEMENTS OF AGRICULTURE.

By J. Allen Ransome.

1843: J. Ridgway: 8vo. p.p. 272.

The volume before us is one which by its very appearance will serve to mark for the future historian of agriculture, a period of no little importance in its history. For such an annalist may have to remark, when speaking of our days, that it was only now that the implements of agriculture began to obtain that general attention which their importance demanded; then it was that appeared the first work exclusively devoted to the subject, in all its various branches—a work which abounding in useful, practical matter, full of the most accurate engravings, comprehended not only an intelligible account of all that had hitherto been done for the tools of agriculture, but contained many suggestions for their further improvement.

The work is sure to find its way into the farmer's library;—we commend it warmly to his early perusal. It is a work however not easily quotable to any extent in this place, from its constant reference to the engravings, without which it would be hardly understood; we shall give therefore merely its opening section—that too describes the plan of the work, and what its author has done so well we need not attempt to give in any other language.

"The implements which mankind have employed in the cultivation of the earth, and their gradual improvement, is a theme closely interwoven with the history of agriculture.

"In tracing the gradual progress of farming implements towards their present state of perfection, it will be readily perceived how steadily, in all ages and countries, they have improved as agriculture has advanced, and how stationary they have ever remained in those countries where the science of agriculture is neglected. It would even seem that there is an intimate connexion between the establishment of freedom of thought and of action, and the progress of agricultural arts and agricultural life—of all modes of life the most conducive to health, to virtue, and to enjoyment. The cultivation of the soil necessarily requires the construction of implements for the purpose; and it is gratifying to observe the progress which has been made in them in Holland, in America, and in England, and contrast the beautiful and labour-lessening implements of agriculture which these free countries possess, with those of the cultivators of Spain, of Portugal, and of Russia, or of the more degraded slaves and ryotts of the countries of the East, such as those of Palestine, and of the banks of the Ganges. These, it is more than probable, have remained unaltered, without any successful attempt at improvement, for two thousand years. Thus we find that the Israelites, instead of employing in their warm climate a thrashing machine, or even a flail, to thrash out their corn, were accustomed to turn their oxen on to the barn floor to slowly tread out the seed. And this rude mode is still the custom in Syria, and even in Portugal; and 'the Moors and Arabs' says Dr. Shaw, in his Travels in Palestine, 'still continue to tread out their corn in this way.' 'In no parts of Hindostan,' observes G. W. Johnson, in his excellent Essay upon the Agriculture of India, 'is the crop stacked for any time after reaping; barns are unknown; thrashing immediately succeeds the cutting of the crop. This operation is generally performed by five or six oxen, upon one of which a driver is seated, traveling abreast around a post placed in the centre of the floor. The Hindoo sacred laws expressly forbid the animals being muzzled while thus employed, but in a bad season the ryot is compelled to limit this privilege of his four-footed servant. The thrashing floor is merely a space in the field which has been levelled and beaten hard for the purpose. In Mysore the thrashing floor is made of a compound of clay, cow-dung, and water, spread over the ground, and made smooth. Some of the smaller seeds are beaten out by means of bamboo rods, but anything resembling the British flail is unknown.'

"And, in accordance with this neglect of labour-lessening implements, scarcely any expedients beyond the most primitive appear to have been adopted in the cultivation of the earth. Thus we find the prophet Isaiah declaring (xxxii. 20), 'Blessed are they that sow beside still waters, that send forth thither the feet of the ox and the ass.' Sir John Chardin, and others, have described an indolent practice still prevalent in the Oriental countries, which explains this expression of the prophet. It seems that in planting rice, which is a crop that only flourishes in wet swampy grounds by the banks of rivers, while the earth is yet covered with water they cause it to be trodden by oxen, asses, &c., and that, after the upper portion of the ground has been thus imperfectly disturbed, they sprinkle the rice on the surface of the water.*

"And if the ground is thus rudely prepared to receive the seed by the action of the feet of cattle, in a manner equally imperfect is the seed covered with the earth by these untutored cultivators. The English farmer must not expect to find in these ill-farmed and unenlightened countries any instruments even remotely resembling the compact and powerful harrows of this country; instead of these, the branch of a tree, or a few logs of wood fastened coarsely together, and dragged slowly over the surface of the very thinly and partially disturbed soil by oxen, are the only means employed to cover the seed. These instruments are thus described by G. W. Johnson: 'When the plough has done its utmost on the stiff soils of Bengal, they still remain cloddy, and unfit to be seed beds. To remedy this a still more imperfect implement than the Indian plough is employed, which is intended to produce the combined effects of the roller and the harrow. This is nothing more in form than an English ladder made of bamboo, about eighteen feet long, drawn by four bullocks, and guided by two men, who, to increase its power, stand upon it as they direct and urge on the cattle. Again and again has it to pass over the same surface, and then, as in the case of their plough, it causes a great expense of time and labour without any commensurate effect. The Indian ryotts show their consciousness of the reason that the operation of pulverizing and levelling is beneficial by calling it, *Rasbandham*, that is, *the confining of the moisture.*'"—*Asiatic Res.*, vol. x. p. 4.

"And, in countries somewhat more civilized, the construction of agricultural implements has hardly progressed more rapidly than in the East, for even

* And everything relating to the preparation of the ground for the growth of corn, or its after preparation for food, appears to have been in keeping. The Israelites had formerly only hand-mills to grind their corn, and these were commonly worked by female slaves.—Exodus ii. 5; Judges vi. 21; Isaiah xlvii. 1, 2; Matt. xxiv. 41.

in many parts of Europe they still use ploughs of the heaviest and most ill-constructed character. Their teams, too, are equally neglected; horses, cows, asses, and even goats, are harnessed together in a most wretched manner, as was the custom, it would appear, in very primitive times in Palestine. 'Thou shalt not plough with an ox and an ass together.' The German farmers still use, instead of a plough, an instrument called a haken, which is exactly similar to one used by the Roman farmers. Their harrows have commonly only wooden teeth, and are worked with five horses in a very bungling manner. (*Johnson's Farm Encyclopædia*, p. 559). And still farther north, the Muscovite harrows are formed even in a ruder way, by merely fastening together the branches of the fir tree, whose projecting, partially-trimmed spurs form the teeth, while the implement they use for a plough is little more than a shapeless bundle of sticks tied together with tarred rope.

"As long, in fact, as men continued to till the earth as slaves, sowing a crop they were not sure of reaping, degraded in spirit, and totally uneducated, it was in vain to expect superior implements of any kind, or any efforts, however slight, towards the improvement of agriculture. In our own island, for instance, ploughs were, during the early and dark ages of its history, rudely constructed, intolerably heavy, and of all kinds of shapes—a result which might have been reasonably anticipated, for by an old British law every ploughman was required to make his own plough. The harrows and other agricultural implements were equally ill-shaped. Drills were utterly unknown until about the sixteenth century. And when, about the year 1730, the celebrated Jethro Tull endeavoured to banish the flail from the barn, his neighbours loaded him with execrations. The tradition of the neighbourhood of Prosperous Farm, near Hungerford, which Tull cultivated, still is, that he was "wicked enough to construct a machine which, by working a set of sticks, beat out the corn without manual labour." This is the first traditionary notice of a thrashing machine with which I am acquainted. Jethro Tull, indeed, must ever be regarded as one of the earliest improvers of English agricultural implements; his ploughs, his horse-hoes, and his ingenious attempts to construct a drill machine, evince a spirit of enquiry and an advance in agricultural mechanics which betoken at once his ability and his enthusiasm. He was far, indeed, before the general agricultural knowledge of his age; and if he did now and then suffer his enthusiasm to carry him too far in the conclusions at which he arrived, still the very effort to improve in such hands was sure to be attended with a measure of success; for while his exertions produced immediate good fruits, they also widely diffused a very general and well-founded suspicion that the implements of that age were not so perfect as they might be made. This led to considerable improvements, and prepared the way for still more important efforts by the next generation of implement makers, to whose merits I hope to do justice when treating of their several improvements in the implements of agriculture; and in the following essay I shall adopt what may perhaps be fairly regarded as the natural course, beginning with the implements necessary for the preparation of the ground for the reception of the seed; then examining those adapted for the committal of that seed to the soil, for covering it with earth; for cleansing the land as the crop proceeds towards maturity; for gathering it in when ripe; and finally for thrashing out the seed and dressing or preparing it for market."

SUGGESTIONS FOR THE MORE GENERAL EXTENSION OF LAND DRAINING, BY THE JUDICIOUS AND EQUITABLE APPLICATION OF COLLECTIVE CAPITAL.

By John Henry Charnock.

While at the late show at Doncaster, our attention was more particularly drawn than it previously had been to the above pamphlet, and the objects which it embraces; and we beg to bring it before our agricultural readers, as a subject which has the highest possible claim upon their serious notice: of its importance there can be but one opinion. Of the necessity that exists for more decided and vigorous steps than any which have yet been adopted, in order to quicken the progress of the great work which we are considering, those persons will be most strongly convinced who are the unfortunate holders of *heavy undrained farms*. To such persons the late wet seasons will have told a fearful tale; and we are much mistaken if the time be not at hand when their *landlords* will be fully convinced that the recent changes in the laws which gave protection to home produce have imposed upon *themselves* the duty of draining every acre of their land which requires it. To suppose for one moment that the farmer of *wet* land can grow corn to meet the reduced prices at which it must inevitably sell—for some years, at least—even with the *protection (!)* that is still afforded him, is to suppose an impossibility: it necessarily follows, therefore, that either the land must be drained, or, after ruining the occupier, it must go out of cultivation. It is also clear that, except he have a long lease, *the occupier cannot drain his land*. We say again, then, that the landlord is bound, by everything short of legal obligation, to drain *thoroughly* all such land as that of which we are now speaking—we mean *very wet* land, whether such wetness arise from water which falls upon the land, or that which is often more difficult to catch, and which has its source hidden and shrouded in all the mysteries of ever-varying geological strata.

A difficulty has often been felt by the life-holders of entailed estates, in finding *the means* for draining them.

It is not for us to do more than just hint that this difficulty is, in many cases, more imaginary than real. We might mention several ways which would not involve *much self-denial* on the part of the owners of property, by which the great work of draining their land might be effected; but we forbear, rather choosing that they themselves shall spontaneously adopt them, in doing which they will only be following the bright example of some eminently *noble* men whom we could mention. But there is one way by which a great deal may be done, even upon such estates as are both encumbered and only held for life, and that is by the landlord *granting a lease upon equitable terms*. It is indeed our opinion that *all* farms ought to be held on lease, whether we consider the interest of the landlord, the tenant, or the consumer; and we trust the time is not distant when such will be the case.

We are wandering, however, from the pamphlet. Mr. Charnock's plan affords the means of meeting *every* difficulty; and we sincerely hope that *he* will

meet with encouragement to the fullest extent of his wishes. We were glad to hear that the project excited a great deal of interest during the show, and that the Committee-room was visited, and the plan and the tiles of the projectors were examined by the leading agriculturists who were in Doncaster, including Lords Fitzwilliam, Zetland, and Milton, Mr. Pusey, Sir W. B. Cooke, Sir R. Frankland, &c.

Our space will not permit us to go at large into the detail of the plan by which Mr. Charnock, and those who are associated with him, in this spirited attempt, propose to drain the estates of such gentlemen as may be inclined to avail themselves of their assistance; but the following are some of the principal points. They propose to subscribe, as fast as it is needed, a capital of £500,000 in shares of £25 each, the management, meetings, offices, interest on shares, general settlement, and "balancing of accounts," are details in the plan which appear to have been very well considered, and fully prove that the matter is in the hands of men of business.

The objects of the association are the following, viz.—1st. To provide the requisite amount for either owner or occupier, or the two conjointly, to thorough-drain their land, repaying the same with interest by half-yearly instalments during a series of years (to be fixed), either at an agreed rate per cent., or by a certain charge per acre, to be determined by competent parties, in proportion to the benefit the land has derived from the work.

2nd.—To make tiles on the most approved plan, and in the cheapest and most convenient localities, so as to supply them at the lowest price.

3rd.—To take, on suitable leases, any land considered worth the operation, to thorough-drain it and relet it.

These are the simple and straight-forward objects of the association; and we entirely believe that if it should happily become organized, it will be the means of extending a more healthy and permanent practice of the more rapid application of the all-important principle of draining the soil, and, in consequence, of increasing production more than any means that have ever yet been in operation. We say this advisedly, for we doubt not but the Yorkshire Land Draining Association will be the parent of many more, and that very soon the greater part of the draining which shall be going on will be executed under the direction of competent persons, which is infinitely more than can be said at present.

We would willingly say a good deal more, but this article has already reached an unreasonable length; we can therefore only repeat our best wishes for the success of this undertaking, and recommend those who wish to acquaint themselves with the entire particulars of the plan, to purchase Mr. Charnock's sixpenny pamphlet. We shall again advert to the subject.

STARCH FROM RICE.—This starch, for the manufacture of which a patent has been obtained, has many qualities that render it more desirable for use than the ordinary starch made from wheat. It is finer, whiter, and perfectly free from impurities; while the linen and other materials in which it is used "retain their stiffness, resist the influence of a humid atmosphere, and are not liable to mildew." Another advantage which the article made from rice possesses over that produced from wheat is, that less, by one-fourth, is required for the purposes of the laundry.

ESSAY ON DRAINING.

There is no doubt but that an effectual system of drainage would add an immense increase to our means of subsistence, and, at the same time, render a good profit to those who are engaged in agriculture. There is especially at this juncture a strong necessity to call forth all the powers of the soil, in order that our agricultural basis may be widened in proportion to the increasing number of our population. You will, therefore, agree with me that the subject I have proposed is of paramount importance to us all; and as the principles which should guide us in draining the land are not, perhaps, perfectly established, nor their application to the various conditions of the soil understood, nor the best known methods introduced into general practice, there cannot be a fitter subject for discussion in such societies as ours. I wish some one who could speak with the authority of experience had proposed the question. I have ventured to put together a few observations; but, as I am not an experienced drainer, I beg you to bear in mind that they are only intended to point your attention to the most prominent questions which the subject offers, and not to advance my own opinions.

Until late years the application of an effectual drainage has been confined to lands which might be called very wet; but there is a vast breadth of our soils which are dry enough to admit of regular cultivation, but which are so much injured by wet through the colder half of the year, that their tillage is rendered difficult, and their fertility greatly diminished. These are, for the most part, the best and deepest soils we possess, and would usually repay the cost of a thorough-drainage quite as well as much of the land which is wet through the whole year. If—instead of the partial and incomplete system which has usually been adopted with these lands—a radical cure were applied, a great part of them which are now accounted poor and cold, might be made to equal those soils in which farmers delight—which the summer does not parch, which the winter does not chill, which are at once firm enough for beans, and friable enough for turnips—the deep loams resting on a porous bottom. Indeed, the only difference in character between two soils which differ by one-third in the amount of their produce, and as much in the expense of their cultivation, often is, that one is laid on a retentive clay, which prevents, and the other on a porous bed which permits, the passage downwards of the water which falls on the surface. It was to this description of land I wished particularly to direct attention, and to submit to debate among the farmers of this neighbourhood the method of draining such land, which has of late years been so successfully practised in many other districts.

But before it is determined to drain land, there is a question of much importance to be considered—namely, whether the increased produce is likely to repay the outlay on it. There is no land which is not rendered more fertile by being laid dry; but bad land may be wet as well as good. The depth and texture of the soil will usually indicate its natural fertile power. If the soil and subsoil resemble others which, being dry, we know to be fertile, it may commonly be concluded that the wet land will become fertile also when the water is removed. Yet a soil of good depth and texture may possibly

be sterile—either from the deficiency of some ingredient necessary to the growth of plants, or because it contains some poisonous substance. The chemist can alone determine this point with precision; but the farmer has, in most instances, a readier and surer way of learning all that he requires to know. He can partly judge from the crops the land grows while wet what it would become when dry. If it bear a good crop in a favourable season—if the drier parts of the land are covered with a healthy herbage while the wet bear rushes and aquatic plants, he knows with certainty that it contains the pre-requisites of fertility. If these signs be not present, he may perhaps be able to lay a small portion dry by way of experiment; and in all cases he may remove a plot or two of the soil to the depth of two feet, and place them on a porous bed in another field. Such observation of the texture of the soil and such experiments cannot fail to shew its natural fertility. As a general rule, it may be said that all lands wet through the year will pay for a thorough drainage, if judiciously applied, and all deep soils partially wet, except the pure clays.

The first question with regard to the method to be pursued in laying the land dry is, whether it be wet from water retained on the surface, or from springs issuing out of porous layers underneath. If land be wet through the year, it may with certainty be concluded that the source of the water is deep; but land which is kept wet by springs is not always wet through the year, for the springs may fail; and if the subsoil be porous, it may be drier in the summer than another field which is wet from surface water. To ascertain the source of the water, the texture of the subsoil must be examined.

First, if the soil, whether porous or retentive, be laid on a retentive and impervious subsoil, the water cannot pass downwards, and the surface is wet from the rains which fall on it. The same cause which prevents the descent of water would prevent its ascent from below, and consequently the wetness of a soil resting on an impervious subsoil is surface water. Two or three exceptions occur to this rule. On the face of a hill a porous bed may crop out, and the water from it overspread the surface below; or on land in any situation whatever, there may be faults in the retentive subsoil which admit the water from below. Or when a porous upper soil on a retentive subsoil permits an easy passage through it, the water will flow to the lower parts of the land and there rest, leaving the upper parts comparatively dry.

Secondly, if the soil, whether retentive or not, be laid on a porous subsoil, the water finds a ready passage downwards, and such lands are usually dry. But the same cause which allows the descent permits the water to ascend from below, and consequently, when land lying on a porous subsoil is wet, we may conclude that it is wet from the under springs. There is an exception to this rule which frequently occurs, and is the more to be regarded because it admits of an easy remedy. The porous subsoil may be thin, and rest on a retentive bed below. The water will flow freely through the porous subsoil, and a few drains laid down to the retentive bed will remove it from a wide space. When the water comes from springs below, or is conveyed horizontally through porous strata to the wet ground, it has been long the common practice to pursue the method discovered by Mr. Elkington.

It consists in digging down to the seat of the springs and leading the water away, before it reaches the wet ground. Or if the springs lie deep, trenches of suitable depth are made, and wells or openings with the auger carried down to them, through which the water rises. This method is particularly applicable where porous beds charged with water crop out on the face of a hill. A single drain cut through the porous bed, above the line of wetness, will frequently remove the water from a large space. In like manner when a porous bed, overlaid by retentive beds on a declivity, is spread out under the soil in the low ground beneath, the water may be cut off by drains through the porous beds at the foot of the hill.

Bogs and marshes usually consist of porous beds laid in retentive basins of clay. Water may flow in through porous strata around the basin, or may well up through faults in the retentive bed. There is no way of effectually draining these but by emptying the springs which supply them; and this must be done by deep drains reaching to the sources of the springs. Frequently, either in immense marshes or in small isolated hollows resting on impervious beds, the water may be removed by piercing the clay beneath, and giving it an escape downwards, instead of carrying a deep drain through its sides. There is only one other case to which deep draining is applicable: where water breaks through a retentive subsoil, not in a hollow, forming eye-springs or small bogs. If these be numerous over the land, there is no resource but to empty the porous strata through which the water flows.

But though it is very easy to draw diagrams to show what would be the best method of proceeding to cut off the springs in given circumstances, it is exceedingly difficult in practice to discover the order of the beds of earth and the course of the springs through them. The search for the springs is often very perplexing; they may pass through thick beds which do not admit the free passage of the water, and may be too deep to be cut off, while auger holes may not give sufficient vent to empty them. In these cases it has usually been attempted to dry the land by deep drains in the body of the wet soil itself, and to bore auger holes thence down to the supplying strata.

The whole subject of draining springs presents more difficulty than the knowledge and experience of a farmer can usually contend with, and he should never attempt it; and very much of the drainage through the country has been imperfectly done by its being entrusted to persons who did not well understand the principles of the difficult art they were meddling with.

The distinction between deep draining for the purpose of removing water which flows to the land from a distance, and deep draining for the purpose of removing that which falls on the surface of the wet land should always be carefully borne in mind. The drains may be sometimes required deeper in the latter case, but the principle on which we proceed is quite different. When the upper layers are composed of beds of clay, and porous gravel or sand, which rest on an impervious bottom, deep drains are needed.

I extract from the best practical work on draining the method of proceeding in these cases:—"Under alternate beds of clay and fine sand, which are often almost parallel to each other, is generally found an impervious bed of clay, which keeps the veins of fluid full of water, moistening the adjacent clay, and running over it. As the

main body of the clay is seldom more than four or five feet below the surface, a drain must be cut to that depth through the middle of the field, if it has descent from both sides; and if the ground declines all to one side, two drains will be required —the one near the upper side to cut off the water coming from the ground above, and the other near the lower extremity, or lowest part, where the water in the different beds of sand will easily discharge itself. This, no doubt, will answer the purpose effectually; as the drains cross the different beds that contain the water they will draw it from each, unless the field is of considerable extent, or have more hollows than one, in which case a drain must be made through every hollow. Another description of land to which nearly the same treatment may be applied, is when the soil and subsoil to the depth of three or four feet is entirely porous, having under that a strong body of retentive clay; the rain water falling on the surface subsides till it meets with the clay, and then, being obstructed from further descent, the whole mass of porous soil above is filled with stagnant water, which not only retards the operations of agriculture, but also vegetation. To remedy this it requires only one or more drains according to the situation of the field; and these require to be made no deeper than to reach a few inches into the clay, between which and the porous soil the greatest part of the water remains stagnant, although it does not appear on the surface."

These two cases—which are quoted from Mr. George Stephens's work on draining—are, I conceive, the only ones where deep drains at great distances will remove retained surface water. Nevertheless, they have been used in a state of the subsoil which did not admit a free passage of the water horizontally, and have, consequently, produced great disappointment. In land laid on a retentive bottom, the upper soil and subsoil, instead of being laid in regular and parallel strata of sand and clay, are more frequently laid irregularly, the layers of sand being very thin, and having an inclination not corresponding to the face of the ground. If drains are cut in such a soil, the water will be seen to ooze forth from the sides in lines, which may have every possible deviation from the horizontal line of the surface. Sometimes on the side of a hill the strata are laid at an angle with the ground; a small quantity of water always rests in these thin strata, and the unpractised are apt to take it for granted that it is water making its way upwards, and not that which has descended from above.

It is manifest that, unless there be a porous bed underneath the subsoil, in which the water rests, and through which it can flow easily, that it is of no use to dig down lower than is necessary to effect a thorough drainage of the soil as deep as the plants penetrate, unless the source of the water is beneath. In such soils as these, it is thought that two feet, or two-and-a-half, is deep enough for that purpose; and whether they shall be made deeper than that will depend entirely on the degree of perviousness of the subsoil at that depth.

If we reckon among the soils requiring drainage those which are only wet through half the year, perhaps four-fifths of them are of that kind on which water is retained by an impervious subsoil. It becomes, therefore, the great desideratum to discover the best method of draining the surface of the land; and though the subject is not so intricate as that of draining springs, we find quite as much contrariety of opinion as to the principles, and quite as great a departure from them in practice, as in the more difficult branch of the art.

The object in all drainage is to make the wet soils resemble the dry; and to do this in the most perfect manner, the operations by which nature effects the same purpose should be copied. She has always some good reason for what she does, and we have then reached the principles of an art when we have ascertained what her reasons are. Our observation of the luxuriance of meadow land, and our experience of the benefit of artificial irrigation, sufficiently informs us that water is a source of fertility as well as barrenness; and that though too much water resting in the soil is unfriendly to the growth of plants, yet it is good that much water should pass through it.

Vegetable physiologists teach us that the food of plants is prepared in the soil from the decay of organic remains of previous growths; and chemists teach us that water and air are alike necessary to cause the decay of the vegetable substances in the soil. When land is kept wet air is excluded. Plants grow on it, but they are plants differing in their nature from the plants of agriculture, and deriving their food from different sources.

The remains of these do not decay, but remain with little change, as in peat bogs; or are partially decayed, when air is not so thoroughly excluded. Precisely the same effect is produced by the want of water on thin dry heaths. Manures consist for the most part of organic matters which require the chemical changes which air and water effect before they can become the food of plants, and such soils as are either too wet or too dry are not benefited by them. Besides this agency of water in effecting chemical change, it has been lately placed almost beyond doubt by M. Liebig, that it conveys to plants direct nourishment.

Rain-water contains atmospheric air and also carbonic acid and ammonia, which he has also given strong ground to believe are the forms in which plants receive all the organic materials of their structure. When the rain is refused entrance into the soil, therefore, we rob the plants of part of their sustenance, as well as its indirect influence in promoting chemical changes. A field which is underdrained, is benefitted by irrigation, but if not drained is injured. We see lands laid on a porous subsoil, laid in ridge and furrow, and the furrows, being irrigated by the water from the crowns of the ridges, are the most fertile. In considering the methods of draining, it will be necessary to bear in mind the use of water to the soil, in order that none of the benefits which drainage confers be lost. To drain perfectly, the water must be carried away after it has passed through the soil, and has conveyed its carbonic acid and ammonia for the nourishment of the plants and its oxygen to quicken the decay of the vegetable substances, and has itself filled the pores of the soil with moisture to aid in the same effect.

It may not always be in our power to drain under the soil, because it may not be sufficiently porous to allow the passage of water through it; or when it is in our power, the land may not be of fertile quality, and such as would repay the cost of a thorough drainage. In such cases less perfect methods may be resorted to. The simplest expedient to rid the land of surface water is to prevent its entrance into the soil by ridge and furrow, or by catch drains. If land be ridged so that the furrows may have a regular fall, the surface

of the land may be kept comparatively dry. In thin soils, resting on impervious clays, and in all soils in which the surface as well as the subsoil is composed of pure clay, this is the only practicable means of keeping the crop from injury. Such lands as these ought never to be in tillage; and if they be laid down, and kept in grass, the ridge and furrow forms a permanent and cheap method of draining. But if this method be applied to tillage soils which have natural fertility, and are pervious enough to allow of under-drainage, its imperfections are very manifest. In the first place, it entails the yearly expense of clearing the furrows and cross drains. The better soil must be taken from the furrows to form the crown. The soil can never be laid dry below the depth of the furrow even in the crown, and half the crop on the side of the ridges receives very little benefit indeed. Add to this, that in the heavy rains of summer, when, perhaps, the crop most requires water, that great part of it is hurried away from the surface. The next step is to cut shallow open trenches over the surface of the land. On the side of hills these may be made into a very effectual means of drainage; on low level ground they may serve to remove land floods, but are very inefficient for the purpose of drying the soil. Another plan, which goes a little further towards efficiency, is to make channels in the heavy clay by means of the mole plough, or by plug or wedge drains. These methods are only applied to grass lands, and those lying on impervious clay. As no deeper plan of drainage could have any effect on such lands, the imperfection of these channels made in the clay itself, is only that they will not last. They are made at very little expense, and many practical authorities concur in thinking them more profitable, for the peculiar kind of land they are applied to, than more lasting drains. A stone or tile drain laid between the soil and subsoil, is the next approach to a good system. Here we have all the expence of the material of a drain, and nothing is saved but the cost of digging deeper. In impervious clays, where the upper foot of the soil, perhaps, alone is pervious to water, the depth of the drains need not be more than a few inches beneath the soil, for the mere purpose of drainage; but for the security and permanence of the drains themselves, it would always be more profitable to place them lower. The drains being so near the surface are liable to be broken in, and the rain makes direct openings through the top, and fills the channel with soil. A system more calculated to accomplish the end in view is the common plan of furrow draining.

Where it is rightly managed it is admirably successful, and indeed differs from the plan of thorough-draining, which has succeeded it, in nothing but that the drains are placed in the furrows. But it is practised at every distance and every depth, without regard to the texture of the soil, and the construction and filling up of the drains is frequently so defective as to render it comparatively useless. The distance between the furrows of the field is no guide to the distance which water will easily flow to the drains through the subsoil, and the furrow may be either nearer or further apart than is necessary. The depth of the drain is not often regulated by any principle whatever; its construction exposes it to speedy derangement, and the filling up with impervious soil prevents the flow of water into it. The placing the drains in the furrows has also another defect. The object sought is to give an immediate passage downwards to the water which falls from the ridges, but the water should pass through the soil. In some kinds of drains too the percolation through the top of them, instead of the sides, will carry down mud and choke the water channel, and the work which ought to last thirty years be spoiled in as many days.

Within these twenty years a system of draining lands which rest on a retentive subsoil has been introduced, which steers clear of the defects of the too deep and too shallow. The name it has acquired of "thorough-draining" sufficiently points out what it professes to accomplish, and its success in practice has been found such as to warrant us in concluding that it is founded on right principles. The plants of agriculture are injured unless the ground is dry to a certain depth, which varies according to the texture of the soil, and the drains are to be laid to that depth.

If water be suffered to remain for a time in the ground, the plants are injured or retarded in their growth, and the drains are laid near enough together to empty the soil quickly. The question how deep and how distant the drains should be, are the first in importance; but there are many others, which relate to the construction of the drains, their permanence, and their cost, which form very interesting subjects for debate among us, and are such as I most wish to hear the opinions of practical men upon.

I think it will be most convenient if I state shortly what seem to be the best rules on each particular point relating to the situation or construction of the drains. By dividing the subject into separate questions, the discussion will be at once more easy and more useful. The principal things to be considered are the distance apart, the depth, the fall, the size, the direction and arrangement, the materials and form of the drain, the manner of filling it up.

1st. The distance apart will vary with the texture of the soil; water will pass more quickly through an open than through a compact soil. The direction of the layers of sand may also be favourable to the passage of water horizontally. The drains will therefore be near or distant in proportion to the quantity of water which flows into them in a given time. This cannot be ascertained without experiment on the soil to be drained; a trench should be cut in the line the drains are intended to run, and the degree of its perviousness at different depths be observed. The distance will also in part depend on the depth of the drains; the quantity of water poured into the drain will (if the soil be of equal texture throughout) be in proportion to the area of filtering surface on the side. In such a soil a drain of twice the depth would draw off twice the quantity of water in a given time, and consequently the distance apart might be twice as great. But it usually happens that the upper are much more permeable than the lower parts of the subsoil, and often that at the depth of two feet they are almost impervious. Say that drains two feet deep will lay the ground dry when they are 20 feet apart, and that in the same soil the next foot downwards be equally porous, then with three feet drains they may be 30 feet; but if the lower foot be only half as porous as the two upper, they must be only 25 feet apart, and if the lower foot be only one-fourth as porous as the upper, the drains must be only 22½ feet asunder. In the first case it would be a great saving of expence to use three feet drains, one-third of the materials and labour in forming drains would be gained, and precisely the same quantity of dig-

ging; but in the last the expence of materials would be only one-eighth less, while the digging would be increased nearly one-third. Mr. Smith, of Deanston, who uses for the most part 2½ feet drains, gives 10 feet as the distance in the most compact, and 40 feet in the more open loams; but the exact texture of the soil, which requires one or another distance, can only be learned by observation.

2nd. The depth, for two sufficient reasons, should not be less than two feet, or two-and-a-half. The ground should be dry to the depth of two feet, to ensure the plants a healthy residence as far as they descend; and a half a foot of fall from the space between to the drain, is not more than should be allowed to keep the ground in the midst dry two feet deep. In more open soils the depth should be more. The security of the drain itself and its efficiency also require it to be as deep as this. There must be in arable land ten inches over the drain, and where the subsoil-plough is to be used sixteen inches over the drain; in grass land as much is needed, to defend the drain from injury by the tread of cattle; there must be at least twelve inches below if we use a rubble drain of stones; and if we use the tile there must be a space above for free filtration, so that less than two or two-and-a-half feet is needed in all events. When the subsoil is laid bare we can decide whether it will be profitable to carry the drains lower. If the subsoil be very compact it will be useless to go deeper, but if on examining deeper the soil still remains porous, or there be found a layer of sand carrying water, the depth may be increased in order that the distance apart may be diminished.

3rd. The direction and the arrangement of the drains must necessarily depend greatly on the form of the land. There is a question as to the direction, which has been the source of much controversy. When land lies on a declivity it has been contended that, as the water has greatest tendency downwards, fewer drains would intercept it if laid across instead of down the slope. If the land be not disposed in layers, and the water only capable of being removed by percolation through the body of the soil, the transverse drains on a slope would certainly be less fitted to remove it quickly than the longitudinal; for in the space between two drains the land falls, and consequently the lower would have to take the water from a greater space than the upper. And where the water resides in layers of sand, these are commonly not parallel to the face of the ground, but dip outwards to the surface, and the water flows from side to side more freely than downwards. Further, if the layers are parallel to the face of the land, it has been argued that the current is as much diagonal as downwards. Whether one theory be right or the other, there has been found little difference in effect between drains laid transverse or diagonal, or longitudinal. The dispute seems of little practical importance, and the direction of the drains need only be considered in reference to an economical arrangement, and to the degree of fall which it is proper to allow them. Should the drains be in the furrows is another question. It saves cutting to place them there, but in every other respect it is disadvantageous, except perhaps in old pasture, where the form of the land cannot be altered, and where there is no danger of damage to the drain by a direct opening through the top. In plough land, and especially when laying on a declivity, the top of the drain is insecure in the furrows. A still greater reason against placing the drains in the furrows of course is, that it is seldom they are at the exact distance which the land requires the drains to be. Instead of the furrow it has been recommended to place the drains midway between the crown of the land, and the furrow, which keeps them equally out of reach of the plough in all changes of the form of the land. When land is drained no furrows are required, and it is better that the whole of the rain should be equally diffused through the soil, and fall through the sides of the drain.

The chief object in the general arrangement of the drains is to secure the proper degree of fall, and to save the expense of mains. If the surface of the ground be uniform and flat, or of such degree of slope as allows the collecting drains to be laid down the field, the main drain extends along the bottom, and the collecting drains run in parallel lines straight down the field. Where the ground slopes upwards on each side, the main will run down the hollow, and receive the collecting drains on each side; and the inequalities in a field may render both these ways expedient in the same plan of drains. If we determine to run the collecting drains transversely across the slope, the mains will run down the side, or if the field be large, down its middle, and receive the collectors on each side. It is recommended to join the upper ends by a cross drain, to curve the collecting drains towards the line of the current down the main at their meeting with it, and to give them a slight sudden fall for the purpose of sweeping away the mud which might collect at their mouths.

4th. The fall is recommended by some authorities to be as gentle, and by others to be steep and quick. There are advocates for as little as 1 foot in 300, and as much as 1 foot in 10. Where there is so much contrariety of opinion on a practical matter, it generally happens that the different arguers contemplate a different state of circumstances. The objection to a quick fall is, that it wears the bottom and sides of the drain, and in all cases where the drains are not defended from injury by the current of the water, it seems that a quick fall would derange them. But the objection does not apply to drains which are laid with tiles resting on soles, nor to a rubble drain of stones, where the current is broken in passing through the crevices. On the other hand, a slow fall in the drains permits and favours collections of mud in them, while a quick one will carry them away. If the fall be slow, therefore, there needs the more care in providing against the entrance of fine particles of soil into the drain. A quick fall has other advantages, which particularly apply to rubble drains. It enables the drain to discharge more water in a given time, and the length may be greater, and the quantity of stones less. Mr. Smith, of Deanston, notices another reason for a quick fall, which has some weight. When the drain becomes obstructed from any cause, the fault becomes apparent on the surface of the ground immediately above, whereas in a level drain it might remain hidden for years. This reason also should be taken into account in deciding the question of the depth of the drains, for it is of much importance that the derangement in them should be ascertained and remedied quickly. On the whole the advantages appear to preponderate much in favour of a quick fall where it can be had, and though it may cause some additional expense to

construct the drains, they will amply repay it in their increased permanence and efficiency.

5th. The size of the drains should correspond to the quantity of water they have to convey. The water falling on a given space is a constant quantity, and as it is the water of the surface alone we have to deal with, we know that its measure will be in proportion to the space the drains draw from. At forty feet distance the quantity of water will be four times as great as at ten feet, and a drain of a hundred yards long will have to carry four times as much as one of twenty-five yards: the first yard will contain only the hundredth part of the water contained in the last yard. If we had only this principle to attend to, the drains might be like a river and its tributaries, increasing in size from beginning to the end of their course; and I cannot help thinking that some improvement might be made in the practice of draining, if it were more observed. There would be little saving of expense in procuring a smaller tile than the smallest commonly used; but might not the first lengths of the collecting drains be made of stones of any shape or size, or merely screened gravel? and where rubble drains are used altogether, might they not be taper from end to end? Mr. Smith, of Deanston, uses drains only three or four inches wide at bottom, and he reckons that one and a half cubic feet of rubble will fill thirty-six yards. Mr. George Stephens, in his work on draining, recommends four times this quantity, and most of the practical drainers use twice as much as Mr. Smith. Might we not steer between the different opinions, and adopt the practice of one party for the first half, and the other for the latter half of the drains?

6th. As to the materials and form of the drain, the questions relate quite as much to the expense as to the efficiency of the different kinds of construction. What we have to do is to preserve as far as is practicable in a closed drain the same functions which an open trench would fulfil—the filter on the sides, and the channel below to carry off the water. A conduit is placed in the bottom, either an open channel or of some material which permits the water to flow through it, and the trench is filled with porous soil to the top. There are many ways of doing this, and they all do very well for a time; but as some are very transient, and others last for an indefinite time, those causes which derange the work should be kept in view, and removed as far as is practicable. They are—the wearing of the bottom, and the consequent sinking of the channel—the falling in of the sides and the obstruction of it, and direct openings through the top, which convey loose soil down to the channel—and the burrowing of moles and vermin.

The principal difference in the various kinds of drains is, that some are formed with an open channel and others without. Of those without a conduit are such as are made with furze or thorns. These, of course, are not lasting, because the materials will decay; but as long as they do last, they fulfil all the required conditions admirably. In open soils they sooner get deranged, because the sides of the drain are not supported; and in no soil do they sustain the top but in very compact soils: they will last a long time, and being very inexpensive, they frequently suit the circumstances of the farmer better than more lasting methods.

A rubble drain of broken stones is more durable, and if well constructed in a proper soil is thought to be not inferior to any method whatever. The chief objection to them is when other materials quite as efficient can be procured more cheaply. Where the stones can be collected on the land, they are much less expensive; but where the stone has to be quarried, and broken, and carted from a distance, the cost will usually exceed that of tiles. Mr. Smith, of Deanston, says that as much stone as will fill six yards of a drain can be quarried, broken, and carted one mile for 7d.; and he uses only half the quantity which is recommended by others.

The same length may be laid with the smaller tiles, 15½in. long, made by the Marquis of Tweeddale's patent machinery, at the manufactory close to this town, for 5½d., and with the addition of a sole to the tile for 8d. But an intelligent farmer in Warwickshire, who has favoured me with information on stone-draining, says that he quarries and breaks a cubic yard of sand-stone for 9d. This quantity might be carted a mile for 6d.; and the cost for a rood of six yards would be less than 4d. Drains so small as Mr. Smith's must require great care to make them lasting. If the soil be open, the side will fall into the rubbles; and if the top be not very well closed, soil will find its way in, and there is no possibility of its being removed again, as it can through an open channel. If more rubble be used, there is not only room for the water to pass, but there is room also after part of the channels have been clogged up; and this seems to be the reason why more is used.

Drains with open conduits are made of stones, and they are in nothing inferior to tiles, except that they are liable to the inroads of vermin and moles. They of course require the same cautions as tiles in making them; and with regard to their expense, the same gentleman I have quoted before, who gets the stone on his land, tells me that his drains cost him, at two feet deep, about 10d. the rood of six yards, which is nearly equal to the cost of a tile with a sole.

The tile is undoubtedly the most perfect, and except where stones are at hand and tiles are at a distance, the most economical material for the construction of drains; but it also requires more care than is usually bestowed, and some additional expense, to make it as durable as it is capable of becoming. The question most demanding consideration about tiles is, whether a sole is needed or not. It might be enough to adduce the evidence of all who have taken up old drains to prove that the bottom of the drain requires to be defended. In the more open loams the washing of the current will remove the support under the tile, and it will sink. In the most compact soils there are often parts which are sandy or loose, and even where the soil is all tenacious clay, the combined action of air and water softens it in the course of years, and lets the tiles down below the line of the drain. When no sole is used, vermin and moles can burrow at pleasure, and we know what mischief they will do. A quick fall in the drain is needed to keep it clear; we cannot venture to have it. On every kind of soil, therefore, if we intend the drain to last, the expense which a sole entails should be incurred. The difference in durability between a tile with a sole and without is as the difference between fifteen years and thirty; the sole will increase the expense per acre one-fourth.

7th. The filling up is perhaps the most important part of the construction of the drain. To preserve a

free filtering surface on the side of the drain, to close the top so that it may admit of percolation downwards without risk of a direct opening, and to support the sides of the drain from falling into the channel, are the requisites of a lasting and efficient work. The filling must be of some porous material. A rubble drain is complete in this respect, and only requires the top to be carefully closed; but when a tile is used other material than the soil must frequently be procured. The perfect mode of filling is with stones over the tiles—they afford support to the sides, they give free passage to the dribbling stream from the side, they contain no soil to be washed into the channel—such a drain has rightly been described as the *ne plus ultra* of the art. But stones are not often procurable at an expense which permits their use; a porous gravel is the best substitute—thorns or furze are sometimes used, but they neither hold up the sides nor sustain the top, and above all they decay, and the drain becomes filled with loose soil. The most usual practice is to place the porous soil taken from the top of the ground at the bottom of the drain, and the subsoil above. The fine soil will assuredly make its way into the channel with this filling, and we must trust to a quick fall and brisk current for its removal. In closing the top of a rubble-drain, it is recommended to place the small stone rubbish on the top, and to beat it down, so as to leave no openings for the upper soil to pass through. The same thing is attempted with turf, but it has been well observed that it is but a short-sighted expedient, for though turf or any vegetable substance may effectually serve the purpose at first, yet when it decays, the drain will be exactly in the condition it would have been without any trouble being taken. When the soil is used as a filling over the tile, it is usual to put a turf immediately upon it, and though perhaps the same caution is not absolutely required to prevent the entrance of soil into the channel of the tile as into the rubble, yet it would be certainly better to place a shallow layer of stones or screened gravel above the tile, and to defend the channel just as is recommended in the rubble drain. One of the very best coverings to the tile would be cinders; they might be riddled twice, and the larger laid below and the smaller above, which would perfectly prevent the soil falling through them. The difference in the expence between the most slovenly drain and the most workmanlike is little in comparison with the benefits produced by the better method. We sometimes see a trench cut in solid clay, a tile laid on the bottom, the impervious subsoil thrown over it. Such a drain, while it lasts, will scarcely dry the ground it covers. If we take it up in ten years we find the tiles here and there sunk below their line, and the channel stopped. In comparison with this kind of work the simple thorn or furze drain is excellent. While it lasts, at least, it performs what it professes, and it really lasts the longest. We see a rubble drain laid down and no care bestowed in guarding the top—the consequence is that, even perhaps in the first year, half the channels are obstructed. The expense of a sole to the tile is really in most cases the only additional cost of a good drain; for three inches of screened gravel or stones or cinders over the tile, are not of more value than the turf which must be used instead of them. If the soil which comes from the drain be not sufficiently porous to fill with, something else must be carried to replace it; and if we do not do this, it would be better not to drain at all than to waste tiles and labour in doing what serves no useful purpose.

Mr. Smith, of Deanston, considers this system of frequent drains at no great depth, all that are necessary for draining land, whether it rise from below, or is retained on the surface. When the under springs can be discovered, and they rest in porous beds which can easily be emptied, there can be no doubt but that it will be the most efficient and least expensive method to drain the springs themselves. But in the case where we are obliged to lay our deep drains under the surface of the wet ground and to remove the water from the body of the soil itself, it is very questionable whether it would not in most cases be better to use shallow drains at smaller distances. If the ground can be laid dry to the depth which is needed for the health of the plants, it is all we require; and it is a question of expense how we shall accomplish it. It is the same thing to the farmer to intercept the water as it rises, as to empty the springs below. If drains be deep enough and near enough together to remove quickly the water which falls on the surface their constant action will draw off and intercept a great quantity of water from below when the upper soil is made dry. Though I have not considered the frequent drain system as applicable to soils wet from water being beneath them, I do not doubt there are numerous cases where the subsoil is only partially pervious, or the springs not abundant, in which drains of three feet would be preferable to deeper at greater distances, or boring with the auger in shallower trenches. Perhaps the drains should be deeper than is needed where the surface water alone has to be drawn off. For example, if a two-feet drain be made in an impervious subsoil, it will keep the land dry to that depth; but in a subsoil which has springs beneath, and is partially permeable, the water must necessarily rise above the level of the drains before it is drawn into them; the soil might, therefore, only be kept dry to the depth of 12 or 18 inches by a two-feet drain, and a three-feet drain be needed to lay it dry to the depth of two feet.

The subsoil plough, which was at first considered only as an instrument in aiding the drainage of the soil, has been found to possess so many other advantages, that its agency in draining is not so much regarded. It is not, perhaps, necessary for the mere purpose of drainage in any but of the most compact soils. In these, if we make channels with the plough to the depth of 16 inches, it must be evident that water will flow sideways to the top of the drains, and be more readily carried off. Mr. Smith, of Deanston, does not now, as I see by a report of a lecture delivered by him, recommend subsoil ploughing as a means of drainage, but as an improvement of the soil after it. Remarkable effects are produced by the use of the subsoil plough, but that its good effect is not chiefly attributable to the thorough drainage of the soil, is proved by the fact of its being more beneficial on the soils which are already drained either naturally or artificially. The admission of air into the body of the soil promotes the fermentation of the food of the plants, and has perhaps some influence on the life of the plant itself which we are not acquainted with; it permits the plants to travel further and collect their food from a larger space, and in light soils, as they go deeper, they are better supplied with water. It causes the disintegration of the soil, whereby the inorganic constituents of the plants are released. These seem to be the sources of the benefit the

subsoil plough does; and as they but little relate to the drainage of the land, we need not now enquire into them. One remark should be made, that the subsoil plough has always been found very injurious where the land is not previously drained.

The expense of such a thorough drainage as is effected by the system I have been describing, is, of course, not insignificant; but I have no doubt there is scarcely any strong land which would not repay the expense of it. We have all been too long content to watch our crops sickening in water without attempting a remedy, and when we did attempt it have not applied it effectually. We did not drain till the land was wet enough for rushes, and we thought it well enough drained when they were destroyed. But the time is come when the full powers of the soil must be developed, and the farmers and landlords too must bestir themselves to keep pace with the altered times. When we compare the produce of two fields of similar texture—the one wet from autumn to summer, and the other dry and fertile the year round—and reflect that a thorough drainage will render the two of equal fertility, we discover what commercial men call a "broad margin" for an outlay of capital. When we enumerate the supplementary advantages of a less expensive tillage, less frequent fallows, the power to work the land at our convenience, the natural death of abundance of weeds, the health of our stock, the ability to vary our crops—to grow winter food and to consume it on the ground; if we sum these up, and place on the other side the cost of the most thorough application of drainage, the return of profit appears enough to tempt even cautious men to undertake it. Nevertheless an investment of from 3*l.* to 10*l.* per acre seems a formidable sum to the farmer, and you will naturally ask where is the money to come from? My own conviction is that it is the proper province of the landlord and his interest too, to make all those substantial improvements on the land which add to its permanent value. He alone has a permanent interest in the land. It is seldom the interest of the tenant to invest his money in such operations as draining; he is not an idle man, but adds his industry and skill to a limited capital, and expects from it a return of from 10 to 15 per cent. It will usually be better for him to employ his labour and his capital on improved land than in improving it. A tenant on good land ought to get a profit of 1*l.* per acre, and land, say at 40s. an acre, will employ 6*l.* or 7*l.* per acre of his capital. If instead of taking good land at 40s. he takes land at 20s. per acre, which requires under draining, and expends 6*l.* or 7*l.* per acre on it, he is not repaid unless he can raise the land to the same yearly value as the land at 40s. On the other hand, the landlord is repaid if he can get the same return for any improvement as the land itself yields him. He commonly is content with 3½ per cent. The same outlay which will repay the landlord if it increase the rentable value of the land six shillings per acre, will not repay the tenant unless its value be raised twenty shillings per acre. The same land would thus yield a high profit to the landlord, which might involve the tenant in loss. There is but little land which will not repay the landlord's rate of profit, but there is much which the tenant had better not meddle with. This view of the matter would not apply to a tenant who had idle capital, which he could not employ so as to reap a farmer's profit from it, nor to a large capitalist who would be content with a lower rate of profit than the common farmer, but it applies to the great body of those engaged in agriculture. A farmer with a good lease should get a farming profit on the capital he uses, and during the course of his lease should get back the money he has invested in improvements. It is of course his interest to do this whenever he can, but how does the landlord's interest stand in such a bargain? If the landlord were to effect the improvements himself, and receive 15 per cent. on the outlay during a twenty years lease, he would enjoy a clear gain of 10 per cent. during that time, and receive back his land in a state of, perhaps, greater improvement than it would have been had the tenant done the work. But if it be not often advisable for the tenant to drain with a good lease, by how much less so must it be under a tenancy from year to year. The landlord can claim for dilapidation of his land, but the tenant has no remedy for dilapidation of his capital; he may have a capricious or unjust landlord, or the property may change hands, and he may lose his outlay and his farm together; or he may have his rent raised, and thus be made to pay interest on the very capital he has himself lent to the land. Such injustice, it is true, is not common; but while there is such a risk no man of ordinary prudence will lay out from 3*l.* to 10*l.* in draining another man's land. The great bulk of the permanent improvements to the land must be and indeed are done by the landlords, but they are not done in the most satisfactory manner. The landlord takes a part of the charge and the tenant a part, and the landlord when it pleases him puts a higher rent on the improved land. This gives rise to much dissension. The tenant is entrusted with the performance of the work; he, perhaps, does not know well how it should be done, and as the materials are commonly found by the landlord while he pays for the construction of the drains, it is his interest also not to be at too much expense in making the work lasting. It would be much more satisfactory if there were always a fixed agreement between the landlord and tenant, in regard to such improvements as draining. If the landlord desire to avoid all risk, the tenant would always be glad to pay interest on the outlay, and suffer the landlord to have the work done in the most efficient manner. But I have no doubt that the landlord would always be a great gainer by taking the risk on himself, and charging an increased rent in proportion to the increased value of the land.

MR. HILL'S BULL, EDEN.—This fine animal has now attained a reputation all over Great Britain, as one of the best, if not the very best, short-horned bulls of the day. In 1841 it won the first prize at the Penrith Agricultural meeting, and the second prize at the Highland and Agricultural Society's Meeting at Dundee in the present year, in a competition open to all England. It subsequently won the first prize at the Northumberland Agricultural Society's meeting at Hexham last week, which was also open to the United Kingdom; and on the 31st ult. it won the first prize, a silver medal, as the best bull of its class—a gold medal, as the best bull of any class—and the Halverstown challenge-cup, as the best animal on the show-ground—at the Royal Agricultural Improvement Society's exhibition at Belfast. In this competition Eden carried away the chief prize from the celebrated bull of Mr. George Grey of Millfield, to which was awarded the chief prize at Dundee.

THE CORN LAWS — REPLY TO MR. ROTHWELL.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I am charged by Mr. Rothwell as being guilty of youth and inexperience, but I have yet to learn that these are crimes; and, to say the least, I am vain enough to imagine that the errors of youth are far more excusable than those of age. If I am guilty of ignorance and inconsistency, how much more should Mr. Rothwell (my senior) be considered guilty for the same faults, when his opportunities of improvement have been so much greater!

In the memorable words of the immortal Pitt, "The atrocious crime of being a young man, which the honourable gentleman has with such spirit and decency charged upon me, I shall neither attempt to palliate nor deny; but content myself with wisbing that I may be one of those whose follies may cease with their youth, and not of those who continue ignorant in spite of age and experience."

I am moreover charged by this Mr. Rothwell with thickheadedness, and a non-susceptibility of the force of impressions; this may be, and undoubtedly is, very true indeed. I have an example in proof of it. I am not clear headed enough to detect how the use of personal invectives and abuse can be any argument of the question at issue; and I am so non-susceptible of impressions, that Mr. Rothwell's remarks have failed to produce any other effect upon my mind than that of sincere pity for their author.

Nothing is so great a proof of a weak intellect as to attempt to argue a question of a public nature by the liberal use of unnecessary expressions, having a personal application.

Having thus disposed of that truly contemptible portion of Mr. Rothwell's letter which has for its subject my own imperfections (and with reference to which I imagine he must be in the same enviable predicament that he appears to be with respect to many other subjects—namely, utter ignorance), I will proceed to notice those arguments which appertain to the real subject of discussion—the corn laws.

He observes that he can discover "nothing new" in my arguments: very good! but have I laid claim to originality? On the contrary. My papers are "On the proposed remedies for the present depression;" and in the first paper I observed that, "in order that we may discuss the question impartially, we must thoroughly weigh the arguments on each side." It is obvious, therefore, that I disclaim originality. I discuss "the proposed remedies for the present depression," by placing in juxta-position, and weighing, the arguments of each party. Then how absurd—how great a proof of weakness to make this a point of attack against me! Moreover, it is impossible to bring forward new arguments upon this question—the fund is exhausted. Mr. Rothwell's letters contain no argument that has not been again and again adduced, and as frequently disproved; yet I should scorn to attack him upon such grounds.

"It is evident," remarks Mr. R., "my friend (!) Thompson supposes I am now lying in the mud with not a leg to stand upon, and made for ever incapable of again showing myself in the field to face my foes. He is mistaken, &c." Owing to my thickheadedness, and the muddiness of this paragraph, it will not be thought strange that I interpreted it literally, but as a friend has kindly informed me that it is an allegorical illustration (certainly a dirty one), I have so rendered it. But I am not clear-headed enough to understand the word "mistaken" in its present application. Mistaken? Positively this must be a mistake. I defy Mr. Rothwell to make it evident that I suppose, or have supposed, that he was "incapable of again showing himself in the field." I have not made a single remark to that effect; I have not even imagined it; hence Mr. R. is guilty of palpable injustice, when he declares me "mistaken" with respect to this opinion. It will also be observed, that he first refers to me as a friend, and then classes me with those whom he is pleased to designate foes. Very pretty grammar, truly.

Mr. Rothwell states that, "All who differ from him on this subject of the corn laws or free trade, he sets down as country Premiers, country Secretaries of State, country Chancellors of the Exchequer, political quacks, and unlicensed physicians." It would gratify me much to know where I have set down such a conclusion. I simply state, that if unlicensed physicians prescribe with impunity for the complaints of John Bull, I, as another unlicensed physician, shall claim equal right to prescribe antidotally. Here again Mr. R. supposes that which never existed.

With respect to my adoption of the term "We," I imagine I have an unquestionable right to please myself; and if Mr. R. cannot understand it, perhaps he will allow me to inform him that there are those who can.

The editor of the *Farmers' Magazine* is informed that, "Mr. Thompson talks (at page 333) of our long enjoyed and unprecedented prosperity." Talk! The pages of a magazine talk? Humph!

That we have enjoyed unprecedented prosperity none but Mr. Rothwell will deny. Is there any precedent in the history of the world, for a similar career of prosperity to that furnished by the history of the British empire for the last fifty years? True we have had seasons of adversity, and ever shall have. But they have been limited. Take the year 1793, and compare it with even 1843. Compare the wealth of the kingdom at the former period with its wealth at the present; and who shall dare to say that it has not increased? Again I assert, we have enjoyed "unprecedented prosperity."

"Grain," it is said, "could not rush into the English market till it was grown. What has been grown abroad has been made use of in some way." Made use of, where? It certainly has not all been consumed on the spot, or where does that come from which we have annually imported from Europe? And if large quantities have already been grown for this country at a lower price than we can grow it, on the average of seasons, it affords good reason to suppose that still more may be supplied. In proof that large quantities are already supplied to this country, and that still larger quantities may be expected under a free trade, I make a quotation from the "Review of the corn trade, during the month of August," in the September number of the *Farmers' Magazine*: "The arrivals of foreign wheat, since our last number, have been already very considerable, and the quantity yet to arrive is also very large." This is just before harvest; the extensive importations during the last eleven months have not drained the whole supply yet; "the quantity to arrive is very large." Then my conclusions are not so "theoretical" as Mr. R. would fain have them to be. He attempts to disprove my statement, that the continental Europeans "are determined to become manufacturers themselves," by another observation

of mine to the effect that they want our gold. He cannot perceive that both these circumstances may exist at one and the same time. Why, he must be exceedingly blind; for in his first letter I find the following paragraph:—"Another cause of the gradually declining profits in trade is, that foreigners have begun to manufacture for themselves;" and "at the first they only required capital and skill. The latter is easily got, as it can be imported, so far as management goes, and they are acquiring it rapidly. The former is not so easily got, but they are acquiring it, and it will be like a snowball—it gathers slowly at first, &c." Thus actually using the same argument for which he endeavours to condemn me. The fact obviously is, that Mr. Rothwell feels greatly aggrieved that I should have dared to expose his inconsistences, and for which act he is determined to attack me, even at the cost of his own former arguments.

Observe how correctly Mr. Rothwell calculates; mark the novel discoveries of his inquiring mind: he says—"free trade in corn would first give us very low prices, then they would be higher than ever. Why this is the very state of things which the corn laws give us, even the sliding scale." Indeed! Where did you get this from, Mr. Rothwell? This is something new, and a *leetle* at variance with truth. It so happens that the price of grain has been gradually getting less ever since the sliding scale became the principle upon which corn laws were built. He afterwards attempts to illustrate this false position, by stating that he has sold wheat at different periods at 5s. per bushel; which, so far from being a proof of his own argument, is a proof of mine. He moreover remarks that he has "sold wheat at 5s. per bushel," on three several occasions, when, "according to the then existing laws," he "should have got 10s., 8s. 10d., and 8s." Now, putting aside the fallacy of any man expecting that a corn law was intended to, or ever would secure a certain price, he omits to mention that in the first period he sold, or might have sold, at 11s. 9d.; in the second at 8s. 6d.; and in the third at 9s. 11d. Indeed his must have been some very inferior samples to have sold at that price in three respective periods, for the average annual price was but once so low, from 1815 to 1842.

What can have induced Mr. Rothwell to make the observation that "this is the very state of things he and his party want," I am at a loss to conceive, for I belong to no party whatever. I distinctly stated this at the commencement of my first paper. But this is one of the many delusions which are so "evident" to the dreaming imagination of Mr. R.

He afterwards makes the following observation:—"In another place he says, 'rent is regulated by the price of grain.'" I make no such remark—decidedly the reverse. I prove that the price of grain has not regulated rent; I admit having stated that should a free trade in corn be brought about, and the British farmer compelled to compete with the foreigner, who could sell in the home market at a less price than the British farmer could grow it rent free, that the ultimate effect must be a reduction in rents. But this is an imaginary case *in toto*—the experience of the past is not imaginary, and it is upon that I build my deduction that the rent of land is *not* regulated by the price of grain. I draw a conclusion, which I make a standing *principle*, from the past—I only allude to those *possibilities* which may occur on the establishment of an *injustice* with reference to the future, and which, therefore, furnishes no *principle* whatever. Mr. Rothwell, I feel convinced, *will not* comprehend my meaning, but the enlightened readers of your Magazine will readily do so.

"In an agricultural parish," remarks Mr. R., "the rates are paid from that parish; in a manufacturing parish the manufacturers pay their due proportion." I should much like to know if Mr. Rothwell is *really* a farmer, and if these are *really* his impressions; because, if so, the sooner a commission *de lunatico inquirendo* is instituted with respect to the state of his mind, the better. It is now well known that the manufacturing classes of England and Wales are equal in number to the agricultural; it is also well known that there is a greater amount of distress, in the aggregate, amongst operative manufacturers, than amongst operative agriculturists. But what is the proportion of rate for the relief of the poor paid by each class respectively? Why, from the most correct sources (parliamentary returns), it appears that in 1841 the agricultural portion of the community paid 4,989,188*l.* in England and Wales alone, whilst the manufacturing portion, *including all other classes*, paid but 1,362,640*l.*! Thus the class suffering the least distress, in the aggregate, has paid nearly four times the proportion of poor's rates; and this is exemplified daily—for no manufacturer pays the same proportion of his profits from his factory to the relief of the poor, as the farmer does from those of his farm. The same argument holds good with respect to the highway, county, and church rates.

He has stumbled upon that oft-refuted and ridiculous argument, that "the tithes *never* belonged to the landowners;" and proceeds, "when they purchased their estates they only gave nine-tenths of their value." I beg to inform Mr. Rothwell, lest he should still further expose himself upon this subject, that by far the greatest proportion of the land in this kingdom was never *purchased* by its owners at all. Perhaps he will inform me how the Ministers of the Established Church are supported, if not by the landowners? Does the manufacturer pay towards their support? Does any other than the landed proprietor? Is not the Church of England supported by the landed interest of the country exclusively? And would not the landowner be more wealthy if he had not tithe to pay? Nay, more, would he not be so if the manufacturer paid his *just* quota of the expences of a national Church? I will leave Mr. R. to answer these questions at his leisure, for his own edification, but earnestly implore him, as he respects his own consistency, never more to assert that "the landowners pay nothing to the church."

Touching the continental nations, he states, "the poor on the continent cost as much per head as the poor here; they take the same quantity of food, of course the same quantity of land, and the same quantity of labour." This is decidedly incorrect, for the poor of those nations which afford the chief supplies of corn, are miserably fed and clothed. In the words of Mr. Alison—"they are in truth the most miserable labourers in Europe, and feed upon scanty meals of rye-bread, in the midst of the splendid wheat crops which they raise for the more opulent consumers in this country."

"Now for highways"— observes Mr. Rothwell—but he does not state in his last letter whether they have highways or not, but in the first I find he remarks they have a "want of good internal communication." Upon this we agree, but he argues that it will cost as much to construct and maintain highways abroad as at home, and here we disagree;

wages are less, much less, there than here, and, therefore, it will *not* cost so much.

On churches he gives *an opinion*—"*I dare say*" —*Dare say!* How very characteristic of a writer on political economy!—"I dare say they are supported as in England." Permit me to inform you, Mr. Rothwell, that in many instances they receive no *tithe* whatever, and that although churches are frequently more plentiful in proportion to the number of inhabitants, they are by no means so with respect to the number of quarters of grain grown.

"Now," observes this sapient Mr. Rothwell, "suppose a Russian serf gets 3d. per day wages, would not a tax upon that serf of 3d. be as burdensome upon him as one of 3s. upon the English labourer who gets 1s. 6d. per day?" Perhaps he will explain this paragraph. He seems to have studied in Joseph Hume's school.

Poor fellow! He says, "I will prove that all you say about fertile soils, no rates, no taxes, half-fed labourers, &c., all rest in your imagination only." I deny having said that they had *no* rates, *no* taxes; my words are "countries far *less* burdened with taxation than our own;" and he bears me out in that statement, in his first letter, when he refers to "their *advantages* of lower rents, wages, and taxes." As to fertile soils, Denmark is no proof to the contrary—that is not the country which produces the chief supplies of grain; we must go to Poland and southern Russia. The former country, I again assert, and defy contradiction *with proof*, possesses some of the most fertile soils in the world; nor is the state of Denmark any proof that labourers are well fed in Poland. In fact the whole district which furnishes us with our principal supplies of foreign grain is composed of fertile soils, pays but a small proportion of taxes, and is inhabited by half-fed, poorly-clad, serfs. But it is useless to state this to Mr. Rothwell, for as he does not hesitate to contradict his own assertions, he cannot be open to conviction. I merely refer to this, therefore, in order that I may not be misunderstood, *through his misquotations*, by the public.

Mr. Rothwell observes that there were no poor-rates in England "200 years ago." Query—is not his historical knowledge somewhat imperfect?

"Such men as Mr. Thompson suppose all farmers abroad to be like our English merchants or manufacturers." Such men as Mr. Rothwell suppose all others to be fools but themselves, nor can anything persuade them to the contrary.

This philosopher decides "that, upon an average of years, with open ports, we should have no more foreign grain than we have had." Rather a "*dare-sayish*" conclusion, inasmuch as the quantity of grain annually imported has long been increasing, but *of course* he is right.

Referring to fertile soils again, he suggests—"My friend Thompson will perhaps say that the soil in Poland, Russia, Denmark, &c., is so fertile, that it requires neither capital, skill, or labour"—and proceeds to reply to an idea of his own conjuring, which he has "perhaps'd" upon me. "Perhaps" Mr. Rothwell will save himself the trouble, in his next *conglomeration*, to answer anything but that I may write, since it makes him appear rather ridiculous.

He flatters himself he has "*very cleverly* made the protection to the British farmer 20s. per qr. without any duty." It is true I am not "very clear-headed," and this may account for my inability to discover the "cleverness" of his conclusion; but "perhaps" he will allow me to observe that many cargoes of grain were shipped from Dantzig, last spring, at 2s. 6d. per qr., whereas he has placed the average freight at 5s. 11d.—only 136⅔ per cent. above the *actual* rate. Again, "a respectable corn dealer" tells him that the difference in the relative value of foreign and home-grown grain amounts to 4s. per. qr. in favour of the latter. I beg to say that Polish wheat is frequently of a superior quality to the English. Thus I have given two specimens of the "clever" manner in which Mr. Rothwell has "made the protection to the British farmer 20s. per qr. without any duty."

Mr. R. reminds you, Mr. Editor, that he has "improved" since his "last letter." Unquestionably he has, if increased inconsistency and the addition of unqualified contradiction, combined with unblushing impudence, can be regarded as any criterion.

He remarks—"We will take the low priced years of 1834, 1835, and 1836. The average price in England of those years was 44s. 8d.; there was none imported those years, of course; there could be no demand from Russia or Poland for Britain. We may, therefore, suppose prices at their lowest ebb there. Well, the average price for those three years, in those countries, was 29s. 2d.—difference, 15s. 6d. In 1835, the average in England was 39s. 4d., and in Russia and Poland, 28s.—difference only 11s. 4d. * * Now it is very clear there can be no importation from there when prices are below 50s. here."

What proof is this that grain cannot be imported from the continent when prices are below 50s. here? When grain was selling there at 29s. 2d., and here at 44s. 8d., the duty, which must have been paid on entering for home consumption, would have been 42s. 8d. per qr.; hence it must have sold at a direct loss of 27s. 2d. per qr., exclusive of freight, &c. But there is abundant proof that it may be sold in this country, under a free trade, for *less* than 50s., as is proved by the reports in the very magazine, upon the pages of which Mr. R.'s letter is *exposed*. The foreign grain entered for home consumption, in the month ending Aug. 5th, 1843, amounted to 2909 qrs. 1 bush.; the duty payable for that was 20s. per qr.; the average price at home, during the month, was 55s. 11d.; if we deduct the duty, it would have sold at an equal profit to the importer, for 35s. 11d.! Now, Mr. Rothwell, where is the truth of your statement? And, be it remembered, foreign grain has been incessantly pouring in, with no prospect, for some time, of obtaining higher prices.

Reference is next made to an excellent letter from C. T. Tower, Esq., as furnishing proof that wheat may be grown in this country, and pay a rent at less than 47s. "In 1835," it is observed, "the average price was 39s. 4d., or 7s. 8d. per qr. below Thompson's no rent mark—the rent of the above farm was 400*l.* that year." Very well! The rent may have been 1000*l.*, and still have furnished no proof that the British farmer can grow wheat, and pay a fair rent at 47s. Firstly, the price of grain was, during one month, 49s. 9d. in that year, and Mr. Tower's tenant *may* have sold his grain in that month; secondly, the crops were above an average in 1835, and therefore the extra quantity counterbalanced the lower price; and thirdly, if nothing will satisfy Mr. R. but averages, during the 21 years to which Mr. Tower refers, the yearly average was but three times below the sum referred to, and the average price during the whole period was 58s. In my second paper I calculated that the rent

amounts to 9s. upon each qr. of grain; now here is 11s. above the estimated tenant's expences of 47s., showing that my calculation is very nearly correct. Thus the very instance which Mr. R. has quoted in support of his own views, is a positive argument against them.

To show the absurdity of quoting the above as an argument, I beg to remind Mr. Rothwell that according to such a system (viz., 5 per cent. reduction in rent, for every 4s. fall in price), the tenant must pay 200*l.* per annum, if corn was so low as Is. per bushel!

Mr. R. has certainly "pulled to pieces" (how rich! one would suppose he was some *ploughboy!*) my argument, but, instead of disproving it thereby, he has strengthened it.

He says—"it is not true that tenants, landowners, and valuers, never look at the corn laws in making their contracts. The above," he observes, "is a proof that they do." What an experienced land surveyor he must be! What an undeniable proof the conduct of one man furnishes! I have known many, and practised under some landvaluers, Mr. Editor, but I never yet knew one so unjust towards a tenant as to found his valuations upon the parliamentary pivot of the scale which regulates the importation of foreign grain. The argument is as false as it is absurd. It is very probable, notwithstanding, that if there had been no corn laws, rents would have been reduced. A sliding scale for protection, is one thing—taking the *pivot* of that scale as the ground work for apportioning rents, is another.

I cannot fail to remark that it is very strange Mr. Rothwell should have cited the instance of a tenant farmer who has done so well as this Mr. Paris during the last twenty-one years, when his chief argument is that the corn laws have injured all tenants.

He attempts to disprove my statement that "the price of wheat has been falling ever since the year 1800, whilst the rent of land has been rising during the same period," by a partial quotation of his experience, and wishes to know where I was born. I strongly suspect I was born, at some time; and I am yet uninformed that it is essential for every man, who is superior to Mr. R., to have entered this world in the year 1800. "Perhaps" he thinks it is.

Mr. Porter—a free-trader, and a good authority—writing in 1836, observed—"With scarcely any exception, the revenue drawn in the form of rent from the ownership of the soil has been at least doubled in every part of Great Britain since 1790." And I find, on reference to parliamentary reports, that the total annual value of real property, in England and Wales in 1815, was 51,898,423*l.*; and in 1841, 62,540,030*l.* Now these are good proofs that the value of land has increased.

With respect to grain—dividing the forty-two years previous to 1842 into three equal periods—it appears that the average price through the first was $89\frac{4}{7}$s.; the second, $65\frac{111}{14}$s.; and the third, $58\frac{6}{7}$s. I think, therefore, that I have proved my argument.

I should be much gratified if Mr. R. would inform me whether it was any "honourable" motive that prompted him to answer my argument by quoting the year 1803 instead of 1800, and the year 1812 instead of 1842. And I should like to know also, if the rents to which he refers are not higher at the present time than they were in 1800! for he does not directly deny it.

"In a great number of instances," he states, "Mr. Thompson evidently does not understand what he is writing about." I wish he would inform me, then, for he has not done so yet; indeed, the only difference between him and me in this respect is, that I *do* not, and he *will* not understand; the one may be pitied, the other despised.

I have seldom seen such a pitiful piece of criticism as the following:—"Now, one would not suppose that an advocate for sliding-scales would write such *nonsense* as this. If corn laws are any protection to the British farmer, is not that protection taken away when the duty is taken off?" Preposterous! Such a man write of *nonsense* in others? Oh, dear me! Pray what is it that causes the duty to be taken off, Mr. Rothwell? Are you aware that it is the high price at home? But high prices are not produced until the supply is unequal to the demand; that is, until we require foreign corn. And when the scarcity is productive of high prices, the home grower has the first opportunity—from his immediate proximity to the market—of taking advantage of it; whilst, through the wholesome operation of the sliding scale, a supply of foreign grain is sent for, calculated to meet the wants of the people when the home supply falls short. But should too much foreign grain rush in, the price would sink, and the duty once more check the importation. On the other hand, suppose a free trade in corn; would the effect be similar? Certainly not. We should have a *rush* of foreign grain, whether required or not; and, as long as the home supply was nearly equal to the demand, we should be compelled to meet the foreign prices.

But the absurdity of the last quotation is most manifest, when compared with some of his previous remarks. He observes in the first letter—"However low the duty, when the prices are high here, this will not affect the prices." And yet "the protection is taken away when the duty is taken off."

Now, I wish he would use one argument or the other, and abide by it; and not be content to oppose his own arguments, simply because he will oppose mine. If the prices are not affected by a low duty in seasons of scarcity, and when they are high at home, then how can the protection be taken away when the duty is off?

Much has been written by Mr. Rothwell and others on the *high* rents exacted for land. Now they must either be the veriest blockheads on earth, or the most obstinate men in existence. For instance, a man has 2000*l.*; he invests it in the funds, in a bank, or in trade; he receives 3, 4, 5, and sometimes more, per cent. But another has the same amount, and invests it in land; what is the result? He is a very fortunate man, indeed, if he obtains two-and-a-half per cent; and very rarely does he obtain more than two per cent. Therefore, what a lack of common sense does it manifest on the part of those who are for ever harping on that discordant string—high rents! High rents! If as much ingenuity was shewn in the management of farms as is shewn in that of manufactories, &c., we should no longer hear of high rents—we should see them rise. Mark my words, Mr. Rothwell. I venture to predict that, should a disorganization of society be prevented in this kingdom, one quarter of a century will serve to bring about lower-priced grain and higher rents, solely through the increased ingenuity of farmers, naturally resulting from the

present *march of science* in agricultural operations.

We are informed that "the very fact of farmers now being on the brink of ruin—the very fact of hundreds of liberal-minded landlords, at various periods during the last thirty years, having made returns of part of the rent, is sufficient proof that the farmers have offered too much rent; and there is not the least doubt but the corn laws have induced them to do so."

The cause of so many "farmers being on the brink of ruin, &c.," is not so much the corn laws as a lack of capital and skill. The honest husbandman, who has the necessary capital, is abandoned, in many instances, for him who has neither money or skill. A farm of 200 acres is taken by a man possessing as many pounds, and who expects to live respectably; the consequence is, a short time serves to ruin him, the farm is impoverished, and the landlord robbed. If the farmer is injured by the corn law, it is by the substitution of the low pivot of 1842 for that of 1828.

Mr. R. indites the following sublime passage—"A low fixed duty would be a far *lesser* evil than the present sliding *humbug*." Very pretty, indeed! I imagine he declines a certain word, as *little, less, least*—so far correct, but afterwards subdivides it into *little, littler, littlest, less, lesser, lessest, least, leaster, leastest*. Again, "perhaps" Mr. R. will take an early opportunity of defining the word *humbug!*

I now come to a charge of fourteen striking inconsistencies said to be contained in my papers. I deny them flatly. I wish the readers of your Magazine to understand that I have neither written, represented, nor admitted, directly or indirectly, any of the arguments excepting the 8th and the 9th; with respect to the inconsistency of which I leave them to judge. I unhesitatingly charge Mr. Rothwell with ascribing arguments and inconsistencies to me of which I was never guilty, and which I defy him to *prove* me guilty of.

Again, in a postscript, he states I have "changed my ground" in my 4th paper. I have not done so. My object was to consider "the *proposed* remedies." I am considering them; I consider the repeal of the corn laws would not be a remedy, but that a modification of the currency would be a partial and assisting one. But I have not "changed my ground."

As to *his* opinion upon the relative merits of my papers, I could have spared it. I value not his opinion. The opinion of a man who can condemn arguments because they are not new, and writers because he thinks they are young, are not worth a notice; and I would not have *condescended* to have occupied so much time on so contemptible a letter, but for the purpose of denying the (I must think intentional) misquotations and misinterpretations therein given of my arguments.

In conclusion, I beg Mr. R. will understand that it is not my intention to carry on a controversy with *him* upon this subject; and that, should he write fifty letters, if they are composed of the same inconsistencies, misquotations, and misinterpretations as the two last, that I shall dismiss them with the silent contempt they deserve. I take up this position, and make this unqualified statement, because I think *misquotation* a most unpardonable offence in a critic.

Hoping that, for the credit of his family and his profession, he will have sufficient sense to refrain from exposing himself by any farther attempts as a public writer, I beg to subscribe myself, Mr. Editor, Your obedient servant,

G. Thompson, Jun.

Lion street, Kidderminster, Sept. 7.

AMERICAN METHODS OF FEEDING SWINE.

(from the fourth report of the agriculture of massachusetts.)

E. Phinney's swine establishment at Lexington, is among the most extensive in the county. His number of fattening swine averages about 100, with 50 store hogs, and they are killed in February and March, when from 10 to 18 months old, being of the fall and winter litters of the previous year. His pens are well arranged; seldom occupied by more than three or four in a pen. They have a manure-yard attached to each pen, into which bog-mud and litter are thrown for their manufacture and compounding, and they have always a dry and comfortable bed. They are fed regularly three times a day. I shall subjoin an account given by himself of his mode of management, which the farmers will read with interest.

"An inquiry is often made as to the best time of killing, or at what age it is most profitable to slaughter them. On a large farm where much green herbage is produced, and where the value of the manure is taken into the account, the pigs killed at the age of 15 and 16 months, give the greatest profit. When it is intended to kill them at this age, they may be kept on more ordinary and cheaper food for the first 10 or 12 months, or till within 4 or 5 months of the time of killing. The manure they make and the extra weight of pork more than pay the expence incurred in keeping them the longer time; but the spring pigs which are to be killed the ensuing winter and spring, must be kept upon the best of food from the time they are taken from the sow until they are slaughtered.

"The older class of pigs from the first 10 or 12 months are kept principally upon brewers' grains, with a small quantity of Indian or barley-meal, or rice, ruta-baga, sugar-beet, &c., and in the season of clover, peas, oats, corn-stalks, weeds, &c., which are cut green and thrown into the pens; the next 4 or 5 months before killing they have as much Indian meal, barley meal or rice, with an equal quantity of potatoes, apples, or pumpkins, as they will eat, the whole being well cooked and salted, and given to them about blood warm. During the season of fattening, an ear or two of hard corn is every day given to each pig. This small quantity they will digest well, and of course there is no waste. Shelled corn, soaked in water made as salt as the water of the ocean for 48 hours, with a quart of wood-ashes added to each bushel and given to them occasionally in small quantities, greatly promotes their health and growth. Their health and appetite are also greatly promoted by throwing a handful of charcoal once or twice a week into each of their pens. Their principal food should, however, be cooked thoroughly and nicely. From long practice and repeated experiments, I am convinced that two dollars worth of material well cooked, will make as much pork as three dollars' worth of the same material given in a raw state.

"Pigs when first taken from the sow should be

treated with great care, to prevent them from scouring and becoming stinted; when either of these happen, it will require many days and sometimes weeks to put them again into a healthy, growing condition. When first deprived of the maternal food, a little new or skim milk, boiled and slightly salted, and given to them often and in small quantities, will prevent scouring, and greatly promote their growth. If intended for killing at the age of 9 or 10 months, they should be full fed all the time, and kept as fat as possible. If, on the other hand, they are intended for killing at the age of 15 or 18 months, they should not be full fed, nor be made very fat for the first 10 or 12 months.

"To satisfy myself of the benefit of this course, I took six of my best pigs, 8 weeks old, all of the same litter, and shut them in two pens, three in each. Three of these I fed very high, and kept them as fat all the time as they could be made. The other three were fed sparingly, upon coarse food, but kept in a healthy, growing condition, till within four or five months of the time of killing, when they were fed as high as the others. They were all slaughtered at the same time, being then 16 months old. At the age of 9 months the full-fed pigs were much the heaviest, but, at the time of killing, the pigs fed sparingly for the first ten or twelve months weighed, upon an average, fifty pounds each more than the others. Besides this additional weight of pork, the three "lean kine" added much more than the others to my manure heap. These results would seem very obvious to any one who has noticed the habits of the animal. In consequence of short feeding, they were much more active and industrious in the manufacture of compost, and this activity at the same time caused the muscles to enlarge and the frame to spread; while the very fat pigs became inactive, and, like indolent bipeds, they neither worked for their own benefit nor for that of others.

"For the purpose of increasing my manure-heap, my pens are kept constantly supplied with peat or swamp mud, about 300 loads of which are annually thrown into my sties. This, with the manure from my horse stable, which is daily thrown in, and the weeds and coarse herbage which are gathered from the farm, give me about 500 cart-loads of manure in a year.

"On regular and systematic feeding, and clean and dry bedding, the success of raising and fattening swine very much depends. A faithful feeder, also, who has some skill and taste, and withal a little pride of vocation, is indispensable."

Of all articles ever given to fattens wine, Indian meal is, without doubt, the most nutritious. Mr. Phinney, it seems, has, by actual trial, settled a much vexed question, whether hogs should be forced by full feeding when young, or at first be only kept well in a growing state. He found it better, when designed to be kept more than a year, to let the young animal, by sufficient but not excessive feeding, have time to develop himself and acquire a natural size, rather than, by filling him to repletion, to bring on a premature state of fatness; which seemed to check their growth. To young pigs, milk, whey, and butter-milk, are the best of all feed; but where cows are kept for the purpose of supplying the market with milk, the pigs will be of course regarded as very poor customers. 'The milkman will not call.' There is, however, as I have shown in page 254, under some circumstances, a mistake in this matter.

The establishment of J. P. Cushing, Watertown, for keeping and fatting swine is upon a large scale, and is exceedingly well contrived for his situation. It consists of a long one-story building, with separate pens on one side extending the whole length, each designed for four swine, with an open yard and a lodging and eating room to each, besides some lying-in apartments.* A commodious passage way runs the whole length of it, with the troughs projecting into the passage-way, and a shutter for the troughs so contrived that the trough is easily cleaned at any time, and the food of the hogs is placed before them without admitting that which, in the usual slovenly mode of feeding, is but too common, an uncivil interference on their part before all is ready. Some centrivance as effectual as this for another class of animals would be quite as useful at some of our public hotels and steam-boats, and save us from the severe remarks of those foreign travellers who have little sympathy with our customary dispatch of business, and seem to look upon us as a nation of fire-eaters.

The cooking apparatus is at one end. Had economy of room and ease of feeding been studied, the building might have been double the width, with pens on each side. In England, they are sometimes made circular with the cooking apparatus in the centre, and the feeding troughs all within the circle; but in such cases there must be much waste of room. Mr. Cushing's barracks are lengthwise of his cattle yard, so that the manure from the pens of his swine is thrown immediately into the yard, and any litter or muck easily supplied in the same way. His store hogs, too, at pleasure may be turned into the cattle-yard with the advice given in Æsop's fable by the dying father to his sons, 'that there is a treasure buried in the field which they would find by digging for it.' The swine, however, do not much need the advice. They are natural philosophers, and go by instinct into deep investigations. Some of them should always be kept in barn-yards and cellars. They are of great use in turning up and mixing the manure; and in yards where cattle are fed upon grain, and the sweepings of the barn floors are thrown out, they take care that nothing is lost. I have known a considerable number of store hogs kept in a thrifty condition upon that only which they obtained in a yard where a proportional number of beef cattle were stall-fed. The philosophy of reciprocal uses, which is apparent in every department of nature, though it frequently presents itself in a form offensive to a fastidious taste, is, to a reflecting mind, always instructive on the wonderful economy of the divine Providence.

A very large hog establishment in this county is to be found in West Cambridge, on the farm of Abner Pierce. He keeps in his enclosure about 500 hogs. They are supported upon the city swill or refuse. No hogs are allowed to be kept in Boston but by special and extraordinary permission; and among the excellent municipal regulations, the refuse vegetables, meat, garbage, and offal of the

* "The length of this building, including the cooking-place, is 252 feet, width 12 feet, and height the same. There are twenty pens, each 12 feet by 8, and a yard of 12 feet attached to each pen. The number of hogs that can be accommodated depends upon their sizes—from three to six, say an average of four of 300 weight each. There were fatted fifty-two hogs last season, weighing, dressed, 15,573lbs."

houses are required to be kept by each householder in a box or barrel, which is emptied once a week or oftener by the city scavengers. This, being taken into the covered city carts, is delivered at Mr. Pierce's establishment, about five miles from the city, daily—he paying therefore to the city 4000 dollars per year on a contract for five years.

His hogs, when I visited him, were in an enclosure of about fourteen acres, partly covered with trees, and bordering on one of the beautiful ponds in that vicinity; a picturesque situation most certainly, for animals making such humble pretensions to taste and sentiment. If nothing else, however, in the summer months they enjoy as much as their betters the luxury of a refreshing bath and quiet repose under the shade, both essentially conducive to their health and thrift. He has had no general disease among them, though occasionally a case of the "blind staggers." He considers this troublesome disease as proceeding wholly from indigestion; and he finds no difficulty in its cure, by procuring an immediate evacuation. For this purpose he gives a dose consisting of half a pint of lamp-oil, and half a pint of molasses, strongly charged with pounded brimstone. This remedy is important to be known, as the disease is not uncommon among swine, and often proves fatal. This disease can hardly be considered local, though the "blind staggers" in years gone by has been known to prevail in some localities, near at least one of these ponds, among a class of animals who assume to be of a higher rank, but who occasionally pollute these beautiful regions by a resort to them for purposes of dissipation; but a simple and perfect preventive is at last found for this disease (so much more humiliating and dreadful in its effects on them) if they can be induced to take it in "total abstinence."

Mr. Pierce's hogs are purchased; he raises none. He buys them at a weight of 100 to 150lbs. Their average weight when killed is from 250 to 300lbs. He has a killing twice a year, though many of his hogs are kept a year. The supply of refuse from the city is sufficient, excepting at certain seasons of the year, when some meal and corn are given.

They fatten in the yard without extra feed, excepting as above. At killing, the skins (that is, the small entrails) are sold at 10 cents a set; the harslet at 8 cents; which pay fully the expenses of dressing. The remainder is cooked for the swine, after saving and selling what can be used by the soap maker. The manure made in their beds where they are littered is sold readily at four dollars per cord, and in quick demand. The average sales of manure are not less than one thousand dollars.

In the enclosure there are extensive plank platforms, on which the garbage is spread when brought from the city. The right of cleaning the tables, after the hogs have filled themselves, is purchased by several neighbouring farmers at 2 dollars 50 cents per day. Much of the refuse thus obtained is spread upon their grass lands, or ploughed in on their cultivated grounds, or placed round their apple trees, and in every case with the greatest advantage. If not used immediately it is put into a compost heap and covered with mould. Some farmers who obtain it use much of it for feeding their own swine. One farmer stated to me that he had purchased the right of obtaining it two days in a week. He kept the last year fourteen hogs entirely upon these gleanings. The gain upon these hogs in live weight, from 1st October to 1st April, when he sold them on foot, was 2800lbs. Other farmers have been equally successful in this economical process.

A small example of fatting swine in Medway, Norfolk county, which came under my notice, seems worth recording, because an exact account of their cost was kept. The owner was a mechanic, and bought every article of their feed, not even keeping a cow. His two hogs, when killed, weighed—one 420lbs., one 382lbs., and pork was then worth 12 cents per lb. Value when dressed 96 dollars 24 cents. They were killed at 14 months old. They were bought in November and killed in the December of the next year. They were kept in the stye the whole time; were fed three times a day with weeds, corn, and potatoes. The potatoes were boiled and the Indian meal mixed with them into a mash. They were fed exclusively on corn one week before being killed. They did as well in winter as in summer. Salt was frequently given to them in their swill. The price of corn bought for them was 117 cents to 136 cents, or an average of 130 cents per bushel. Potatoes were 30 cents per bushel. The whole cost of the hogs when fatted was 62 dollars, including the price of purchase, or 7.8 cents per lb.

I shall here subjoin some careful experiments made by myself a few years since in relation to this subject. They were given to some portion of the public at the time, in another form; but they may here reach many by whom they have not been seen, and to whom they may be interesting.

Experiment 1.—Two hogs about one-year old, one of them a barrow in very good condition; the other a barrow recently gelded, and in ordinary condition, were put up to be fed exclusively upon Indian hasty pudding, or Indian meal boiled with water. We began feeding them the 1st March, 1831, and weighed them again on the 19th of the same month. In the eighteen days they consumed six bushels of Indian meal. They were offered cold water to drink, but did not incline to take any. The result:—

	lbs.
No. 1 weighed on 1st March	233
Do. 19th March	269
Gain	36
No. 2 (recently gelded) weighed on 1st March	190
Do. 19th March	247
Gain	57

The gain of the two was 93lbs. in 18 days. The quantity of meal consumed by them was ten quarts per day to the two. We allow thirty quarts to a bushel, deducting two for grinding. The price of corn at the time was 70 cents per bushel. The expense of the increased weight is 4.5 cents per lb.

March 21, 1831.—Killed the hog mentioned first in the foregoing experiment. Live weight 273lbs. Weight when dressed 215 lbs. Loss in offal, loose fat included, 58lbs., or a little more than one-fifth.

Experiment 2.

	lbs.
No. 2, mentioned above, weighed on 23rd March	253
Do., 30th April	312
Gain in 38 days	59
No. 3, a shoat purchased from a drove, weighed on 28th March	100
Do., on 30th April	151
Gain in 33 days	51

This is a fraction over 1lb. 8oz. per day each; nearly 1lb. 9 oz.

In this case their food was exclusively boiled potatoes mashed with Indian meal. The exact amount consumed not ascertained, but fed as freely as they would bear.

Experiment 3.—The two last named hogs were for the next 20 days put upon Indian hasty pudding exclusively, with the following result:—

	lbs.
No. 2 weighed on the 30th April	312
——————————— 20th May	382
Gain in 20 days	70
No. 3 weighed on 30th April.....	151
——————————20th May	185
Gain in 20 days	34

The two in the above-named 20 days consumed 4½ bushels of meal, cooked as above. Meal 78 cents per bushel. Gain of the two, 104lbs. in 20 days.

Experiment 4.—Sundry swine purchased from a drove, and fed with meal and potatoes, washed and mashed—

	March 28, 1831. lbs.	May 19, 1831. lbs.	
No. 1 weighed	97	165	Gain in 52 days, 68
No. 2 ,,	134	182	,, 48
No. 3 ,,	100	186	,, 86

The two following, raised on the farm, and fed as above—

	April 25, 1831. lbs.	May 19, 1831. lbs.	
No. 4 weighed	151	206	Gain in 24 days, 55
No. 5 ,,	140	165	,, 25

Experiment 5.—In this case it was not intended to force their thrift, but to keep the swine in an improving condition. They were shoats of the last autumn, and were of a good breed.

Tuesday, 3rd April, 1833.—Put up four shoats, and began feeding them with Indian hasty pudding.

	April 3. lbs.	April 22. lbs.		June 25. lbs.		
No. 1,	176	202	Gain 25	264	Gain	62
No. 2,	119	153	,, 34	226	,,	73
No. 3,	150	170	,, 20	218	,,	48
				Total		183
No. 4,	121	145	,, 24	Killed 30th May.		

From 3rd April to 22nd April, the above swine consumed 7 bushels and 1 peck of Indian meal. From 22nd April to the 25th June, 7 bushels of Indian meal, cooked as above.

One of the above, No. 4, was killed on 30th May; being absent, the live weight was not ascertained.

On the 25th June, the three remaining hogs were weighed, and in the 63 days, from 22nd April to 25th June, they had gained in that time 183lbs., as above.

After 30th May, when one of them was killed, 1 peck of meal made into hasty pudding, with a small allowance of the waste of the kitchen for a part of that time, lasted them three days, that is 22·25, or less than a quart, say seven-eighths of a quart per day to each.

At first we employed half a bushel of Indian meal to make a kettle of hasty pudding; but we soon found that a peck of meal by being boiled sufficiently would make the same kettle nearly full of hasty pudding, and of sufficient consistency. The kettle was a common-sized five-pail kettle, set in brick-work in the house; and it was remarkable that the peck of meal produced nearly the same quantity of pudding that we obtained from the half bushel, which showed the importance of inducing the meal to take up all the water it could be made to absorb.

The price of Indian corn was at that time 75 cents per bushel—30 quarts of meal to a bushel, deducting the toll. The amount of meal consumed in the whole time from 3rd April to 25th June was 14¼ bushels; the cost 10 dollars 69 cents; the total gain, making no allowance for the gain of No. 4, from 22d April to 30th May, which was not ascertained, was 287lbs.

The gain of No. 1, 2, and 3, from 22nd April to 25th June, was 183lbs. in 63 days; and allowing 1 peck to serve the three hogs for three days, required 5¼ bushels, the cost of which was 3 dollars 94 cents. The live weight could not be estimated at less than 4 cents per lb. when pork was at market 6 cents.

The value of the 183lbs. therefore was equal to 7 dollars 32 cents, or at 5 cents to 9 dollars 15 cents.

The gain of the swine for the first 19 days, from the 3rd to 22nd April, was—

No. 1.....	26lbs.....	or 1.368lbs.	per day.
No. 2.....	34	,, 1.789	,,
No. 3.....	20	,, 1.052	,,
No. 4.....	24	,, 1.263	,,

The gain from 22nd April to 25th June, 63 days, was—

No. 1.....	62lbs.....	or 0.984lbs.	per day.
No. 2.....	73	,, 1.158	,,
No. 3.....	48	,, 0.761	,,

The difference of daily gain in the two periods was attributable to the diminished quantity of meal. The question then arises, whether the first mode of feeding was as economical as the second.

In the first 19 days, 7 bush. 1 peck consumed, gave 104lbs. gain.

In the next 63 days, 5 bush. 1 peck consumed, gave 183lbs. gain.

Had the first gain been in proportion to the second gain, in reference to the meal consumed, the 7¼ bushels which gave 104lbs. should have given 252 5-7lbs. This great disparity can be explained only in the more economical preparation of the meal, by which a peck, taking up as much water as it would contain, gave a kettle nearly full of pudding, when half a bushel of meal, imperfectly prepared, gave little more. This seems to demonstrate the great advantage of cooked food, both as it respects its increase of bulk, and the improvement of its nutritive properties. Whether it would apply to those substances whose bulk is not increased by cooking, equally as to Indian meal and the like, is a matter which experiments only can determine.

With respect to the age at which it is advantageous to put up swine to fatten, I have only to remark that it is with swine as with other animals, there are some breeds which come much sooner to maturity than others. A successful farmer in Saratoga county, N.Y., says that March pigs, killed about Christmas, are the most profitable for pork. Four pigs, of what is called the grass breed, were slaughtered at Greenfield, N.Y., which weighed 348lbs., 318lbs., 310lbs., and 306lbs., at nine months and seventeen days old.

On this point, I present a letter with which I was honoured by the late John Lowell, whose authority in the agricultural community is justly estimated.

"DEAR SIR,—I have been prevented answering your inquiries as to my experience in raising old or young pigs. I may say that I have fully and clearly ascertained, from a trial of 20 years, that young pigs of from 25 to 30lbs. will give nearly double, in some remarkable cases three times, as many pounds as shoats of 6 months weighing from 100 to 150. I have taken two pigs of 100lbs. each, age six months, and never was able between May and November, to get them above 180, rarely above 170. I have taken 3 pigs of about 30lbs each, and on the same food which I gave to the two, they would weigh from 170 to 180 each in the same period; nay, I have taken pigs of 200, and never could get them to weigh more than 300 in 7 months on my food. The way I ascertain the quantity of food is, that I never give anything but the produce of my dairy, and the refuse of the garden, peaches, apples, and cabbage, which are uniform generally.

	lbs.
3 pigs of 90 wt. or 30 wt., will give ordinarily	510
Less original wt. 90, often not more than 60 ..	90
Gain.....	420
2 pigs of 100 wt. each, will give ordinarily....	340
Less original wt.....	200
Gain.....	140

"But the three pigs of 90 will not consume for the first 3 months half so much as the two of 100 each, and I have kept a fourth and sold it in August for quarter pork.

"There is nothing new or remarkable in these facts. It is the law of the whole animal creation. It is true of the calf and of man. The child of 7lbs. quadruples its weight in 12 months; and the calf of 60 wt. if fine and well fed will weigh 600 wt. at the end of the year, and (if a female) will not double the last weight at any age.

"P.S. It should be remarked that the weight at purchase is live weight, and at sale dead or net weight, because, in truth, to the owner this is the true mode of considering the subject. No doubt my sort of food is peculiarly favourable to young animals, it consisting in very liberal allowance of milk. If the older pigs were at once put on Indian meal they would attain to 250lbs at a year old, but the cost of the meal at 70 cents per bushel would amount to 9 dollars, and if the first cost, 5 dollars 50 cents, be added, and the pigs sold at 6 cents, there would be but 2 dollars gain on 2 pigs of 100 lbs. each; while 3 small pigs without meal, fed on milk, would give 24 dollars in the same time. I do not mean to give minute details, but general views. As an important qualification of the foregoing statement, it should be added, that shoats of 6 months bought out of droves have usually been stinted in their growth, and animals, like trees, recover slowly after a check. I presume if shoats were taken from a careful and liberal owner, the difference would be less. But as a general law it may be safely affirmed, that weight for weight at the purchase, the younger the animal, the greater the positive, and the far greater the net gain. At least such is my own experience and belief."

Swine ought to be kept on every farm in sufficient numbers to consume all the offal and waste of the dairy and kitchen. If beyond this, a breed can be obtained, which will arrive at early maturity, and which can be advantageously grass-fed or kept at a small expense and in an improving condition through the summer; and being put up to fatten early in autumn and forced as much as possible so as to be sent to market early in the winter, the farmer will ordinarily find a fair profit in this branch of husbandry. A great advantage is found in the keeping of swine from the valuable returns of manure both in quantity and quality, which are obtained from them, where care is taken to supply them with raw materials for the manufacture. Too much care cannot be bestowed in the selection of the breed and the general health of the animal when put up to feed; and it is strongly recommended to every careful farmer occasionally to weigh the animal and measure the feed, that he may ascertain seasonably on which side the balance of debt or credit is likely to fall. Nothing is more prejudicial to good husbandry than mere guesses and random conjectures; and though the result of our operations may not meet either our wishes or expectations, an intelligent mind will be always anxious as far as practicable to know precisely how far they correspond with or disappoint them.

EXPERIMENTS WITH VARIOUS MANURES.

The following detailed statement of experiments made by Thomas Stiles, Esq., a respectable and intelligent surgeon and landowner, farming part of his own land in the immediate vicinity of Spalding, cannot fail to be acceptable.

"Dales' Hybrid Turnips, sown on the 27th June, 1842, on ridges 27 inches apart. The soil a rich loam with a sandy subsoil.

		Expence per acre.	Produce. Tons.	Cwt.
No Farm-yard manure.	No. 1.—6 cwt. of urate mixed with ashes....	36s.	15	10
	No. 2.—6 cwt. of urate, 6 bushels of bones and ashes.....	54s.	17	10
	No. 3.—1½ cwt. of guano 4 bushels of bones and ashes.....	42s.	21	4
	No. 4.—12 2-horse cart-loads of rich farm-yard manure	36s.	19	8
Ten loads of rich farm-yard manure, ploughed into the ridges, at 3s. per load.	No. 5.—6 cwt. of urate, with ashes, 10 loads of well-made farm-yard-manure.....	66s.	20	0
	No. 6.—6 cwt. of urate, 6 bushels of bones and ashes, 10 loads of the same manure.....	84s.	21	2
	No. 7.—12 bushels of bones, 3 cwt. of urate, ashes, 10 loads of manure	84s.	20	15
	No. 8.—1½ cwt. of guano, 4 bushels of bones, ashes, 10 loads of manure	72s.	22	0
	No. 9.—12 bushels of bones, ashes, and 10 loads of manure....	66s.	20	0
	No. 10.—2 cwt. of guano and ashes, 10 loads of manure	70s.	20	0

"REMARKS.—Guano and bones are now considerably reduced in price, so that the compost used in

experiments Nos. 3 and 8 may be obtained for about 35s. per acre. I should certainly prefer them to any of the others. By their combination we obtain a fertiliser of extreme potency; recent chemical analysis shows us that they contain those elements which plants require as food.

"Urate and bones certainly accelerate vegetation, which is of much importance to protect the young plant from the ravages of the fly; but the expense is considerably increased, and the weight of turnips much less, than where bones are used in combination with guano.

"These experiments were very carefully conducted under my own superintendence; and, that no mistake should occur, I did not trust to the drill, but by means of a dibbling implement, contrived so as to form oblong holes in the ridges, into which a handful of compost, previously moistened, was deposited; upon this the seed was sown, and a very light rake completed the process. Each plant, when hoed, stood twelve inches asunder.

"From these experiments the practical farmer will learn that it is not by an *extra*, but by a *judicious* expenditure in artificial manure that he can secure a good crop of turnips. At first sight it appears rather remarkable that the weight of turnips raised by means of bones and guano, should amount to nearly as much as when 10 loads of farm-yard manure are applied in addition. And, also, that comparatively few more turnips are obtained in consequence of an extra outlay in artificial manure, for it appears that from farm-yard manure alone, 19 tons 8 cwt. were produced, whilst by the addition of an expenditure of 54s. per acre in artificial manure, only 22 tons were obtained.

"*Practice* cannot explain this apparent anomaly; *science* can readily elucidate it.

"Water, carbonic acid, oxygen, and nitrogen are the principal elements which compose the atmosphere, and vegetables growing in the sunshine decompose the carbonic acid of the air, which they absorb, and form part of their organised matter.

"The sun, air, and moisture give life, health, and vigour to vegetables, and their influence is much increased by frequently stirring the soil. It is on this account that vegetables cultivated on ridges possess such a superior advantage over those sown on the flat and near together. By the frequent use of the *horse-hoe*, the sun, air, and moisture have free access, and by a process of absorption, peculiar to the leaves, they take up from the atmosphere what is essential to their growth, and *flourish independently of the soil itself*. This is exemplified in the growth of turnips, where no farm-yard manure is used; but, by means of bones, the plant is pushed into a rapid growth, and then flourishes in consequence of its absorption of food by its leaves from the atmosphere. Bulbous flower-roots, for example, will grow and flourish in pure weather only, provided they are open to the access of the air; but deprived of air they sicken and die.

"By hoeing, too, we obtain an increased supply of moisture, which is highly advantageous to the growing crop, and in a long drought the refreshing morning dews effectually supply the place of genial showers. In the choice of the artificial manure to be employed for a green crop, it is of essential importance to the practical farmer that he should be guided by the wants of the succeeding crop. If, for instance, as is frequently the case in the fens of Lincolnshire, oats and wheat are to follow in succession, it is highly necessary that farm-yard manure should be liberally used, in conjunction with bones, urate, &c., or the soil will be deficient in some of the elements necessary to the full development of the corn crops. If, on the other hand, the green crop is consumed by sheep, and wheat succeeds, artificial manures, such as bones, bones and urate, or bones and guano, will amply suffice; and the farm-yard manure reserved for a crop of beans, after which another crop of wheat may be safely taken. Or if clover be grown instead of beans, the manure may with much advantage be ploughed in previously to taking another crop of wheat; or, what is much better, if the clover be grazed, to give to each sheep half a pound of cake daily, by such means an eminent agriculturist assures me that he obtains four bushels of wheat more per acre. On barley soils, both artificial and well made farm-yard manure should be used, in moderate quantities, to secure a crop of turnips; after the barley, the clover which generally succeeds should be grazed, and the sheep fed on oil-cake; or, if mown, farm-yard manure should again be liberally supplied, and a good crop of wheat will be the result.

"The farmer should never lose sight of the simple fact, that the *use of manure* is to afford the growing plant a fresh supply of that food which preceding crops have *consumed*, or which the soil does not contain. Indeed, the principle ever to be kept in mind is to supply the soil with those elements of nutrition which the plant requires as food. To establish these principles on a secure basis, *science* lends her aid, and the practical farmer will not surely turn a deaf ear to the advantages which must accrue from the researches of scientific men.

"I am informed by one of our most wealthy farmers, that he had grown wheat every alternate year, for many years past, and that his land is in much better condition than when he bought it. This is a clear proof that he has acted upon the principle of *returning* more of the *elements of nutrition* to the soil than he has removed; and when it is considered that our population increases every day, and that with this increase of the population an increased demand for the productions of the soil arises, it will at once be allowed that no object can be more important than this. The resources of the earth are unknown, and the energies of the farmer must never cease, until they are brought out to their fullest extent. The preceding experiments must convince the most sceptical that it is not by an *extra* supply of manure that he can produce an abundant crop, it is by a *judicious* use of the great *variety* of manures by which he can administer to the various wants of vegetation; and though it cannot be expected that every farmer can conduct his business on scientific principles, yet he should never forget that green crops can be raised by *artificial fertilizers*, and that he should husband his farm-yard manure for the purpose of obtaining an efficient crop of corn; bearing in mind too, that the relative value of manure depends on the food the animals eat, and there can be but little doubt that it would be more to the advantage of the farmer to keep his sheep and cattle on more nutritious food, for the sake of the increased value of the manure."

AGRICULTURAL CHEMIST FOR SCOTLAND.

Our readers are probably aware that Professor J. W. Johnston, of Durham, has been appointed agricultural chemist to the Highland and Agricultural Society of Scotland. The following are stated to be the duties, scale of charges, and privileges of subscribers, &c.

I.—DUTIES OF THE CHEMIST.

1. The chemist will be expected to assist in suggesting such series of experiments as are most likely to promote the objects of the association, to consider and explain theoretically the results obtained, and to point out how they may best be turned to account by the practical farmer.

2. Chemical analysis being of the highest importance, both as connected with such experimental inquiries, and to inform private parties of the value of different substances, whether for sale or use, the chemist will be expected to analyze soils, manures, limestones, the products of vegetation, and other such substances—the cost of their transmission to him being defrayed by the persons sending them.

3. It will be his duty to give advice, whenever it is in his power, regarding the mode of culture followed in any particular district, with a view either to its improvement, or its adoption elsewhere; and, upon the weekly market-day in Edinburgh, to devote a certain portion of time to giving practical directions to members of the Association wishing the benefit of his counsel.

4. Before commencing the analysis of any substance submitted to him, the chemist may require a statement of the precise object which is proposed to be attained by it.

5. He shall be bound to give only such an analysis as is adapted to the particular practical object for which it is required, and he will apprise the party of the charge to be made for it.

6. The chemist will have his laboratory in Edinburgh, but during a portion of the year he shall visit different parts of Scotland, on invitations, and at times approved of by the committee.

7. When the services of the chemist are so required, his expenses while travelling to and from, and residing in the district, are to be defrayed by the parties inviting him.

8. The chemist, if it shall be required of him by the committee, to visit the lands of any members of the association, will be expected to do so on the same terms.

9. A short journal must be kept by the chemist of his proceedings, when resident in Edinburgh, and when visiting in the country; a record kept, in a separate book, of all the analyses he makes, and of any reports he may draw up, and all correspondence on the business of the association.

10. The chemist shall, at his own expence, provide a laboratory, with the necessary apparatus and materials, and such assistance as he may require, for enabling him to perform the duties required of him.

11. The chemist will be expected to give gratuitously his advice to the committee of management, on all matters connected with the objects of the association, whenever required by them to do so.

12. All application for analysis or advice are to be addressed to the chemist, who, if he finds it necessary, may consult the committee.

13. The foregoing duties shall be performed on the following terms:—

SCALE OF CHARGES.

1. Testing saline manures, (such as gypsum, nitrate of soda, sulphate of soda, guano, bone-dust, &c.,) for *adulterations*, for each sample, 3s.

2. Examining limestones, marls, shell-sands, &c., to ascertain the proportion of lime, and the presence of magnesia and alumina, 5s.

3. Ascertaining the proportion also of the latter, or of any other ingredients, for each ingredient 2s. 6d. extra.

4. Examining a soil, or the ashes of a plant, to determine the proportion of one ingredient, 5s. The proportion of every other ingredient to be charged 2s. 6d. additional for each.

5. Examining, with a view to its commercial and agricultural value, any artificial mixed manure, such as manufactured guano, humus, animalized carbon, patent manures, &c., 5s.

6. Examining the products of vegetation, to determine, for example, the quantity of water, or of starch, or of sugar, in potatoes or turnips; or of oil or gluten in wheaten flour, from 2s. 6d. to 5s.

7. Letters asking advice, unless accompanying, and in reference exclusively to substances transmitted for analysis, to enclose 2s. 6d.

N.B.—Every ten shillings subscribed by a tenant, or twenty shillings by a proprietor, shall entitle to two analyses yearly on the above terms; all beyond that number to be charged one-half more. To the numbers of letters of advice, it appears unnecessary at first to prescribe any limits.

No sample to be sent for analysis without the fee being enclosed with it.

II.—PRIVILEGES OF SUBSCRIBERS.

1. Every landed proprietor who pays 1*l.* yearly, and every tenant farming other persons' land, who pays 10s. yearly, shall, on subscribing their names, or authorizing their names to be inscribed in a book to be kept for that purpose, be entitled to the services of the chemist, on the terms before mentioned.

2. The directors of the Highland and Agricultural Society shall be intitled to publish exclusively, in their Transactions, the reports made to the general meetings of the subscribers, as well as such chemical analyses, made for subscribers, as in the opinion of the committee are deserving of publication.

3. Every agricultural society, by paying to the funds of the association 5*l.* yearly, shall be entitled to one lecture from the chemist; by paying 10*l.*, two lectures; and by paying 15*l.*, three lectures; and such society shall have right to prescribe the particular subject of each lecture, as well as to have these lectures delivered either separately or together.

TO THE EDITOR OF THE TIMES.—Sir,—The following novel and interesting experiment having lately been successfully made by a friend of mine at Cheam, in Surrey, deserves a place in your influential journal:—In July, 1842, Mr. A. Palmer put one grain of wheat in a common garden-pot. In August the same was divided into four plants, which in three weeks were again divided into twelve plants. In September these twelve plants were divided into thirty-two, which in November were divided into fifty plants, and then placed in open ground. In July, 1843, twelve o

the plants failed, but the remainder thirty-eight were healthy. On the 19th of August they were cut down, and counted 1,972 stems, with an average of fifty grains to a stem, giving an increase of 98,600. Now, Sir, if this be a practicable measure of planting wheat, it follows that most of the grain now used for seed may be saved, and will infinitely more than cover the extra expense of sowing, as the wheat plants can be raised by the labourer in his garden, his wife and children being employed in dividing and transplanting them. I have enclosed one of the stems as a sample. You will find it rather above six feet long, and stout in proportion. I am, Sir, your obedient servant,

Spring-grove, Sept. 9. HENRY POWNALL

THE CLOVER DODDER.

(FROM THE GARDENERS' CHRONICLE.)

Professor Henslow last week called attention to the silent but dangerous progress that is making by a new agricultural pest, the clover dodder, which threatens to destroy the clover crop altogether in some places. We have been favoured with a communication, which will be found in another column, from Sir James M'Adam upon the same subject; and we understand that the evil is beginning to cause serious alarm among agriculturists.

There can be no effectual means of opposing the inroads of this new enemy, without knowing what we have to oppose. It may therefore be as well at once to explain its habits, and to offer suggestions for its eradication.

The dodders are a singular race of true parasites, inhabiting all the temperate and warmer parts of the globe, distinguished by botanists into numerous species, but all having the same manner of growth and multiplication. They are leafless annual plants, allied to the bindweeds, and, like them, strangling whatever they lay hold of. Their flowers, which are small, appear in balls on the stems, speedily form fruit, and end in producing each four seeds, about the size of a grain of mustard, within which is coiled up an embryo plant, looking like a miniature snake. As the number of flowers in each ball is, in our common species, on an average, about fifteen, it follows that every ball will furnish about sixty young plants—whence the rapid spread of such pests may be easily understood.

As soon as the seed of the dodder is ripe, it falls to the ground, and usually seems to lie dormant till the succeeding year; sometimes, however, it is said to germinate immediately. When the spring returns, the embryo sends one end down into the earth to form a root, and with the other it rises upwards, like a small white thread or worm. At this time it is not a parasite, but seems to derive its food from the soil, like ordinary plants. It cannot however do so long, but withers and perishes, unless it touches some living branch or stem. If it succeed in doing so, it immediately seizes the live stem by means of a sucker, which is protruded from the point of contact; and then, twining from left to right, and forming more suckers as it twines, it establishes itself on its victim, and ceases to have any further connexion with the soil. From that time forward it is a true parasite, feeding on the juices of the plant it has seized upon. After making a few turns round the branch, and securing itself firmly in its new position, it again lengthens, and catches hold of some other branch, when more suckers are protruded; and thus it goes on—branching, and twining, and sucking, and branching again—until it forms that appearance which Professor Henslow well describes as resembling "fine, closely-tangled, wet catgut." Now the dodder has a new and independent seat of life wherever it has twined round a branch; and as it is incessantly twining and separating, and twining again, a single plant is speedily in the condition of a polype—so that if it be cut into a thousand pieces, each piece will immediately go on growing, as if nothing had happened to it. Tearing the dodder to pieces, then, so far from extirpating it, only multiplies the mischief, instead of arresting it.

This short statement will show that it is a formidable enemy that has been thus unfortunately introduced to our fields; and, as these things are not very nice in their food, it is not impossible that the clover dodder may next take a fancy to our wheat fields, unless we can speedily put an end to its presence. It is of little use to cut it in pieces—it is of no use whatever to do so, if the fragments are left where they can catch hold of anything else.

As it is only an annual, it would be killed if we could prevent its flowering; but that is difficult, because of its hiding itself among the lower branches of plants, where it cannot well be seen: and a few heads of flowers will soon renew it in a succeeding year. The right plan would be to dig up the clover where the dodder appears, so as to form a circle considerably beyond the patch apparently formed by it, and then to burn it in heaps; or in cases where the entire field is infected by it, to sacrifice the whole crop, and burn it.

This may appear a violent remedy, but it is the only one likely to be effectual; and even this will fail, if (which is not yet the case, but soon will be) the dodder is allowed to form its seed: for they will fall on the ground, lie hid in the crevices, and re-appear with the next crop—when all the labour will have to be done over again.

CLOVER DODDER.—A desire to be useful will, perhaps, be the best apology I can offer for the liberty I have taken to give an account of a most pernicious and destructive plant in a field of clover, called seven acres, on this farm, which has attracted great attention, and caused much alarm. Its name, if I am correctly informed, is cuscuta (dodder) or Indian grass. It commences in small patches all over the field, and gradually extends itself in circles of from five to seven feet in diameter, destroying in its progress all vegetation, clover, weeds, and every thing; it then appears to die off, leaving the whole area black, as if a fire had existed on the spot. Nearly one fourth part of the crop of clover is already destroyed, and the evil still continues. This weed has the appearance of a large mass of yellow horse-hair, which shoots up through the clover upon an average of nine inches deep, and twines itself around every stalk of it. A portion of it throws out a small white flower at the joints. It is presumed that the seed of this most destructive plant must have been mixed with the seed of the clover when sown, which was purchased from a general corn and seed dealer in this neighbourhood. I am anxious through the medium of the *Chronicle* to put my brother agriculturists upon their guard against so fearful an enemy, and I will highly esteem the favour of any information that may be elicited on the subject.—*James M'Adam, Tindon End, Thaxted, Essex.*

HARLESTON FARMERS' CLUB.

(EXTRACTS FROM REPORT FOR 1842.)

COMPULSORY CULTIVATION CLAUSES.

The concluding discussion, given in the last year's Report, did but establish a broad principle relating to the position of landlord and tenant. This, your committee of the present year pledged themselves to carry into detail, regarding it as a question of prominent importance to the interest of agriculture. The more closely they have studied the subject, the more are they convinced that it contains the source of one of the greatest evils the cultivators of the soil of Britain have to contend with;—as these views are advanced in times of the wildest speculation, they are anxious that all should see that their conclusions are supported by facts;—they are jealous alike for their own fame and for their interest of the craft, and therefore desire that the soundness and justice of their opinions should be acknowledged by all; well aware that they have to grapple with a giant, they have looked always to the ground they have taken; and knowing both the duties and the difficulties of their position, they have advanced with cheerful self-reliance, and have contended only for the removal of impediments they know to exist, that thus every encouragement may be afforded to those who have always been regarded as not the most insignificant class of the community. They deprecate the introduction of any measure that would divide the interest of the landlord and the cultivator; but they are persuaded that, in these days when distress threatens farmers and labourers alike, landlords ought to make many concessions, and renouncing at once a compulsory system, which must needs be too stringent for the present times, promote that more profitable husbandy, which long and comparatively unrestricted leases have almost invariably introduced.

Your committee will endeavour to give you, in as compressed a form as they can, the outline of their proceedings. They commenced with the consideration of "The Compulsory Cultivation Clauses," generally introduced in leases. The introducer contended that, such now was the improved state of husbandry in this neighbourhood, that lands coming for fallow would in very few instances require the number of ploughings generally prescribed in leases—not less than five; that such tillages (especially on heavy lands, to which his remarks more particularly applied) would very frequently, in an ungenial season, throw the cultivator so far behind, and leave his soil in so unkind a state, as effectually to unfit it for a root crop, the procuring of which he considered to be the key-stone, on all soils, of profitable husbandry.

The next speaker admitted the soundness of the remarks respecting the root crop, but he did not think it could be secured in any way but by the plough; he always found time to give the five earths, which he considered essential to good cultivation, for sunning the land well, bringing up a variety of surfaces for the vegetation and destruction of annuals, which he thought no implement could effect so well as the plough. Touching the compulsory clauses, he must maintain the necessity of them as the rule; with the written authority from the landlord, or his agent, as an exemption, in all such cases as he might think proper to grant it. It was admitted that such prescriptions were necessary for bad farmers, but that due discrimination and distinctions should be made for the encouragement of the good husbandman.

A doubt, which was expressed as to the advantage of growing roots on all the heavy-land fallows, was met by the statement of a case of a heavy-land farm during the progress of a lease of twelve years, which was proved to have produced a much more profitable return from the cultivation of roots, than from the system of long fallowing as practiced the previous twelve;—one system affording a rent, where the other paid nothing.

It was still contended that, although under a liberal landlord, or a competent and practical agent, a tenant might obtain all the freedom that was necessary for effecting his purposes, it was objectionable, as placing him in the position of requesting as a boon that, which as a practical operation, immediately affecting his interest, ought to be left to his own control. The advocate for restrictions said, he should consider the tenant making an effort to improve his own case, entitled to every indulgence, as the landlord's best friend.

After a protracted and most animated debate, the following resolution was adopted:—

"That although land in a very foul state may require four or perhaps more ploughings, in order to clean it, still, when the land is clean, other machinery may supersede the number of ploughings, as tending to obtain a better tilth at less cost, and more benefit to the root crop, which this meeting considers indespensable to good farming; inasmuch as the long fallow has been proved to give a less amount of corn in value during a course, than a good system of root crop growing, and that the landlord's property is ultimately materially benefited by the latter course. The meeting is therefore of opinion, that the present compulsory clauses, in the cultivation of the fallow under a good farmer, are of too stringent a nature."

The detail of the lease question was again introduced at the April meeting. The member brought his observations to bear principally on the rotation of crops generally prescribed in Norfolk and Suffolk leases—the four, or rather eight course shift of turnips, barley, clover, wheat, allowing only the substitute of beans or peas for clover in the next round, and not always that. He put it to the meeting, whether or not it was best for the landlord, best for the tenant, best for the consumer, that such a fixed course should be insisted on: or if it would not be better for all parties, that the succession of crops should be left during the major part of a lease, to the judgment and discretion of the tenant. He warmly contended, that in all cases, length of lease, and that comparatively unrestricted, (except as it regarded the succession of white crops, and rotation in the last four years of the term,) was the only principle on which a contract between landlord and tenant should be based, looking impartially to the rights of both parties, which he conceived would be more efficiently protected by a valuation at the commencement and termination of a lease.

The following speaker supported the same views; observing, that he conceived it derogatory and debasing to the cultivator, that he should be thought so ignorant of his business as to need the dictation of the lawyer or landlord's agent; that the tenant, whose every-day business and interest it was to make the most of his land, might fairly be considered most competent to judge what would be beneficial; that the interests of landlord and tenant were so inseparable, that the former

could have nothing to fear; that the discoveries of science, and progression of art, would be rendered nugatory and useless by an obstinate adherence to things as they have been; and that a more liberal code of covenants would certainly operate as a stimulus to more improved husbandry.

The next gentleman thought length of lease indespensable; for a tenant taking a farm in a fresh neighbourhood had much to learn, and frequently suffered considerably from want of knowledge of the peculiarities of the soil, which nothing but long experience could enable him to guard against. The last observation was illustrated by a case, showing forcibly the necessity, not only of understanding the soil, but of possessing such freedom as would admit of acting upon such knowledge.

After many other corresponding views and observations from various gentlemen, the unanimous feeling of the meeting was embodied in the following resolution:—

"A discussion having taken place on the rotation of cropping compelled by our leases, it is the decided opinion of this meeting—an opinion confirmed and increased by every debate on the subject, that the only sound principle for tenure of land is *length of lease, with unrestricted covenants* (except in two or three general points, such, for instance, as not growing two white straw crops in succession); but feeling that the landowner's interest must be equally considered, the Harleston club recommends a fixed course for the last four years of the lease, and a valuation at the commencement and termination of the same,—the deterioration, if any, to be paid to the landlord. The Harleston Farmer's Club is persuaded, that whether for the interest of the landowner, the occupier, or the community at large, this is the only correct principle, and one which will tend, more than any other, to improve the soil and increase its produce."

An adjourned open meeting was appointed for the 2nd of November, for the re-introduction of the lease question, which was not considered by the club to be sufficiently definite or explicit, without a summary statement of what they conceived to be some of the approved features of such a contract. After a protracted and animated discussion, the following conclusions were determined on:—

I. That whatever the nature of the covenants we may sanction, or the length of term we may recommend, we strongly adhere to the principle of corn rents, as being most equitable to both owner and occupier, more particularly in these times of uncertain legislation.

II. That with regard to length of tenure, the Harleston Farmer's Club considers a long term (say from sixteen to twenty years) indespensable to good and profitable farming, and mutually advantageous.

The club having, at a previous meeting, passed a resolution recommending unrestricted covenants, with certain exceptions, it becomes necessary to define the most prominent. They are as follow:—

That two white-straw corn crops shall not be grown in succession.

That no pasture land shall be broken up without the consent, in writing, of the landowner.

That no hay, straw, manure, or green crops, be sold off the farm, without an equivalent being returned in artificial food or manure.

That all water courses shall be kept open.

Some other points, such as burning, &c., were adverted to, but it was considered unnecessary to enter into a minute detail, as the expediency of such matters must, in a great measure, depend on soil and circumstances.

Concerning the preserving of timber, the landlord will, of course, insert what clauses he may deem necessary; but the club cannot forbear stating its decided opinion, that the injury to the tenant, from timber on hedgerows, and more particularly from ash timber, is incalculably greater than any profit accruing to the landlord from the same. And lastly, the club strongly recommends the owner to find the necessary capital for all permanent improvements, a fair interest for the same being added to the rent; or if the tenant wishes to employ his own capital in such improvements, it considers him entitled to allowance at the end of the term, for any portion of the same which may be unexhausted.

In reverting to the opinions of the club, on the prominent subject of this year's discussions, viz. that of leases, and their general character, your committee can but congratulate you on the growing popularity of your conclusions,—scarcely a farmer's club, or other association, but has responded to the justice of the principles you have advocated. As tenant farmers, *alive to their responsibilities*, your committee deem such an influence much more potent than compulsory or restrictive dictation; they feel satisfied that they have examined with diligence and decided with impartiality; if they have discovered no new light, they have endeavoured to expose an old and long standing error.

In originating this movement, the Harleston Farmer's Club acted from no other motive than a conviction of the duties and the exigences of their position. They, the sons of the soil, would not be found flinching at a time when, more than ever before, "England expects every man to do his duty."

MAIDSTONE FARMERS' CLUB.

ON FOLDING AND FEEDING SHEEP.

The discussion was introduced by Mr. Rutley, of Wrotham, who read the following paper on the subject:—

"Mr. Chairman,—Having benefitted from several discussions at our different monthly meetings, I feel it my duty, as a member, to give any information I may possess that may at all tend to benefit the members, or even any individual member, of this society; not that I have the presumption to imagine that in opening the discussion for the present evening I shall be able to throw any new light on a subject so well known to most of us, but it will afford me great pleasure if any thing you will allow me to state here, should give any information to any member of this society that may prove useful to him.

"The feeding and folding of sheep is a subject of great importance to all occupiers of light and dry soils, whether it is chalk, sand, loam, gravel, or any other soil, lying on a dry and porous subsoil; and in giving you my ideas on the subject it is my intention to confine myself principally to my own practical knowledge, more with a view of gaining information from gentlemen here in reply to what I may advance, than from an impression that I

shall be able to give much. I know that it is a subject on which practical and experienced persons have differed, and I have too often had occasion to put aside practices in farming which I once thought right, for better ones, ever to suppose what I practise cannot be improved upon. (*Cheers*).

"I will begin with folding of sheep. On that subject I have heard opposite and very different opinions; some stating, and very truly, that folded sheep do not thrive so well and cannot be brought to so early maturity; others concur with a late eminent sheep breeder, Mr. Bakewell, that it is robbing Peter to pay Paul in carrying the manure of one field on to another. From those I differ, having, from many years' experience, found that I have benefitted my arable land without at all injuring my pasture; in fact, I consider my pasture land improved, certainly not by folding on the arable, but by the close feeding of a folding flock. In all parts where I have seen folding practised, the down and pasture land, if not improved is no worse than it was 50 years back, whilst to the arable land it has been a source of great benefit. A great deal of arable could not be cultivated advantageously without it. With respect to the objection that sheep do not come to so early maturity when "worked," as we term it, much depends no doubt on the soil and situation of the farm. There are many thousands of acres of dry healthy feeding pasture land in this kingdom, that will assist to promote the growth of sheep, but not to fatten them. Such land would become, as it were, useless, unless a lean flock was kept. The general practice, and the best one, is to feed the flock on the poor pastures until some time in the afternoon, taking care generally to have some green growing crop on the arable land; such as, in summer, rye, tares, clover, or other artificial grasses; in winter rape or turnips, that the sheep may be able to fill their bellies before they go to fold; taking care to have them turned out of the fold early in the morning in hot weather, but on white frosty mornings, not until the frost is off, and the sheep will do as well as running at large on enclosed pastures all night. It certainly is, I admit, very desirable, and much for the benefit of this kingdom, that sheep should be brought to as early maturity as possible, thereby producing the greatest quantity of meat in a given time; it is therefore desirable that farms containing such poor pasture land as I have been describing, should be devoted to a breeding and weaning flock; and such a flock I consider best adopted for folding. Some farmers occupying such land consider it most advantageous to keep a dry folding flock, buying in either lambs or tags for that purpose; but in that case they are not fatted so soon generally by twelve months or nearly, coming perhaps to a greater weight each, but of course not so many would be fatted as when brought to maturity twelve months earlier. I am alluding, gentlemen, to south or west Down sheep; Kents, Leicesters, or any other sort that I know of, not being calculated so well for folding. I am borne out in my opinion on folding by the late John Ellman, Esq., of Glynde, who in a letter to Sir John Sinclair, describes the advantages of folding, and the objections made by some against it, a copy of which letter appears in the *Farmers' Magazine* for 1840, vol 2, p. 110. He there states that 3,200 sheep will dress an acre of ground in one night, and that the value of that dressing is from 35s. to 50s. per acre; and calculates the value of the dressing from folding to be 4s. 6d. per annum for one sheep. I generally lay at the rate of 2½ or 3 sheep to the square of a hurdle-gate. For instance, if I have 300 sheep to fold I have (if I want to lay three sheep per gate) my fold pitched 10 gates square, which will go over an acre in ten days, making 3000 sheep to an acre. My general practice is where I feed off seeds or tares to fold them on the same field after they have had their bellies filled from them, and thereby laying the manure more evenly over the field; as well (as Mr. Ellman states) to prevent their laying on their food and stenching it. I consider the value of a fold quite equal to what Mr. Ellman states, having in some instances, from folding a clover ley, had from 6 to 8 bushels per acre more wheat, and found it do good for more than one year.

"Gentlemen, I am fearful I am drawing too largely on your time and patience, I will therefore in the few observations I wish to make on the feeding sheep on turnips be as brief as I can. We have in two or three of our former discussions touched on this subject. We have resolved that sheep fat faster in a warm yard, with sheds to lie in, than they do in an open field, and that therefore it is desirable, on clammy and other soils not adapted for feeding in wet weather, to draw the turnips, more particularly Swede turnips, for yard feeding; but on light sandy, and thin chalky soils, it was best to feed them on the land, as such land required treading as well as manuring, but that the cutting of turnips with Gardner's or some other similar machine, was in all cases best. There is consequently but little fresh to be said on feeding off turnips, and I would not have troubled you with any observations, did I not find a great prejudice still exists against drawing and storing Swede turnips. Some contend that when you have made a good fallow for turnips, well manured it, and got a good crop, that by loading them all off the field you are robbing that field, and leaving it in no better state than before you made the fallow. Of course the field will not be left so full of manure as if the turnips were fed on it, but I contend it will be left in a much better state than it was before it was fallowed and manured. I think our agricultural chemists will tell us, that all manures, and more particularly good farm yard, oil cake fatting, and stable manure, contain, or are composed of, various substances and gases, each more or less the food of different vegetables; consequently the turnip only takes from that manure that food best adapted for its growth, leaving in the soil that best adapted for the succeeding crops. Had the turnips been fed on the ground, each crop would have an increased quantity of food, but would they yield in proportion? Is there not sometimes a crop of barley layed by manuring followed by strong feeding? Is not the clover, if any is sown, as is common, in barley after turnips, injured or quite destroyed by a heavy laid crop of straw, and the ley lost or much injured for a succeeding crop of wheat. I am speaking now of land adapted for the growth of Swede turnips, but not so well at all times adapted for feeding, being in wet weather, as I before said, sticky and clammy, and consequently cannot be fed only in fine weather; and which, when fed in the spring, if not followed by frosts or congenial showers, ploughs up so close and tough that it cannot be pulverised sufficiently for the ensuing crop; consequently a loss is sustained that would not have been experienced had the land not

been trodden so closely with sheep. I am not one of those who think that you can have too much manure, but it must be judiciously applied to turn it to the most advantage. It is not because a crop of turnips is taken off a field that the farm is less manured. I contend that more manure is made from the same turnips fed in a yard than on the ground, the sheep will do a great deal better, and the manure can be applied where most required. I am not advocating this system either on all soils, in all situations, or under all circumstances; for upon all soils where treading and closing the ground is necessary, I would not do it, nor am I an advocate for continually feeding stock sheep in a yard, but when I fat sheep in winter I yard-feed as much as possible, and I yard as many of my sheep as I can find room for at night in very wet weather; giving them always fodder, and in some cases a little corn. When I feed turnips on the ground I do not close fold them, but, as generally practised, let them run back. I do not close-fold anywhere in very wet weather, but either yard them or lay them on a dry pasture field. There are many light and dry soils that require closing before or after the seed is deposited, and more particularly wheat, and none more than light thin chalky soils; and before I close the subject, allow me to recommend to the notice and use of occupiers of such soils, a furrow presser, with four wheels or pressers, to press four furrows at a time. I have used one this year, and I much approve of it, particularly on clover leys, where I have principally used it. The seam between the furrows is pressed down very neatly and evenly. The seed is consequently deposited at an even depth, and any little pieces or roots that may break off the edges of the furrows is pressed down so that the harrows bury it. The only disadvantage that I know of belonging to it is, that it cannot be used on side hilly ground. I believe both Mr. Farrant and Mr. Garrett sell these presses, and those gentlemen receive my thanks for introducing them into this neighbourhood.

"In concluding, I beg to observe that in folding sheep my object is to get their manure where most beneficial and most required; and in feeding, to make as much manure in the winter as I possibly can, and distribute it where most advantageous, for it must be obvious that if one field is deprived of some part of the manure, by taking off part or all the turnips, some other field must be benefitted, that field receiving in its turn from another field equal benefit; being of opinion that the more frequent, in reason, manure is applied the better, although it may not exceed the whole quantity put on less frequently."

Mr. HATCH said that he should recommend feeding in troughs as strongly as Mr. Rutley had recommended folding, but only on light soils, as he thought that a season might be lost by the poaching of retentive soils. He had had very little experience in folding a dry flock, but on his light soil he had found it answer well with a breeding flock, and he had not discovered any difference in effect between Kent and Down sheep. He believed that the Kents were in every way adapted to folding—except perhaps in the length of their wool, which in close folding rendered them more dirty and uncomfortable than the shorter fleece of the Downs. With reference to close folding, he had never lambed his ewes down in a close fold, but enclosed about half an acre to from 120 to 150 sheep. To this enclosure he made a warm "lu" with bundles of hop-poles stuck up and secured, and believed that the warmth and shelter given by this "lu" saved him, perhaps, half a score lambs in the year, and found by the use of this enclosure that much time was saved to his shepherd. He had folded trifolium, and had found it to answer extremely well; indeed, he had found it to be the best green crop he had ever had. It had grown to the height of about eighteen inches when in bloom, and he had found that his ewes and lambs had done better on it than on any other green crop. Everybody knew that when sheep first run into a green crop they knocked it down and trampled on it as flat as if a roller had gone over it. He had found, however, that the trifolium thus trampled on had been eaten up all clean, and had had less waste with it than any other crop. He thought that for light soils this was a very good crop, which had been very much neglected. After feeding off trifolium he had often grown some very good turnips, both white rounds and Swedes. He would also recommend on dry soils the planting of early peas, which might be succeeded by turnips, and these were fed off in time for wheat. He had thus got an early crop of peas, and the feeding off his turnips had always left his land in better order for wheat than it would have been had it not been folded. His pea-straw he generally had cut by a machine, and his crop of turnips was generally equal to any other that he had. The peas generally came off in July, and might be succeeded by either the turnips or rape; and if they preferred rape, and got a kindly autumn, they would get very good feed in November, together with the cut pea-straw given in troughs. He agreed with Mr. Rutley in the value of the presser, which he considered an excellent implement, but he feared that a four-furrow presser would be found too heavy for two horses, unless they could go abreast.

Mr. FARRANT said that the four-furrow pressers had been advantageously used with three horses, one behind and two abreast in front.

Mr. RUTLEY thought the plan mentioned objectionable, because the two horses abreast must be wider than the presser, and one of them must consequently run over the work. He thought that a six-furrow roller with four horses might be better, one advantage of which would be that they were not obliged to follow the plough so immediately, and they might sow a fortnight afterwards if it was thought desirable.

Mr. CULL, in reference to Mr. Rutley's plan of feeding sheep, first on pastures and then folding them on arable land, said that although he believed that plan might be found profitable in Berkshire or Hampshire, and other counties where there existed a good deal of rough or poor pastures, yet he did not think that it would be found suitable for Kent, except in particular situations, where there was an unusual quantity of pasture land. In the case of Mr. Ellman, alluded to by Mr. Rutley, it might be supposed that he had plenty of Down land, and under such circumstances no doubt it was a very good system. He (Mr. C.) did not, however, approve of that plan in Kent. With reference to sheep-folding he believed it to be a very good plan, and that they could not do on some soils without it. He generally allowed his tares to stand till they were high enough to mow; he then had them cut, and given to the sheep in cribs. On giving his sheep about two oilcakes a day, with tares cut in

this way, he had found them get on very quickly. He disapproved very much of folding lambs in small folds, and thought the preferable plan was to give them a large piece, say three quarters of an acre, to range in. He had found that they thrived much better under this plan. He (Mr. C.) did not think Mr. Rutley's system of yarding a good one, as he doubted whether the expense of pulling and carting the turnips to the yard, and afterwards carrying the manure back to the field, was not greater than the sowing.

Mr. RUTLEY said that yarding could not be practised where folding was impracticable, as, for instance, on some strong soils with wet subsoils.

The CHAIRMAN (C. G. Whittaker, Esq.) said that he had seen on Mr. Spencer's land a sheep-yard almost in his field. He (Mr. W.) had tried sheep on white peas, and had found them answer exceedingly well. Peas were very forcing — almost as much so, indeed, as oilcake.

Mr. RUTLEY said that, in reference to Mr. Cull's doubt as to the saving of expense in yarding, he (Mr. R.) had adopted the system at first from necessity, and had always found a saving of expense in it. He had always lambed down in yards, and had always found, when turnips were pulled for sheep, that they eat them up much more cleanly than when they were folded.

Mr. HATCH recommended that, after folding, the field should be ploughed as early as possible, He had known an instance where a folded field. having been allowed to remain unploughed some time in a dry autumn, the benefit of folding the first portion had been afterwards scarcely perceptible.

A further rather desultory conversation followed, in which Messrs. Hyde, Davis, Cull, R. Golding, Bartlett, and other members took part.

Mr. GOLDING said that he had generally put his sheep into yards in very wet weather, and folded them in the day-time; and considered that the folding and yarding systems might be very advantageously combined on some soils.

Mr. CULL said that a friend of his, who was a strong advocate for close folding, had lost many of his flock by having close-folded them in a very wet night, in consequence of their not having room to move about and keep their blood in circulation.

Mr. HYDE mentioned a case in which he had had some lambs poisoned by eating the root called "lords and ladies," which had grown under the hedge-row of a meadow in which they had been kept.

Mr. CULL asked Mr. Davis whether he thought that oilcake, or what other food, was most suitable for fattening sheep whilst on grass?

Mr. DAVIS said that he should certainly prefer corn to oilcake, but he thought it best to give a change of clover-hay, corn, and cake.

Mr. CULL spoke highly of the lentils or Egyptian tares.

Mr. HATCH had found dry tares very good for sheep in wet weather.

Mr. HYDE asked whether, in feeding with Irish oats, it was thought desirable first to bruise them?

Mr. CULL thought that it was not; he had tried cracked barley, and had found it not succeed so well as whole barley.

Mr. HATCH had found his sheep do very well on cake and whole barley.

Mr. R. GOLDING also considered whole grain best for sheep, which was perhaps accounted for by the fact of the sheep being a ruminating animal.

Mr. DAVIS thought that bruised grain would be best for broken-mouthed sheep, although whole grain might be best for young ones.

After some further discussion, the following resolution was adopted unanimously, on the motion of Mr. Hatch, seconded by Mr. Cull:—

"Resolved—That it appears to the members of this club, that on dry soils folding is expedient to close the soil, and that, if yarded at night, sheep may be folded on wet land. Trifolium (which should be grown on dry soils), tares, and other high grasses, appear to be most economically used when cut and put into cribs in the fold. It has been found very advantageous, where practicable, to sow early white peas, followed by turnips or rape, which may be fed off in time for wheat. Pea-straw and clover-hay, cut and put into troughs, is always highly beneficial in folding. White peas are said to be equal at least to oilcake in fattening, and barley or even tares, when cheap enough, are also very good. On grass, corn should be preferred to oilcake, at whatever price the latter may be. Rape is exeellent food for lambs and ewes, as it forces the milk; and even fatting sheep will sometimes thrive on it as well as on turnips."

THE AMMONIACAL LIQUOR OF GAS-WORKS AS MANURE.

Mr. S. BARTLETT, engineer of the Maidstone gas-works, called the attention of the members to this liquor, and expressed a wish that some agriculturists would try experiments with it. This had been done by Mr. Ellis, of Barming, the late Mr. W. Barrow, and Mr. Davis, and these gentlemen had found it too powerful, not having sufficiently diluted it. It contained a large proportion of ammonia, and would, he believed, when it became better known, and used in a very diluted state, be found to be a most powerful promoter of vegetation. He should be happy to give some of this liquor to any member who might be sending to the gas-works for the refuse lime, and lend him casks to carry it in, on the sole condition that the members receiving it would undertake to report the result of their experiments to the club. Several members undertook to try it on this condition.

It was then decided that the next subjects for discussion should be, first, on the best mode of fattening stock; secondly, on the best mode of cultivating woodlands.

SECOND ANNUAL REPORT OF THE COMMITTEE OF THE MAIDSTONE FARMERS' CLUB.

The committee beg to present to the members, according to the rules of the society, a report of the proceedings of the club during the past year, and of its present condition.

THE DISCUSSIONS.—The nature of the proceedings in the discussions will be best collected from the following notice of the subjects of discussion, and the resolutions which were adopted thereon, from the minute book:—

Feb. 24.—On the best sort of spring corn, and the best spring tillage:—*Wheat.*—"That notwithstanding a very general and long prevalent opinion that Talavera wheat was absolutely necessary for

spring sowing, the experience of the members of late years has decidedly proved, that all of such other kinds as have been tried, both white and red, have been more prolific than the Talavera. An instance has occurred in which red wheat sown so late as the 17th of April grew a fine crop. The only objection against late sowing appears to be its coming somewhat later in harvest. Thick sowing, having a tendency to early maturity, is recommended in these late cases. An objection to Talavera is also its peculiar liability to take injury from wet during harvest."

Oats.—"That it is not theoretically good husbandry to sow oats after a white crop unless stimulated by sprats, rape-cake, or other strong manure, or sown on light land after wheat which had been preceded by clover, or on stiff land preceded by a fallow, because the fallow pulverizes the land and prepares it for the oat crop."

March 24.—On the best sorts of roots for stock:—"That, in the opinion of this meeting, Skirving's Swede turnips are the most productive and hardy sort, but that Matson's 'green-topped' is a very good and hardy turnip; also his 'purple-topped,' if early consumption be contemplated, is very excellent. If turnips are to be fed off for wheat, Matson's white round and the tankard are recommended as coming early. If potatoes are intended for stock, goldfinders are considered the best. The club, however, wish it to be understood that they have had but little experience in the raising of potatoes for stock. White carrots produce the largest quantity, but red are the best in quality."

April 21.—On the summer cultivation of hops:—"That in the opinion of this meeting, in poleing hops, it is of importance to adapt the length of the pole to the strength of the hill, that every hill may be provided with support according to its powers; that it is therefore important to begin poleing in even and strong grounds with the strongest parts, so that the weakest may have time to show their bine, in order that each hill may have proper poles allotted to it. It appears to be the general opinion that the use of a line in poleing is beneficial for the after-cultivation, as rendering the bines less liable to injury; that deep culture in the early part of the summer is decidedly advantageous on most soils; that it is desirable to pull out the rank pipy bines before tying. With reference to mould, it appears to this meeting, that this disease has been experienced under all systems of management, whilst all systems of management have sometimes escaped it, under apparently similar external circumstances as those under which it has been experienced. An opinion prevails extensively, however, that rags, as a manure, are peculiarly favourable to its development, and a dense atmosphere favourable to its progress, and also that its causes exist more in the nature and conditions of the soil, than in the kind of hop."

May 19.—On the best sorts of breeding stock, and the best modes of breeding, feeding, and fatting:—"That it is the opinion of the meeting, that the Sussex breed of cattle are very good, and perhaps, all things considered, are the best kind. For the purposes of milk and butter, the Alderney kind are best suited for small dairies; for larger, a cross between the Sussex and South Wales or Sussex and Alderney are very good; it is believed that a little of the short-horn blood might be introduced with good effect. The Kent sheep, for general purposes, are also very good. Mr. Goord's sheep are considered a superior kind. For folding, the Southdowns are considered more suitable than the Kents, the improved Kents being, however, considered best for general purposes. When winter feed is short, sheep may be put into a yard with advantage, for the purposes both of fatting and of common feeding; in that case some mould should be put into the yard previous to littering, and the sheep kept clean."

June 16.—On the best mode of making hay. Introduced by an able paper from Mr. R. Golding, of Hunton, and a valuable letter from Mr. F. B. Elvy. Resolution:—"That the principles to be generally observed in hay-making should be, to cut on good lands before the grass is fully ripe; in rainy weather, after one day's good exposure, to place it in cock; and in fine weather, to place it in wind-rows, as more cheaply distributed for drying. Exceptive cases in cutting are where, on very poor land, the July rains produce more in quantity than may have been injured by standing too long. Where, too, hay is consumed at home, and it is in scanty crops, it may be economically made by allowing it to lie in swathe till the day after it is cut, when, after the dew is off, it is turned. It is then shook out on the third day, and carried in the afternoon. When hay is badly carried, it should be invariably salted, as should also good hay when not intended for sale."

July 21 and August 18.—On the best agricultural implements:—"That in exercising a choice of ploughs and every other agricultural implement, the properties of the soil and the local circumstances must be considered; that the turnwrist plough, although it has not been found applicable to the soils of other counties, has yet been found to do better than any other in Kent, where deep ploughing and turning over the soil is best adapted for keeping it clean and in a state of pulverisation. Mr. Smart's improved Kentish plough, for three horses, has been found well adapted for unvarying, free-working soils. The Suffolk drill, on all soils, but particularly on stiff soils, is generally considered decidedly preferable. Rollers in three divisions are generally believed to be the best." An able paper was read in this discussion, by Mr. J. B. L. Farrant.

Sept. 15 and Oct. 13.—On irrigation. Introduced by some valuable extracts and remarks, furnished by Mr. R. Golding, of Hunton. Resolution:—"That it appears, from all the experiments which have been tried by the members of this club, that irrigation, if properly regulated, is highly beneficial on all porous soils. On undrained clay soils great caution is, however, considered to be necessary, to prevent the land from being chilled by the subsequent evaporation."

Nov. 17.—On the folding and feeding of sheep:—"That it appears to the members of this club, that on dry soils folding is expedient to close the soil; and that, if yarded at night, sheep may be folded on wet land. Trifolium (which should be grown on dry soils), tares, and other high grasses, appear to be most economically used when cut and put into cribs in the fold. It has been found very advantageous, where practicable, to sow early white peas, followed by turnips or rape, which may be fed off in time for wheat. Pea straw and clover hay, cut and put into troughs, is always highly beneficial in folding. White peas are said to be equal at least to oil-cake, in fattening, and barley, and even tares (when cheap

enough), are also very good. On grass, corn should be preferred to oil-cake, at whatever price the latter may be. Rape is excellent food for lambs and ewes, as it forces the milk; and even fatting sheep will sometimes thrive on it, as well as on turnips."

Dec. 15.—On the best means of fattening stock:—"That the best mode of fattening bullocks on soils unsuitable for turnips is with hay and oil-cake, when the latter is not above 10*l.* per thousand; but when above that price, cracked beans or barley-meal at 28s. per quarter have been found a valuable substitute. Sheep have been very advantageously fatted, in yards, on Swedes, cut and given in troughs, with either cracked beans or oil-cake. Meal, when used for fattening hogs, is found best when used after having been mixed two or three days."

ON THE HIRING OF AGRICULTURAL SERVANTS.

BY CURTIS HAYWARD, ESQ., OF QUEDGLY.

Mr. Hayward, who has bestowed much attention on the subject of the hiring of agricultural servants, and who was chiefly instrumental in opening an office in Gloucester for registering the names of servants in want of situations, having been requested by the Gloucester Farmers' Club to favour them with his ideas on the subject, as the period for hiring servants was approaching: he complied, and on the 2nd inst. read a paper, of which the following is a copy:—

* * * *

But as to the present subject of discussion, "The best mode of hiring Farm Servants," I think I may appeal to all here present that the character and condition of their farm servants is not such as to make them think that the best system can be that prevailing in this district of hiring their servants for a year certain at mops. From the complaints I am continually hearing, I judge that farm servants are not such as their employers could wish them, that, in the opinion of farmers they have degenerated and become less careful of their master's interests, and more negligent as to their own characters than heretofore. Now if this be so, it is surely a case which demands serious investigation and consideration, for the interest, not only of the farmers, but also of the whole race of agricultural labourers is involved, and with them, other classes of the community. It is therefore highly desirable to investigate the causes, and apply a remedy if possible to so crying an evil.

There is perhaps no business in which the employer's property is more at his servant's mercy than the farmers—none where the steadiness and good conduct, and even forethought of his servans its more necessary to save him from disappointment, and to enable him to take advantage of the chances, which the variableness of seasons are continually presenting to him, and yet it would appear that no description of person could be less careful, as to the character of those whom they admit into their service. For I cannot consider the present mode of hiring to be much better than putting into a lottery for a servant, since in most cases, little more than a few minutes conversation can be depended upon, and then, if the servant seems likely, and there is a tolerable demand for them, he is hired without any enquiry as to his conduct in his last place, or his general character. It does occasionally happen that if the previous master is to be found on the spot, some questions are asked previous to hiring, but this is impossible in the majority of cases, so that in fact however bad a servant's conduct may have been in his last place, he has nearly as good a chance if he is a sharp well-spoken fellow, of getting a good place, as any one who came there with the best recommendation for unexceptionable conduct. What wonder then that servants should appear to be becoming careless of a character which is found to have so small an influence over their future prospects. The farmers, therefore, I think, are greatly losers by the present system, from the necessity of taking servants with so little time for enquiry as to their characters, by the general deterioration of the class of farm servants, arising mainly from the absence of that weight which ought to be attached to character in securing good places. They are losers also, I think I shall hereinafter show, by the custom of hiring for a year certain, and by the desire of change, and the unsettled feeling which is generated in all servants at the approach of the annual season for changing places.

Upon the servants themselves, the effects I consider are still more injurious—in the first place, the result of a great mass of the young of both sexes, congregating together as they do at the annual mops, and remaining out at night, and returning to their places together, are pretty well known to most of you. I believe that many a young girl, who might have proved a steady, useful, and respectable servant, has traced her ruin to the license of those lawless days. Then I do consider that the system of standing in a market, to be hired and chosen as cattle for their capabilities, must have a very degrading effect upon any people who possess any sort of self esteem. In old time when communication between places was very difficult, and our fathers bought almost everything at a fair, it is not singular that the same method should have been adopted in hiring servants, and there might have been nothing revolting or debasing in what was perhaps necessary; but now when we rarely see anything but cattle standing in a fair, it cannot fail to strike any one that it is degrading and distressing to see our fellow creatures in the same position; and I cannot help believing, however popular those days may be with the lower classes as holidays, inducing them to look upon such customs with pleasure rather than pain, nevertheless, to those of them who have any more reflection than their fellows, such an exposure must be productive of feelings of dissatisfaction and self-degradation.

But, besides these general evils, its effect individually is often very discouraging to the well-conducted: the lad with an excellent character stands all day and at last is thrown on his family without being hired; while a neighbour, an idle, ill-conducted, but perhaps stout and free-spoken youth, has obtained a good situation in spite of his ill-conduct in his last place. Being thus thrown out of place by no fault of his own, the hitherto good lad and promising servant is thrown upon his family probably for the year, during which time he gets out to work, and finds he can earn at day work, if there is employment, more than enough to support himself, the remainder he spends too often in company with other idle young men of his parish in drinking and dissipation. At the end of a year thus spent he is likely to prove a very different sort of servant from what he was at the commencement of it, even if he is

willing to submit again to the restraint of service at all. He is, thus young, thrown upon the world with a very slight knowledge of what every agricultural labourer, to be generally useful to a farmer, ought to know, and is doomed for the rest of his life to be either a very inefficient farm labourer, or to depend upon chance work for his livelihood.

A continued service under the roof of one active and intelligent farmer, has ever proved the best school for the agricultural labourer; he there grows up strong in body from having better food than the cottage fare can supply, and under the vigilant eye and restraint of his master, learns all the ordinary operations of husbandry, upon his skill in the conduct of which so much of his future value as an agricultural labourer must depend; and I have almost invariably found that those are the steadiest and most useful labourers who have remained longest in farm service. Believing such to be the case, I cannot help seeing with much regret, that the practice of boarding farm servants in the house is on the decrease, and that it is by some farmers almost entirely discontinued. At the same time, it is impossible to feel surprise that such should be the result of the great trouble and disappointment they have so frequently met with in their servants. It is, however, a consequence much to be deplored.

It is one thing, however, to point out the evils of the present system, and another to show how they can be remedied. Upon this subject I shall offer you some observations with much diffidence.

In the first place, I am inclined to think that your system of hiring servants for a year certain is not the most desirable one. I know I shall at once be told that unless we hired a servant for the whole period, a man who came to us at Michaelmas might stay with us through the winter, when we least wanted him, and then leave us just at hay-making, or before harvest. Such a thing is possible, but I believe would very rarely occur, and might, if you chose, be guarded against by agreeing for a lower rate of wages during the winter six months, to be raised for those succeeding; but if character was more looked to, a man who left one employer in the lurch just at haymaking, would not find that such a recommendation would induce other persons to give him a trial, and a warning or two of that sort would prevent the custom becoming prevalent.

Besides, I suspect that the legal tie which binds an unwilling servant to his place is not of any great value in reality to his master. It not unfrequently happens to me to be applied to, as a magistrate, by masters towards summer on account of the misconduct of their servants; and upon examination they detail a number of petty instances of neglect, extremely annoying, and, no doubt, very injurious to their interests, but not such as I could exactly lay hold of to punish the servant. The master, however, I often hear say, "I know what it is, sir, he wants me to be rid of him; and I am really so sick of him, I almost think I shall let him go, though he is a good workman." In other cases, if the offence has has gone farther, and is punishable by a magistrate, it becomes questionable whether it is desirable for a master to send his servant—who may be honest—to gaol, and hence to return to him perhaps a thief from what he has learnt there. Assuming, however, that the farmer does obtain some security by hiring his servant for a year certain, does he not in return pay very dearly for it, by the risks he runs on his part? He hires a servant for a year at Michaelmas; in a month the man meets with an accident, or becomes ill; this is no dissolution whatever of the contract, and the master is bound to maintain his servant in sickness or in health to the end of the term; and that you may not suppose such to be a mere fancied case, I will relate to you one which occurred last year before myself and other magistrates at Whitminster Petty Sessions. A farmer hired a dairy girl at the Mop, according to usual hiring, at 5*l.* a year; the girl went to her place, but was very inefficient, and had a bad leg, which, growing worse at the end of a fortnight she was quite incapable of work, and her mistress sent her home for a week. At the end of that time she returned rather better, but was very unequal to the place; and her mistress finding that she was not ever likely to get through the work, sent her home and got another servant. The girl and her mother having been instructed by an attorney, applied to a magistrate to compel her master to take her back or to pay her a year's wages. Sickness, or indeed her inability to get through the work of her place, was no ground for dissolving the contract, as she was willing to do what she could: we therefore felt ourselves obliged to tell the farmer, that unless he could settle with the girl and satisfy her, we must make an order on him for the year's wages, as he would not take her back. It ended in his actually paying her 2*l.* 10s. as a compromise, besides some expenses for a fortnight's indifferent service. His liability in this case entirely arose from the custom of hiring for a year certain. Had the hiring been upon the usual terms of common service—that is, for an indefinite time, with the implied understanding of a month's warning or wages—the most he could have been liable to would have been 8s. From this you may judge as to my opinion upon the subject, that the more advisable mode would be for farmers to adopt the practice which prevails in other cases, that of hiring their servants for an indefinite period, with the implied understanding of a month's warning or a month's wages at separation. They would be only bound together by mutual interests, which, after all, I believe to be the only tie which is likely to unite them to each other cordially and with mutual advantages. I find that this system already prevails in many parts of the country. It is the custom in Staffordshire and many of the midland counties; and upon enquiry in Staffordshire the other day, it seemed the general opinion that it worked well, and was not productive of the evils you would be likely to anticipate.

In recommending to you, however, this mode of hiring, instead of that at present existing, I am not unaware of the great difficulties which attend any such changes, especially where a custom is so deeply rooted in the habits of the people as that of enjoying a holiday at the Mop has become. Some difficulties at once present themselves as to how you are to find servants if you want them. In the hope of opening some better channel of communication between masters and servants, I established—as many of you know, in conjunction with some other gentlemen—an office at the Saving's Bank, in the Westgate-street, for the supply of agricultural servants. This has been now four years in operation; and I am sorry to say the measure of success it has met with is so small that we are thinking of closing it, as our funds are nearly exhausted, and we have not effected enough to make us feel justified in another appeal to the public for its support. We have to thank many farmers for the assistance they have afforded us, and the willingness they have shown to give us the preference of the Mops; but our difficulty has been rather in finding servants to put down their names, than in getting them places. It required a

more general effort than we were able to make to alter the system; for while servants were able to get places at the Mop, they preferred enjoying their favourite holiday to attempting to get a place previously at the office. But was the change to become general, and farmers in a body to determine to set their faces against a proceeding which they believed not only to be injurious to their own interests, but detrimental to the character of the agricultural population at large, such difficulties would soon vanish, and servants would be quite willing to apply wherever good places were to be heard of. If it was found that the more respectable farmers did not countenance the Mops, and that the better places were not to be obtained at them, good servants would soon look to other modes of obtaining situations, and none would frequent those scenes but those who were content to look for inferior places, and those who went for amusement. If such a change could be effected, I trust that farmers would see that their servants were not the losers even in point of amusement, by giving up those meetings, but that masters would, in exchange for them, allow all such servants as gave them up some few holidays in the year to visit their friends or enjoy themselves. Such would operate very beneficially as rewards to diligent and well-behaved servants—would tend to keep them much under their master's control, and have, I believe, a very beneficial effect on their characters.

I cannot help hoping that at this time, when so many of the farmers are showing their anxiety to encourage good conduct and a spirit of meritorious rivalry among all descriptions of farm servants and labourers, by subscribing to the fund for distributing premiums to the most deserving in each branch, they will be disposed seriously to take into consideration whether they have it not in their power, by a combined effort among themselves, to effect greater improvement in the character of their servants, than all the premiums offered by the agricultural or any society can possibly accomplish. And this, too, not by any expensive outlay of money as large subscriptions, but simply by agreement and determination among themselves, not to be supported, it is true, without some trouble and personal inconvenience in the outset, but still requiring only firmness on their part to ensure success. If this change of system in the mode of hiring and service could be accomplished —as I feel sure it might—I do believe that a surer step would have been made towards advancing the comforts and interest of the farmer, and a still more important one towards improving the condition of the agricultural servants, and with them that of the whole rural population, than almost any other single alteration I could name.

If your attention being called to this subject again should lead to further consideration among yourselves, and in any way lead the way to so desirable a result, I shall indeed rejoice that this was found among the subjects for discussion at the Farmers' Club.

N.B.—The above remarks were addressed to the Farmers' Club; but there is another class, viz., the clergy, who might most appropriately have been appealed to, as their influence in their respective parishes might be most beneficially excited in representing to the parishioners the evils which attend the present system of attending Mops, and in persuading those who are in want of places to enter their names at the office.

LANDLORD AND TENANT BILL.

OBSERVATIONS ADDRESSED TO THE LANDLORDS AND TENANTS OF IRELAND.

Having submitted to Parliament, during the late session, a bill on a subject vitally important to the interests of both the classes to whom these observations are addressed, I deem it my duty to call their serious attention to the objects and provisions of the measure I proposed, because that bill has only been for the present withdrawn, on the promise of the first Minister of the Crown, that the subject should, during the recess, receive the consideration of the government, with a view to the better adjustment of the relationship of landlord and tenant in Ireland. The question has therefore arrived at that stage of importance, that it must be seriously discussed—and I trust cannot be put aside, without the passing of some enactments, which will remedy the just complaints of the Irish tenantry.

It is asked, why is this law required for Ireland more than for England and Scotland? This question is asked by some who are ignorant of the answer, and by others who know, but pretend ignorance. I have often answered the question, but I shall now answer it again. I answer—because the practice of Ireland is essentially different from that of England or Scotland. In England and Scotland the practice of letting lands is, that the *buildings and permanent improvements on the soil should be made by the landlord, or at his cost.* Leases are given to cover such a number of rotations as will repay the tenant the expenditure of his capital, in the ordinary cultivation of the soil; and in many districts in Scotland the rent of leased land is founded on the equitable principle, that the rent shall rise and fall with the price of produce. The English and Scotch tenants have capital, which they may apply otherwise, if they think fit, and have therefore the power of making such bargains with the landlords as they may deem compatible with their own interests. But in Ireland all these circumstances are different. The practice is, that lands are let at their value, *without any buildings or other improvements being made or allowed for by the landlord.* Leases of considerable duration were formerly given, but these leases have expired, or are approaching to their termination. Leases are either refused, or very short leases granted; and in many cases the ancient tenants are ejected. No matter how valuable a tenant's improvements have been, he has no legal right to compensation, and in many parts of Ireland his equitable right is not respected by the landlord. The Irish tenant has generally no capital, and has no means of employment or existence, except that derived from the occupation of the soil. Those who were possessed of capital have expended it on the premises, in buildings, or other necessary improvements. The tenant has therefore no power to make a bargain—he is not a free agent—he must submit to extortion, or else relinquish all that he is possessed of, and become a wandering beggar. Under such circumstances, he is entitled to a legal protection, which is not required in other parts of the United Kingdom. From the existing state of things, it results that either the tenant abstains from erecting such buildings as are suitable to his decent or useful occupation of the premises, as well as from any improvements on the soil; or if he does make any

valuable buildings or improvements, he puts himself in the power of the landlord to deal with him as his pleasure may dictate—a power often exercised with injustice and harshness, and without any due respect to equitable dealing; and, to meet this practical injustice, unlawful Associations are formed, from which violence and murder result.

There are only three modes of letting, by which a tenant can have any injustice:—1st—Letting, with the buildings and permanent improvements of the soil made, or agreed to be made, at the landlord's cost, and for such tenure as will cover a sufficient number of rotations, to repay the tenant's ordinary expenditure. 2nd—Letting with a power to the tenant to claim compensation for buildings, or other improvements, and unremunerated expenditure. 3rd—Letting in fee, or for some term substantially equivalent to a perpetual tenure. If one or other of the two first plans be not adopted, the latter becomes indispensable to a just relationship of landlord and tenant. I maintain that the evil condition of this relationship in Ireland demands that the State should interfere by some compulsory enactment, and I propose the second plan as that which does least violence to existing institutions, and as the remedy best suited to the existing circumstances of the country.

But some will advocate compulsion in the direction of the first plan. They say, compel the landlord to let with the buildings and improvements made at his cost.

Let those who make propositions on this subject always recollect, that the Irish tenant, from the necessity he is under to have land for the means of existence, is not a free agent—he cannot make his own terms as to rent—the consequence would be, that, in case the law compels a reluctant landlord to erect buildings, he will compensate himself by extortion, in the form of rent. If, therefore, the State exercise compulsion on this point, the State must also determine the rent, or else the tenant can have no chance of justice. Perhaps this would involve greater difficulties than the system of compensation. But another evil effect of such a law would be, to cause the extirpation of the smaller holder, by giving the landlord the stimulus to ejectment, in order to avoid the expense of numerous calls for the outlay of money; and the expulsion of the small holder, under the present circumstances of Ireland, would certainly produce a vast immediate increase of misery and destitution.

It seems to be considered by some, that all the complaints of the Irish tenant would be removed, by enforcing the granting of leases for determinable periods of years—for instance, for twenty-one years—as is very much the practice of England and Scotland. But, I would ask, how would a lease of this description be a security or encouragement to a tenant, for laying out money on permanent improvements or buildings? It cannot be expected that extensive improvements on the soil could be compensated in twenty-one years, when made solely at the tenant's expense; and, with regard to buildings, no matter how long the lease, the duration of any limited tenure could never bring compensation for buildings, which are continued source of expenditure, without profit. I maintain, therefore, that, on the system of expenditure of this nature, by the tenant, a determinable tenure affords no security to the tenant, unless it be accompanied with the principle of compensation for improvement.

To obviate the injustice of the present state of the relationship of landlord and tenant in Ireland, my bill proposes to adopt the second plan, viz., giving the tenant power to claim compensation, in case of ejectment, for unremunerated expenditure in valuable and permanent improvements, and to give the whole existing occupying tenantry of Ireland a lien on the lands, in their respective occupations, to the extent of the value of such improvements, of whatever description, *which produce an actual increase of the value of the premises.* Such is the object of the measure I have brought before the Legislature. I would ask the landlords of Ireland, can they deny that this is an object which both equity and justice demands? Can any one impugn this principle; or, is it possible for any man to deny that a necessity for enforcing its operation exists? Some landlords will say, we act upon this principle, and therefore there is no occasion for a law for us. I freely admit there are landlords who respect the tenant's right; but they cannot plead ignorance of the fact, that there are many landlords (chief landlords and sub-landlords) who do not do so; and, if they think justice requires them to act in this way, what objection should they have to compel unjust landlords to do that which they consider just in their own case? I claim from all landlords who desire to act justly to their tenantry, an admission of the principle. This is all I ask, I do not require them to bind themselves to the details of my bill. Let them declare to the Government and to the country that the principle is just, and ought to be carried out; and I have no doubt the Government will be able to devise the means of making safe and effectual provisions. If they do not do this, if a bill of this nature be not passed, I ask them to reflect on the consequences. They will found an irresistible claim for the last-mentioned remedy—namely, that of letting in fee at a rent by valuation—a proposition the necessity of which I desire to avert, because I see difficulties insuperable in forcing such a measure, without doing injustice both to the landlord and tenant class. But I put it to the landlords to consider, can they ensure to themselves the payment of their rents, even notwithstanding the extraordinary powers they possess, if, by a perseverance in injustice, they organize a combined resistance? The Irish tenantry will honestly and cheerfully pay their rents, if they have even the smallest measure of justice; but it is not prudent to try the utmost extent to which the patience of a people under want and wretchedness will endure a system which cannot be defended on any principles of justice or policy.

There is an objection raised against a leading principle of the Bill I submitted to the Legislature, which, being the most important one, I think it necessary to notice. It is objected that the Bill gives a power to claim compensation for buildings, or improvements made without the consent of the landlord having been first obtained; and that, therefore, difficulties arise as to valuation and compensation, and it is asked, why not resort to the simpler course of requiring the landlord's consent? I answer this by the following reasons:—First—Such a provision would leave the whole body of existing tenants, who have made their improvements, without a shadow of protection. They would be all liable to ejectment either *instanter*, or at the termination of their present leases, without one farthing of compensation. It would actually offer a premium for dispossessment to rack-renting landlords, in order to get possession of the improved

premises, before the new system came into action. This would be its operation with regard to the improvements already made. Secondly—With reference to improvements hereafter to be made: it may be said, why not adopt the provision of the landlord's consent? I answer, for the following reasons:—Why is there a necessity for a legal enactment at all on the subject? Why have the lands been let, without houses having been built by the landlords? Why have there been no improvements made on the soil by the landlords? Why are rack-rents levied? Why are tenants turned out without compensation for improvements? Because the landlords who have done so are utterly indifferent to the wants or comforts of their tenants, or to the improvement of the country; and is it not evident, that the same spirit which promoted these landlords to act so would prompt them also to refuse consent for any improvements, which would give the tenant a future claim on their revenues. Let it be recollected, that this is not a bill to operate against just or benevolent landlords. *They* do that without a law, which this bill proposes to make law, in order to coerce unjust landlords to do that which is just; and, if you leave to these landlords to judge whether they will or will not found a claim on the part of the tenant against themselves, it is very easy to foresee how they would determine. The law, in case their consent was first to be obtained, would be a perfect nonentity; but the principal of valuation laid down in the instructions to valuators, contained in clause 12 and schedule G, and the exemption and limitation in clauses 16 to 21 (inclusive), provide safeguards to the landlord's interests, so that no compensation can be awarded for any buildings or improvements, except in so far *as they increase the real value or annual rent*; or for any buildings or improvements for which allowance, by abatement of rent, or in any other form, had been made by the landlord.

I conceive, that by the provisions I have introduced, the landlord's interests would be completely guarded against any demand for money laid out, which had been unprofitably expended; and in order to prove my sincerity in that statement, I take this public mode of declaring, that I hold myself, bound by all the provisions of this bill, in my transactions with my own tenants, whether it passes into a law or not.

It is further to be remarked, that by the plan I propose, the tenant would require no right or benefit, except derived from the produce of industry.

It is said, and, perhaps, with some truth, that the Irish tenant is indolent, as respects the management of his own concerns, but he is not indolent in his exertions to make money, by his labour, on the English soil. Why is he indolent at home? Because he is heart-broken, he is oppressed, he has no security that he shall reap the rewards of his industry, on his own soil; give him that security, and you will give him a stimulus, which will show itself in the rapid improvement of the habits of the tenant, and the prosperity of the country.

With these views, I have on different previous occasions, submitted measures to Parliament, on the same principle as that which is now before the consideration of the public. I respectfully claim for this measure the deliberate consideration both of landlords and tenants. I would call on the tenantry class to demand no more than that which is just and fair to the landlord. I would call on the landlords to yield that which is just to the tenant, as the best security for their own rights, and the best mode of advancing their own interests.

I should particularly wish to call the attention of the landlords to this subject, at a time when they are about to assemble, with the laudable object of improving the science and practice of agriculture. They desire to encourage the tenantry of Ireland to adopt improved culture of the soil. I would respectfully ask, can they expect the tenantry to improve, without having some security that they shall reap the fair benefit of their improvements? Can any impartial man say, that they ought to improve, without first having the security? It appears to me, that any attempt to create improvement, which is not based on that principle, is like attempting to build a house without a foundation-stone. The agricultural Society of Scotland has been eminently useful. Why? Because the system of landlord and tenant, in Scotland, had already created that security. But, will a like Society in Ireland succeed, when that security is wanted? The consideration of any legislative enactment is excluded, by the rules of this society. But it cannot be expelled from the thoughts of the people of Ireland. They expect, and justly require, some declaration from the landlords, of their intention on this subject. It is one which cannot be blinked. The Government are pledged to its consideration; and the progress of agricultural improvement in Ireland must stand still, till this important question be first settled, in some manner satisfactory to the just wants and claims of the agricultural population.

I append to this address an abstract of the principal provisions of the Bill.

WILLIAM SHARMAN CRAWFORD.

Crawfordsburn, August 28, 1843.

ABSTRACT OF THE BILL.

1.—Tenants at will, or from year to year, or lessees, enabled to recover from landlords compensation for permanent improvements made by them, in case of an increased rent being demanded, or being served with notice to quit, or being ejected from the premises.

2.—Tenants, in such cases as aforesaid, may serve on landlord, or his agent or receiver, a notice of claim for such compensation.

3.—If landlords refuse to pay such compensation, or to grant a new lease, tenant shall then deliver a copy of his notice at the County Surveyor's office. County Surveyor shall make an estimate and report of the particulars and value of such improvements, and an estimate of the rent the premises are worth, according to certain prescribed rules and forms.

4.—If tenant agree to accept the sum which may be awarded by the County Surveyor as compensation for improvements, or shall be willing to continue as tenant on the premises, at the rent determined by the Surveyor's valuation, he shall serve a notice on landlord to such effect, and the agreement of landlord thereto shall discharge such claim.

5.—If tenant disagrees from the award of the County Surveyor, and if landlord and tenant cannot agree as to renewal of term, or settlement of compensation, such compensation may be recovered by petition, or by civil bill in the Court of Assistant Barrister, if claim do not exceed one hundred pounds; but if it exceed that amount, may be recovered by petition to the Court of Chancery or Exchequer.

6.—Mode of proceeding in Court of Chancery or Exchequer, for recovery of compensation.

7.—If landlord or tenant should so require, the master or Chief-Remembrancer, may order a new valuation to be made by three arbitrators, at the expense of applicant for the same.

8.—Mode of proceeding in Court of Assistant Barrister, and recovery of compensation.

9.—If landlord or tenant shall so require, Assistant Barrister may order a new valuation, to be made by three arbitrators, at the expense of applicant for same.

10.—If lands be situate in different counties, proceedings may be had in any one of such counties, and decrees executed in any county.

11.—Acts now in force, relating to proceedings by civil bill, shall apply to this act, save that there shall be no appeal.

12.—Rules and regulations to be observed, as far as practicable, in estimating value of improvements under the provisions of this act. 1st,—Compensation for building. 2d.—Compensation for improvements on the soil.

13.—Rules and regulations to be observed, as far as practicable, in making estimates of rent under the provisions of this act, as required by clause 3.

14.—In case surveyor shall have declared compensation to be due to tenant, he shall allow the same in making estimate of rent under the provision of this act.

15.—In making estimate of rent, buildings, &c., only to be added to the rent which have been erected at cost of landlord.

16.—Compensation not to be awarded for buildings or improvements made on lands or premises let for one season, &c., unless made with consent of landlord.

17.—No tenant shall be entitled to recover compensation under this Act, for any buildings or other improvements which shall not, in the opinion of the Court and valuators, be suitable to the premises with regard to extent and cost, and be calculated to produce an increased rent to the landlord; and, if buildings of greater extent and cost shall be erected, compensation shall only be given so far as they increase such value or rent. If compensation be refused on these grounds, tenant may pull down buildings and sell materials.

18.—Compensation not to be awarded for buildings erected for purposes of sub-letting, although in occupation of the head tenant, at the time of claiming compensation.

19.—Compensation not to be awarded for buildings erected in pursuance of any contract, &c., or not in substantial repair.

20.—Compensation not to be awarded for improvements on ground let for building.

21.—Compensation not to be awarded for improvements made by tenants evicted for non-payment of rent, unless their rent exceed the valuation made for purposes of poor-rates.

22.—If rent paid by tenant exceeded poor law valuation, and compensation be awarded for improvements, the rent due shall be deducted from such compensation, not exceeding one year of such rent.

23.—Sub-tenant entering into occupation, after the passing of this act, without consent of superior landlord, shall not recover compensation from superior landlord, unless the occupation was with his consent, in writing; but, on eviction, may remove buildings, &c., erected by him, or recover compensation for same, from his immediate landlord.

24.—Landlords, having particular estates, may charge the lands with compensation for improvements.

EXPLANATORY NOTES.

Clauses 2, 3, and 4.—Compensation can only be claimed in case the landlord takes some step to evict the tenant. The object of the Bill is, to secure continuance of occupancy to the tenant, at a fair rent, and that the landlord shall not be liable to the claim, if he is willing to continue the tenant in occupation. The valuation is required to be made by the County Surveyor, as being a public officer, and thus to avoid expense, and to give the parties an opportunity of agreeing without legal proceedings. Clause 5 gives that which is the cheapest possible mode of recovery, viz., the Assistant-Barrister's Court; and with the least possible trouble, because the claim has been brought into detailed form by the County Surveyor, as required by clause 3, and schedules B and C. The Court has then the claim in a state convenient for adjudication. The Barrister may decide on his own judgment, but, if required by either of the parties, is bound by clause 9 to order a valuation by arbitration. It may be a question whether the Barrister's jurisdiction, when accompanied with the power of demanding an arbitration, might not be extended to cases of any amount; but, in order to meet the views of persons who might object to such a power being vested in this Court, the clauses 6 and 7 have been inserted in the Bill, giving the jurisdiction to the higher Courts, with reference to sums above 100*l*. These clauses might, however, be expunged if, on consideration, it should be deemed proper to do so; or else the jurisdiction of the Barristers might be raised to a higher amount. The higher Courts are also bound to refer the valuation to arbitration, if required by either of the parties, in like manner as the Barrister's Court. Clause 12 contains the rules by which valuations of compensation are to be made. 1st—With regard to buildings, the clause provides that the cost of the buildings, if to be built new, is first to be determined; then, such reduction is to be made as the valuator shall judge reasonable for deterioration by age, or any other causes; the remainder is to be the amount of compensation. [The description and circumstances of buildings, for which compensation can be claimed is limited, by clauses 16, 17, and 18, especially clause 16—for which see above.] 2ndly—With regard to compensation for improvements on the soil. The clause provides that the valuator shall first examine into the nature and extent of the improvements made, and shall compute, according to the best of his judgment, the proportion in which the annual value of the premises has been increased by such improvements, as compared with the productive powers of the soil in its unimproved state, and, having determined such proportion, the money value of such increased productive power shall be determined by ascertaining the proportion of the annual rent paid by such tenant, which shall be equal thereto; and this amount shall be deemed and taken as the amount of the increased annual value of the premises.

The amount of the increased annual value having been so determined, the amount of the sum to be given as compensation shall be a certain number of years' purchase on such annual value, regulated according to the following scale, with reference to the previous tenure, or duration of occupancy:—

Previous occupancy or tenure.	The number of years purchase on the increased annual value.
Not exceeding 10 years	20 years purchase.
Exceeding 10 but under 20	15 do. do.
Exceeding 20 but under 30	10 do. do.
Exceeding 30 but under 40	5 do. do.

After 40 years' tenure or occupancy, the claim for improvements on the soil shall cease; but with respect to claims for compensation for buildings, made by or at the cost of the tenant, the same shall be computed as hereinbefore provided, according to their existing condition, without any restriction as to the duration of tenure, or previous occupancy by the tenant. Forms are given in schedule B and C, according to which the returns of valuations are to be made.

On the above it is to be remarked, that the compensation for improvements on the soil depends, not upon the amount of money expended, but on the increased value produced; therefore, if a tenant expends money injudiciously, the landlord does not pay for such expenditure. The foundation of the valuation rests upon the computation of the increased value created. Any valuator, who has a knowledge of land, and competent to be a valuator, if he finds, by examination, that a certain quantity of a farm has been drained or trenched, or made into arable land, from rocky or other kinds of waste—can form a judgment in what degree the value of such land has been so increased; and from thence in what degree the value of the premises have been increased; and this computation being made as the foundation element of the valuation, the other steps are mere matters of arithmetical calculation. With respect to the scale, the number of years tenure, and number of years purchase proportioned thereto, are inserted *in italics*, in the bill, as being matters to be filled up as a committee should determine. They are at present filled with a view indirectly to force long tenure. The compensation is made very high for short tenures, diminishing as the length of the tenure increases. If, therefore, a landlord has to pay high compensation, it is his own fault, by the dispossessment of the tenant. The compensation for improvement on the soil terminates after forty years' tenure. This is founded on the principle, that a tenant may be reasonably supposed to make his improvements within the first ten years; if, then, he has the land for thirty years after, at the unimproved rent, he may be supposed to have received ample value for the same within that period, otherwise they must be valueless improvements. But, as the buildings on farms can never bring a profit on the money laid out, but always a loss thereon, no length of tenure should disentitle the tenant from compensation.

After the valuator has determined the proportion in which the annual value has been increased by improvements of the soil, he ascertains the money value of that increase, by taking a like proportion of the rent heretofore paid. The amount of compensation will then depend, in a great degree, on the rent which the landlord has required—the higher the rent which the tenant has paid, the higher will be the compensation. And is not this just? In cases of land of equal value originally, the tenant has derived more or less advantage from his improvements, in proportion as he paid less or more rent. By this system, then, the rack-renting landlord will pay an amount of compensation proportional to his extortion; and, therefore, an inducement will be given to moderation of rent, whilst the more moderate landlord will be justly assessed in a less sum. In fact, this law would hardly ever be called into operation, with respect to such landlords; and with regard to lands let originally at low rents, properly proportioned to their existing value, the original rent will be a fair criterion of the original value. Thus, from the provisions of this clause, the value which the tenant will receive, as compensation for improvements on the soil, will depend on these two elements—the amount of the rent he has paid, and the duration of the term. If the landlord extorts in rent, and shoens term, he suffers the just penalty of his own course of proceeding.

Clause 13.—This clause refers to the mode of valuing rent, which, by clause 3, is required to be made by the County Surveyor, with a view to a settlement between landlord and tenant, without recourse to legal proceedings. By clause 2, the tenant is required to furnish the landlord with a specification of his demand. If the landlord refuse it, the Surveyor is then to make his computation of the value of improvements, and also his valuation of rent, as a foundation for the landlord and tenant to agree upon a renewed lease, if they think fit. The Surveyor may be considered an officer more likely to be partial to the landlord than to the tenant; but then, the tenant is not bound by his valuation, and the landlord can have the less grounds to reject it. It is at the option of the tenant, by clause 4, whether to accept it not. If it be a fair valuation it will be his interest to accept it; and the refusal of the landlord would then form a strong case in favour of the tenant; besides the Surveyor, if he complies with the rules given in this section and schedule D, would render his qualifications and character liable to be questioned, if he made an incorrect or partial return. The rules given in this section are framed with a view to establish a correct system for the valuation of land, founded on *the actual value*, not on *the fictitious value*, created by competition. The actual value can alone depend on the productive power; and rent cannot be computed with justice in any other way than upon a certain proportion to the value of produce. The rule given in this clause does not fix that proportion; for that proportion may justly vary, under different qualities and circumstances of land; but, then, it is fitting, and it is indispensable to a just valuation, that a valuator should estimate the productive power of any land he values, and also the average price of produce on which to found the valuation of that power, and also the proportion which the rent ought to bear to that power. The regulations in this clause require the valuator to give all these data in the form of the schedule; and, these data being given, the principles of his valuation are known, and liable to be corrected, if erroneous. It is especially desired to call the attention of the public to this system of valuation of rent, as that which is applicable to all valuation, whether of a public or private nature, and especially to valuations under the Poor Law Act, where a correct valuation between landlord and tenant is of such deep importance. The following is the clause in full, as given in the bill:—

Clause 13.—And be it enacted, that with respect to any estimates of rent to be made by the County Surveyor, or any other valuator, under the provision of this act, such valuator shall make such estimate, so far as may be practicable, according to the rules hereinafter contained (that is to say), he shall first

inquire as to the value of the soil to be valued, and estimate the powers thereof, in producing such description of corn, or other agricultural produce, as it may be most capable of producing, according to the nature and circumstances thereof; and he shall next determine the proportion which, in his judgment, the rent to be paid by a solvent tenant ought to bear to the quantity and value of the produce capable of being raised on such soil; and in case the lands to be valued be fit for the growth of corn, he shall take, as the standard of their power of production, such one species of corn as he may deem most suitable to the nature and circumstances of the soil; and in case the said lands be, from any cause unfit for the growth of corn, but fit for the purposes of pasture, he shall take as the standard of their power of production such article of produce as he may deem most suitable to the nature and circumstances thereof; and in case the lands to be valued be, from their situation or any other cause, unsuitable to the growth of corn, but suitable to the growth of hay, he shall take the article of hay as the standard of their power of production, and shall estimate the money value of such productive powers, in the respective articles which shall have been so adopted as the standard of value, with reference to the average prices of such articles, for the *three* years next preceding, according as he shall be best able to ascertain the same from *The Dublin Gazette*, or from the market-notes of some market town, in or convenient to the county wherein the premises shall lie, and in which town market notes have been regularly kept and recorded; and in case the lands which such valuator may be required to value shall consist in part of some or all of the different qualities of land to which different systems of valuation, as hereinbefore directed to be applied, he shall value each such portion separately, and determine the rent of the farm so valued upon the aggregate of such several portions; and he shall, in every estimate of rent made by him, under the provisions of this Act, specify the standard articles of produce on which such estimate was made, and the prices at which such produce was rated, and the proportion at which he estimated the rent, as compared with the value of such produce; and he shall specify the particulars aforesaid, so far as may be practicable, according to the form in the schedule (D) to this Act annexed; it being the true intent and meaning of this Act, that all estimates of rent made under its provisions, should be founded on the uniform principle of the value of the productive power of the soil, according to the quality and circumstances thereof, and not according to any fictitious value, created by competition.

The above are the most material grounds of the bill which require observation or explanation. It is not attempted to put it forward as a full and perfect measure; but it was intended, at the time it was introduced to the Legislature, as the groundwork for a more perfect proposition against the next session of parliament, improved by such changes as the public voice and public opinion, either of landlord or tenant, might justly call for. It is now to be expected that the question, in some shape or form, will be taken up by her Majesty's government; therefore discussion, and the expression of opinion, becomes, from that expectation, the more imperatively necessary for the interests of all parties concerned, in the proper adjustment of the relationship of landlord and tenant in Ireland.

W. S. C.

IMPROVED DIRECTIONS TO MAKE CIDER, PERRY, AND WINES, FROM RECENT CHEMICAL DISCOVERIES.

The apples being ripe and laid in a heap a fortnight, uncovered, about eighteen inches deep—but pears should be taken ripe from the tree—they are then ground in the cider mill, which consists of a circular stone in the form of a solid broad wheel, about 4½ft. in diameter, 14 inches wide, and about the depth of 12 inches, including the wooden rim upon it, and similar to a bark-mill. In this trough two bushels of apples are ground at a time, with a handful of wood charcoal strewed amongst them, until the kernels and rinds are broken small, as much of the goodness of the cider depends upon it; and this fact was communicated in the Agricultural Report of the Rev. John Duncombe, in 1813. By an experiment made by Dr. Symonds, of Hereford, "He made an hogshead entirely from the rinds and cores of apples, and another from the pulps of the same fruit; the former was of the most unusual strength and high flavoured, the latter was watery and possessed not one recommendation." And last year I made two hogsheads of cider from the same fruit—one had the apples as above directed, the other was half ground. The cider of the latter was weak but pleasant, the former rich and high flavoured of the fruit, and both were alike preserved.

A horse, with a man and boy, will grind sufficient pomage to make nearly two hogsheads of cider in a day, which is put into open tubs until the next morning: it is then pressed through several hair cloths, and the liquor is taken to the fining house, and put into a vessel to ferment from seven to nine days, with one pound of charcoal in it, in lumps, and four good eggs, unbroken, in a hogshead, to liberate the oxygen from the carbon of the carbonic gas.* It is then drawn off into tubs, and about one pound of pulverized charcoal is stirred into it, and left until the next day, when it is put into thin calico dropping bags to fine. One dozen of these bags, similar to jelly bags, suspended from frames, the cider is passed through, being previously dredged inside with pulverized charcoal. For a short time it will run muddy—by continuing to fill them it will soon be clear. The muddy cider in the tubs is then removed. An egg, unbroken in each bag, improves the dropping. One hogshead a-day will fine by this process, but some fruit fines sooner than others, and if it be quite mellow it requires a longer time to ferment before it will pass clear through the charcoaled bags than the juice of apples not so mellow; the juices of fruit diluted with an equal or greater quantity of water, such as raspberries, currants, green gooseberries, cherries, should be fermented

* That the oxygen is liberated from the carbon of the carbonic gas in this state is proved by the must or scum being very acid, whilst the liquor remains sweet. To inhale it by standing near increases the circulation of the blood, and acts powerfully on the urinary passages. The scum or must should be taken off, or the vessel should be full for it to run off.

as cider, putting an unbroken egg into each bag in fining it.

A mixture of apples with yellow pulps, and red and yellow, commonly make the best cider. The Kingston black apple, and the hang-down, make very good.

The dropping bags must be replaced by clean ones the next morning, to filter the cider remaining.

The cider being now fine, and retaining the flavour of the fruit, to preserve it so consists the discovery.

Fill the cask to two or three inches of the bung-hole, and put into a hogshead one pound of wood charcoal, in lumps, and from eight to ten unbroken good eggs. Bung it then close to exclude the air. The diluted juices of currants, raspberries, and green gooseberries require from 1½lb. to 2lbs. of loaf sugar to each gallon, after it be fine, but the quantity will depend on the water added, and the ripeness of the fruit—taste, therefore, must direct. This process retains the flavour of the fruit, and the liquor will be sweeter at the end of the year than when put into the cask, and free from alcohol. Every vessel must be quite clean and well-seasoned or the whole will be spoilt.

By the above process the fermentation of cider perry, and wines is arrested, which preserves the flavour of the fruit, and prevents the saccharine constituents of the juice being converted into alcohol, and this is effected by the charcoal as humus liberating the oxygen fron the carbon of the carbonic gas, and the constituents of the eggs supply the nourishment to the liquid with the fruit: for the cider made the previous year in the same manner, having only charcoal it it, at the end of nine months its sweetness was gone by a new fermentation, and had intoxicating qualities from alcohol; but with eggs and charcoal another cask of cider was sweeter in a year after than when put into the cask, and apparently free from alcohol. From this evidence I conclude that the charcoal in liberating the oxygen of the carbonic acid is, in part, converted into sugar by a new combination with the carbon and hydrogen of the water, and constituents of the eggs and fruit. One-fourth part of the eggs and charcoal preserves all malt liquor mild.

By the analysis of eggs, compared with that of the gluten of wheat-flour, vegetable fibrine, vegetable caseine, and vegetable albumen are nearly the same; also isinglass, and the tendons of calves' feet;* but having used only eggs and isinglass, with charcoal as humus, I prefer the former—but some of both I have used together with good effect.

But charcoal and fresh eggs, unbroken, are equally useful in the dairy. The difficulty of making good butter in summer arises by making it, in many farm houses, only once a week to be sent to market; the consequence is, the cream becomes sour and rancid, and the butter indifferent. To preserve the cream sweet, I directed my servant to put into each four-gallon cream vessel weekly a fresh unbroken egg and half an ounce of charcoal in lumps. Since then the cream has been sweet, and the butter good. In very warm weather two eggs have been used. J. R.

Dumbleton, 1843.

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* See Liebig's Organic Chemistry.

MANAGEMENT OF MANURE IN FARM-YARDS.

COPY OF A LETTER WHICH HAS BEEN ADDRESSED TO THE ROYAL AGRICULTURAL SOCIETIES OF ENGLAND, SCOTLAND, AND IRELAND.

MY LORDS AND GENTLEMEN,—I hope you will pardon the liberty I have taken in addressing you on the following subject. It is one which I think agricultural societies ought in the present day strictly to mature, seeing the great distress which prevails throughout the country, and the general disapproval of our corn laws. Nothing in agricultural pursuits has been so grossly neglected as the management of manure in farm-yards, &c., the abominable waste of which has been a most painful subject to myself for a long time past, and one to which I havegiven mature consideration. It is this which has prompted me to address the leading agricultural societies on the subject. From a calculation lately made, it is proved that for want of manure a loss to the United Kingdom is sustained to the amount of from eleven to twelve millions of pounds annually. Could this increase of growth be accomplished, we should hear but little of corn bills, or corn laws; our country would be amply supplied from our own soil. I am inclined to think that this could in a great measure be accomplished by a proper system being adopted in every farm-yard in which the dung is deposited, so that the liquid manure could be saved, and used at discretion. The surface of the farm-yard should be sloping, with a round brick tank in the centre, in which a pump should be fixed, elevated five or six feet, for the accommodation of the water-cart, a most valuable appendage to every farm: to this tank bring the draining of your stables, pigsties, wash-house, water-closet, &c., &c. This liquid you will find invaluable in the manufacturing of manure, which is at present suffered to pass off in draining. Instead of allowing the great mass of manure to remain on the surface of the yard, have it formed into ricks round your tank, so that they may be supplied with the liquid during the time of making. Do away with the detestable practice of burning your couch grass, &c.; bring it home to your bartons; also the cuttings and parings from your roads, deposits in your ditches, rubbish from your gardens, &c., &c., and let all be deposited in your manure ricks according to the following directions, viz.:—

A layer of stable dung, one foot thick, salted.

A layer of vegetable matter, six inches thick, limed.

A layer of stable dung, one foot thick, salted.

A layer of vegetable matter, six inches thick, limed.

A layer of stable dung, one foot thick: on the top of this fifth laying saturate with the liquid from the tank in a sufficient quantity to pass through the whole. Begin again, and repeat the layers as before, with the dressings, and make your ricks to any size you may judge proper; the larger the better. After you have made them to the size you may wish, and thoroughly saturated with the liquid manure, cover them up close, with long dung or straw, to keep in the ammonia, and prevent the rain from penetrating. The covering should be removed from the centre, and the liquid applied about once a month, and remain six months before

used; a few layers of draining tiles will be very proper at the bottom, to give the information that the liquid has passed through the whole body, and to convey the waste to the tank. This liquid, after passing through the manure, will imbibe salt, lime, &c., and make it a very valuable liquid dressing for meadow or fallow land, and would after the effect had been tried, be appreciated and considered the most valuable part of the manure. By a general adoption of this plan it would very soon be the pride of every farmer to see his barton well stocked with manure ricks, and very pleasing to the landholder to see a provision made for his land. A very short period will convince every person who may think proper to adopt the plan, that the growth of crops will be very considerably increased, and that their expense and trouble have been amply repaid. Few persons have made the subject of manures a closer study than myself for some years past, having always considered it the mainspring of the agricultural profession, and seeing at the same time very gross neglect and great scope for improvement. In the present day patronage is a strong stimulus, and without it persons feeling inclined to persevere in any public business have great difficulties to encounter. My experience enables me to say the plan I have suggested is so very plain and simple as to be in the power of any person to adopt, and it will be observed it gives two distinct kinds of manures. From the practice I have had, I am convinced that those who may be inclined to adopt the plan will find their manure doubled in value. The application of liquid manures is as yet quite in its infancy. A clean farm ought to be the pride of every farmer, and this is not to be obtained without attending to the use of manure properly decomposed, and also to that of *liquid* manure, as it then takes no filth to the land. A general adoption of collecting and manufacturing manures would very much increase labour, and prove a decided remuneration to the employer, which is a great object in the present day. The unbounded scope which is given to the cultivators of the soil in collecting every thing which is decomposable for manure has never been properly appreciated, and it is a mystery that such an important subject should have remained so long neglected, when it cannot be viewed in any other light than being profitable to the employer. The eye of the agriculturist is fixed on the Royal Agricultural Societies, and without their patronage perseverance in any new agricultural pursuit would be unavailable. The formation of the farm-yard and tank must be a part and parcel of the farm, and provided at the expense of the landholder, who would ultimately receive a hundred-fold for the outlay. *Complicated recommendations* for a general plan to be adopted in the manufacturing of farm-yard manure would, I am convinced, from the experience I have had with agriculturists, have no general effect.

In the manufacturing of manure for various purposes, the greater the variety of proper articles combined, the stronger the manure will be after decomposition has taken place (see the cottager's manure heaps); one cart load is quite equal to two of farm-yard manure in producing crops. Having taken the opinion of many *eminent* landholders on the subject of my address, and not *one* objection having been raised against it, convinces me that if properly carried out the result would be most satisfactory. It must be acknowledged that this is a very important subject, and one that cannot be confuted; and if supported by the royal societies and the leading landholders, it would very shortly become a prominent question with agriculturists generally; and if so, the result must be prodigious. See the Chinese with their immense population to be exporters of manure. A great change has already taken place in the cultivation of the soil; not *one-half* the sum has been expended on artificial manures this year as there was in the last, and this evil will increase if not counteracted. I beg to recommend the use of *sawdust* in cases of scarcity of straw for stall-fed cattle, pigs, &c., &c. It will be found a good substitute for straw in keeping the cattle clean, and not a bad mixture with manure: it will also prevent the waste of urine, and will act well with the vegetable matter. It is easily obtained, and very cheap.

My Lords and Gentlemen,—I hope you will pardon the liberty I have taken in presuming to address you on this subject, but being a very *warm advocate* for improving the long neglected evil, I do flatter myself you will excuse the liberty I have taken.—I have the honour to be, my Lords and Gentlemen, most respectfully your obedient servant, John Harrison.

St. John-street, Devizes, Wiltshire.

CORN TRADE.—A Quebec correspondent of the *Montreal Courier*, under date of the 7th instant, expresses an opinion, based upon the state and prospects of the present corn crop in the United Kingdom, and the small stock of the old crop on hand (the quantity in bond not exceeding 500,000 quarters) that there will soon be a demand from that quarter for Canada flour, at remunerating prices. At present, *foreign* wheat cannot be imported into England without a loss of about 10s. per quarter—the duty being, by the last average which has reached us, 14th July, 20s. per quarter, *i. e.* if taken for consumption. The Quebec writer says—

	£	s.	d.
Assuming flour sold in your market at 27s. 6d. currency, equal to 8 per cent. premium of exchange to stg.....	1	2	11
Commission for purchasing, 2½ per cent. cartage and other incidental charges per barrel	0	0	10
Cost on board.....	1	3	9
Freight to Liverpool, per barrel..... 3s. 6d.			
Duty ..... 0s. 7½d.			
Insurance, say at 4 per cent..... 1s. 0d.			
	0	5	1½
Cost laid down in Liverpool.....	1	8	10½

As during the extraordinary depreciation of the corn markets in Britain during the past year, 27s. 6d. was the ordinary rate for Canada flour, except on one or two occasions, when a shade lower was submitted to for inferior parcels, I think the above price may be calculated on with the utmost confidence. Upon a careful consideration of the accounts of the British corn market I am led to the gratifying conclusion that there will this fall be a large trade in bread stuffs, profitable in various degree to the agricultural, the commercial, and the forwarding interests of this province. If the harvest be as productive as is expected the result of this year's business will, I hope, be such as in a great measure to countervail the losses sustained last year. The same writer expresses his belief that under the new Canadian Corn Law the position of the Canadians in respect to the flour trade is not as favourable as it was before.

EXPERIMENT ON THE FEEDING PROPERTIES OF SWEDES AND OF MANGOLD-WURTZEL.

By C. Hillyard.

To prove the comparative feeding qualities of mangold-wurtzel and Swedish turnips, I put into my stalls, on the 4th of January, 1843, six three-year-old Hereford steers, all of one person's breed, divided as equally as possible as to weight, frame, and quality.

The six beasts were slaughtered by Mr. Giblett, and the carcasses shown in his shop on Monday, the 1st of May.

THE FOLLOWING FED ON MANGOLD-WURTZEL :—

	Estimated weight when put in the Stalls.	Dead weight of carcass.	Increase of weight.
	Stones of 8lbs.	St. lbs.	St. lbs.
No. 1.....	74	87 6	13 6
No. 2.....	76	92 1	16 1
No. 3.....	74	89 3	15 3
	224	269 2	45 2

Whole increase of weight. ..... 45 stones 2lbs.
Loose fat..... 25 stones 5lbs.

THE FOLLOWING FED ON TURNIPS :—

	Estimated weight.	Weight of carcass.	Increase of weight.
	Stones of 8lbs.	St. lbs.	St. lbs.
No. 4.....	76	99 2	32 2
No. 5.....	74	85 6	11 6
No. 6.....	74	89 7	15 7
	224	274 6	50 7

Loose fat. ..... 24 stones 7lbs.
Increase of weight exceeding the increase of those fed on mangold-wurtzel ..... } stones 5lbs.

According to this trial, the comparison of the nutritive qualities appears to be in favour of Swede turnips. My mind not being satisfied by this trial, I intend, on the 1st of November, to try six other beasts that will have been grazed through the summer. The beast No. 1 disappointed my expectations; I thought he would have increased quite as much, if not more, than any one of them; but, proving in the stalls of uneasy temper, his increase of weight was, one excepted, the least.

The weekly cost of the feeding of each beast was as follows:—

	s.	d.
10lb. daily of cut hay, at 3s. per cwt.	2	0
Linseed, one quart, boiled, cost at home.	1	6
Barleymeal, three quarts daily.....	2	0
(These, well mixed together, given in three feeds.)		
1½ bushels (in three feeds), daily, of mangold, or of turnips	2	6
	8	0

The cost of keeping each for sixteen weeks in the stalls, £6 8s.

Each beast sold for £4 more than its value when put in the stalls. This is paying rather too much for the improvement of manure; still there should be some stall-feeding on what are called turnip land arable farms. On some clay land, if not very stubborn, mangold, with good cultivation, may be produced better than Swedish turnips.—*Journal of the Royal Agricultural Society of England.*

FARMING COMPETITION.—DISTRICT OF AYR.—A very spirited and highly interesting competition for the premiums offered by Mr. Hamilton, of Carcluie, for the cleanest and best kept farms in the district of Ayr, and during the present season, has just terminated. The judges—Mr. Burnett, of Gadgirth; Mr. Finlay, Lyonstone; Mr. Ralston, Dunluff; M. M'Caw, Ardlochan; Mr. Robert Guthrie, Crossburn; and Mr. Hamilton, of Capringstone—after two very careful and minute examinations have unanimously awarded the premiums as follows:—First premium, to Mr. Paterson, Aitkenbrae; second premium, to Mr. George Hendrie, Orangefield; third premium, to Mr. Struthers, Slaphouse; fourth premium, to Thos. Reid, Sanquhar.

THE MURRAIN.

Sir,—In discussions upon other matters it has often been alleged that landowners are more prompt and liberal in their charities than the rich manufacturers. Perhaps this may be the case; if so, let them wear the honours their kindness has won. My intention is not to impugn their charity, but to invoke their justice, not on behalf of their labourers, but their tenants, who, because they fill a better station, are often worse neglected.

It is well known that for the last two years a most destructive murrain has prevailed amongst neat and other cattle. For this epidemic no sure preventive or effective curative agent has been discovered. The pathology of the disease seems to be unknown, and of those few who recover, none are able to assign the cause of restoration. In many instances the losses which have been sustained have been fearful. One case amongst many I heard of the other day, was of a young man, who, possessed of a few hundred pounds, had borrowed as much more, stocked his farm, and when just settled had the irretrievable misfortune to lose 20 out of 24 cows, which composed his dairy. Many other almost equally distressing cases have occurred in this neighbourhood, in which ruin has been induced by this sad visitation.

Now, Sir, I put it to the landlords who read your journal, whether they are not bound to share the loss with their unfortunate tenants? I know that ordinarily the tenure is that the tenant shall bear the risk. This is right; because something like an average calculation can be made, and the tenant pays rent accordingly. Not so in general calamities like the present. Had the knowledge of what was coming been possessed, no one can say his farms would have let for so much money; had the *probability* existed, he knows it would have been the same. How then can he with justice allow his tenantry to be ruined by a misfortune which never entered into their calculations when they took his farms? in my opinion he is bound in *honour*, and I might say in honesty, to share the burden. One landlord, a baronet in Cheshire, has set the illustrious example of allowing to each of his tenantry a certain sum for each cow or sheep that is lost through this disease. It now remains to be seen if others will follow his example; if not, let us hear no more boasts of charity with money which has been received from the bailiff. We shall point to the ruined farmer, who was forced to yield all his patrimony to an ungenerous landlord, who refused to share the burden of a public calamity; and when he has gazed upon this prospect, we will, for the sake of contrast, take him to the next large mill, and shew full warehouses, yet continually crowding with goods, because the manufacturer will not dismiss his hands in the moment of misfortune, but continues to risk an increased capital rather than cause entire destitution amongst his numerous workmen.—I am, Sir, your obedient servant,

A Landowner.

Derby. Sept. 20.

AGRICULTURAL QUERIES.

BONES ON GRASS LAND.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Will you, or some one of your numerous correspondents of experience, have the goodness to tell me, through the medium of your widely circulated journal, the best time to apply bone-dust to grass land, and the proper quantity.

I am, sir, yours respectfully,

A SUBSCRIBER.

Darrington, August 28th, 1843.

FARM ACCOUNTS.

SIR,—Can you or any of your subscribers inform me of the best plan for a bailiff to keep a farm account. I am sorry to say my bailiff has a mode of keeping his accounts so complicated, that they are impossible to be understood. I am anxious to hear of a simple account book.

I am, &c.,

AN OLD SUBSCRIBER.

SIR,—I should be much obliged to any of your correspondents practically acquainted with the matter, if they would be kind enough to state the best mode of improving a barren sand (formerly a furze-hill), what they consider the best rotation of crops for the tenant, keeping in view the permanent improvement of the soil. An early reply will be much esteemed by

Sept. 5th. Your obedient servant,

A SUBSCRIBER.

P.S.—Perhaps you will add the analysis of the soil.

	Parts.
Silica	75·9
Oxide of iron, with a little alumina	17·6
Vegetable matter	3·5
	100·0

SIR,—I am the occupier of a large farm in the neighbourhood of a market town, whence I am in the habit of loading a considerable quantity of manure. My farm is strong turnip and barley soil, and I cultivate it on the four-course system of turnips, barley, clover, and wheat. I should wish to be informed by some of your more learned correspondents what is the most proper period for laying on the purchased manure — whether on the barley stubble and young clover immediately after harvest, or upon the same land in the spring, or at what other period of the course? There is an idea that manure laid on young clover before winter keeps it warm, and assists the early growth in spring; but it may be doubted whether the rains and frosts of winter may not wash out and destroy some of the good qualities of the manure during so many months of exposure. Should any one of your correspondents having a competent knowledge of this subject favour the readers of your journal with an opinion upon the point, he will confer a signal benefit upon the farming community. By inserting these few lines in your next week's *Express*, you will much oblige

Sept. 12. A SUBSCRIBER.

P.S.—A few hints about the most economical application of manure generally upon a farm such as that mentioned above might be of service to the farming public.

SIR,—On reading the account of the great meeting of the Yorkshire Agricultural Society at Doncaster, I was struck with a remark of Earl Spencer's on the efficacy of a seton passed through the dew lap of calves, in order to prevent the disorder called quarter evil.

Many of my neighbours, as well as myself, having been great sufferers from that disease, I should feel greatly obliged by any of your readers informing me, through your valuable paper, the proper age and season for inserting it—what the seton is to be composed of—how long it is to remain in—and how managed during its operation; with any other hints which may appear necessary to its perfect understanding.

I remain, sir, yours respectfully,

AN OLD SUBSCRIBER.

Pembrokeshire, Sept. 14th.

SIR,—I should feel greatly obliged if you or any of your numerous readers would give me a little information on the following subjects.

Having a farm in the county of Glamorgan which entitles me to extensive right of pasturage on the neighbouring common, on which my stock of sheep are kept during the greater part of the year, I find a great inconvenience arising from my neighbouring farmers allowing their rams to run at large during the whole year; the consequence of which is that not only themselves but every one who has got a stock of ewes upon the common, must submit to have them crossed with such rams, and that perhaps a month or six weeks too early for such a cold, mountainous country. I have sometimes had lambs so early as the beginning of February, when there was not a particle of young grass for them, the consequence of which is, that they either die, or are so much stinted in their growth that they continue small and weedy as long as they live. The inconvenience as well as loss of having lambs too early is not the only disadvantage under which I labour; there is another and a greater one still, that is, the inferiority of the rams in shape and constitution; in fact, many of my neighbours will not be at the trouble to get their ram lambs cut at all, but allow them all to run on for rams upon the common, where they do irreparable mischief to a good stock.

I should therefore wish to know whether there is any law to prevent such a nuisance. I should also be obliged by you or any of your readers informing me where the different acts of Parliament can be procured regarding the pounding of cattle, horses, and sheep for trespass, and whether the law of pound is the same in England as in Wales. An early answer will oblige—Your obedient servant,

WELSHMAN.

Sept. 19.

ANSWERS TO AGRICULTURAL QUERIES.

ON MOWING WHEAT.

SIR,—Your correspondent "Marion" states that the best mode of mowing corn is to lay it against the standing corn. Admitting that the corn is not laid or twisted, so as the most useful scythe can be used, I think a better mode is to take it from the standing corn.

A real Yankee cradle scythe cuts two feet forward and eight feet wide, and holds the corn so as to

enable the mower to lay it evenly in gavel, sufficient for a sheaf. The stepping back three cuts out of the four required for a sheaf of course takes a trifle more time than to lay it in swathe; but by this plan one person can tie the sheaves as fast as two can gather and tie from a swathe.

Reaping must surely be the best mode for heavy crops, and different scythes may suit different districts, but the American cradle scythe is the best that I have seen for cutting light or moderate standing crops of wheat, oats, and beans, and also for some species of grass-seeds and brank.

The scythes can be had of Ransome's, Ipswich, but without instruction as to the mode of using them they would be useless.

I am, sir, your humble servant,

CHARLES POPPY.

Witnesham, Ipswich, Suffolk,
Sept. 1st, 1843.

WIRE-WORM IN TURNIPS.

SIR,—"A Subscriber to the Mark Lane Express" in your last paper, enquires whether any of your subscribers can prescribe any plan for the destruction of the wire-worm?

It is a subject that attracts the attention of most agriculturists. In a conversation lately with Colonel C—— and the Rev. W. R——, two gentlemen who unite science with practice, the Colonel said that for the last seven years he had been in the habit of steeping one-half his turnip seed for forty-eight hours, and then sowed it, and about a week after sowed the other half, but without steeping it, and never failed to have a good crop. The fly, he said, attacked the leaves of the first sown, and, as he imagined, became satiated, and hence the second sowing escaped their ravages. I enquired in what liquid he steeped the seed? He said water; when the Rev. gentleman said that steeping of seed in solutions of vegetable poisons, as *Nux Vomica*, would generally destroy animal life, but never that of vegetable life, and hence recommended trials to be made with those poisons mixed with urine, brine, water, &c., taking care not to sow the seed with the naked hand, and to protect the eyes with muslin whilst sowing, and when practicable to sow with the wind. There appeared to me to be so much good sense in these remarks, that I have recommended several of my friends to make the experiment, and now recommend your Cornish subscriber to do the same next year, and forward the result to your paper.

There are other vegetable poisons than Nux Vomica that might be tried, as Hemlock, Helebore, Coculus Indicus, Alcohol, Ether, and some of the empyreumatic oils.

In all cases I would recommend the experiment to be made upon a small scale, and in various parts of the same field. JAMES DEAN.

Aug. 24.

SIR,—In answer to your correspondent, "An Old Subscriber," there is no question the earliest time after Michaelmas is *the best* for applying farm yard manure to new layers, that the rains may wash it well down to the root of the plant. You seldom see much good effected by manure when applied late, and a dry season set in afterwards.

Manuring new layers is undoubtedly one of the best systems of farming pursued in *any country*, as it insures your wheat crop the following season, if put in in good time. Every farmer should drive his farm and not let his farm drive him.

A SUBSCRIBER.

SIR,—In answer to the "Old Subscriber," who wants to know the best account book for a bailiff, I beg to say that for the last few years my bailiff has kept my farm accounts to my perfect satisfaction in "Taylor's Improved Farmers' Account Book," formerly Haddon's, now in its eighth edition. I think it an excellent book, being very simple and comprehensive.

I am, sir, your obedient servant,

A SUBSCRIBER.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

THE LEWES SHEEP FAIR.—This celebrated county fair was held on Thursday last, and, contrary to what is usual, the weather was beautifully fine: the downs were particularly inviting on the occasion, and some thousands of people collected from all parts of Sussex, and also from Norfolk, Suffolk, Essex, Dorset, Hants, Gloucestershire, &c. were present, to watch and take part in this the most important sheep fair of the country. We are informed that there were about 27,000 sheep penned. It was nearly noon before the whole of the sheep were on the ground, and some further time elapsed before any business was actually done. The buyers and sellers were bargaining, and it was nearly one o'clock before the two parties could come together: at this time the following, among other sales, were effected:—Lambs—Mr. Guy, of Crowlink, at 21s.; Mr. Gosden, Radmill, at 23s.; Mr. John Hillman, Landport, at 21s., also at 15s.; Mr. John Saxby, Northease, at 21s.; Mr. S. Grantham, culls, at 20s.; Mr. Turner, Old Shoreham, culls, at 16s.; Mr. Tanner, Preston, 21s. 6d.; Mr. Arkcoll, Langley, 21s.; Mr. Farncombe, Bishopstone, at 21s. Ewes—Mr. Ridge, Stoneham, 50s. and 45s.; Mr. T. Meetings, 25s.; C. Goring, Esq., at 24s. and 31s. 6d.; Mr. John Saxby, culls, at 21s.; Mr. Farncombe, Bishopstone, at 35s.; Major Paine, at 24s. Wethers—Mr. Scrase, Laughton, at 30s.; Mr. Ridge, Stoneham, 35s.; Mr. Hall, at 37s. 6d. Business might now be said to be commenced in earnest, and a great deal was done at about the prices quoted; in some cases a shade less was submitted to by the seller, but in lambs a slight advance was made by the purchaser. The fair altogether presented an improvement since last year of about 3s. per head; but this advance is not such as to afford the remuneration to which the Sussex flock-masters are entitled. There were some few heads of lean stock and cows shown, but the business done in them was trifling. There was one feature connected with the present fair deserving notice; it was the exhibition of agricultural implements belonging to the Lewes manufacturers. Really, for number and quality, we do not believe at any fair in England there has been a better display of new and improved implements, which not only did credit to the show, but will tend to operate on the minds of farmers that the town of Lewes is the best mart in the south to obtain them. Several of the implements were inventions and improvements of our own townsmen. Husbandry is susceptible of its greatest improvement through new means for obtaining a good tilth; hence we ever regard the skill of the mechanic when devoted to improve a plough or agricultural machine as one of the best applications of the human mind.—*Sussex Exp.*

KINGSDOWN FAIR.—We noticed last week that there was every prospect of there being a good supply of sheep at this fair, and to use the words of an informant "there was more than ever was seed on the Down afore." There were two rows of pens covering ground upon which pens were never at any former time pitched, and many sheep were to be seen under the south wall not penned at all. The sheep and lambs were of a very good description, particularly the Downs, many of which were bred in the parish and neighbourhood. Southdown ewes realized from 20s. to 24s.; lambs from 15s. to 20s; for Leicester more was asked. The Downs seemed to be the favourites, if we might judge from their pens being first cleared. We observed two pens of very fat Downs, which seemed to attract great attention, as they appeared just fit for the knife. We hear that mutton realized 6d. per lb. The trade in beef was slack, the description not of a very tempting character; that sold made 9s. per score. The cheese fair was dull, and the quantity pitched not so great as we have frequently seen; prices ranged from 46s. to 50s.—*Bath Chronicle.*

PARTNEY SHEEP FAIR was much larger than was anticipated, considering the vast number of sheep which had been sold at the two former fairs; however, plenty of purchasers were found for the stock at fair prices. Lambs sold from 16s. to 22s., the average prices being about 18s.; tupping ewes from 20s. to 28s., and we heard of one lot fetching 34s. each. Mutton 4½d. per lb.

At MACHYNLLETH FAIR there were many buyers, and prices were a shade higher than at this time last year; but live stock is greatly depressed. Two-year old bullocks fetched £3 to £3 10s. at Machynlleth on Monday, which three years ago would have obtained £6 to £8; and it may be added that the cattle in Wales have done well upon the hills this year, as the herbage has been plentiful.

KERRY, (MONTGOMERYSHIRE, FAIR.)—The was a good show of cattle; cows and calves, as well as good bullocks, were more eagerly enquired for, and realised prices far more advantageous to the farmer than at any of the preceding neighbouring fairs, and all descriptions were cleared. There was a considerable quantity of sheep, not being less than 3000 penned for sale, the whole of which were sold by an early hour at a considerable advance. A few pigs exchanged hands, but at a very low figure.

NORTHAMPTON FAIR was well supplied with store sheep. Good bred ewes for tupping, and useful store shearhogs for keeping, met a ready sale. There was a very poor show of mutton, as regards number and quality. Ewe mutton made from 3s. to 3s. 2d. per stone; wether, 3s. 8d. a stone. Several pens of ewes were turned out unsold at the close of the fair. The supply of fat beasts being large, caused the trade amongst them to be dull. Beef made from 3s. 4d. to 3s. 6d. a stone: most of the beef was of a very inferior quality. There was a larger number of store beasts than we have had for some fair past. One jobber, Mr. Thomas, had 500. The trade amongst them was very bad, and a great many were turned out. The weather operated unfavourably for the cheese fair. There was not a great weight of cheese brought for sale, and of really good there was but a short supply. Prices ranged from 56s. to 63s. per cwt.

READING CHEESE FAIR.—This extensive Fair commenced on Thursday last, when, from an early period of the day, the streets were thronged to excess with cattle dealers, country visitors, and show people, the weather being more favourable than we have known for some years. The quantity of cheese annually pitched at this mart has very materially diminished since the completion of the Railway, as sales are now effected to a very considerable extent without the commodity being brought into the Fair. The supply, however, on this occasion was somewhat greater, the quantity pitched being upwards of 500 tons. Trade was rather dull, but the whole was ultimately cleared off at the following prices:—Thin, from 35s. to 44s., good Wiltshire, from 46s. to 54s.; and best old Somerset, from 66s. to 72s. Of the show of horses and cattle, we cannot speak in approving terms, as the supply appeared very indifferent, both in quality and extent.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

That antiquated person, "the oldest man living"—but who, by-the-bye, is almost invariably a good authority in matters relative to agriculture—does not recollect a finer month for the in-gathering of the crops as has been that experienced since our last report. Throughout the length and breadth of the land, all has been activity and bustle in securing the grain; and such progress, under the most favourable auspices, has been made, that harvest work may be considered as concluded in the whole of the forward districts; while in the most northern parts of England a conclusion is expected to be arrived at in the course of a few days. As is almost invariably the case at this season of the year, numerous reports, having a spurious tendency, have been set afloat, relative to the quality and yield of the new wheats. Accustomed as we are to hear the most contradictory statements, we are naturally inclined to view most of them in a suspicious light. It has been asserted that the quality of the grain is *beneath* an average, and that the produce exhibits a comparative deficiency over that of last year by nearly 2lbs. per bushel. We can well understand that the *early* harvested wheat is out of condition, for it must be borne in mind that such was the uncertainty of the weather, and the almost continuous rains, many large growers, apprehensive of a bad season, carted a great deal too hurriedly. But this cannot in any way be considered as applying to England generally, for that grain secured in the past month has reached the barns and stack yards in the most admirable condition. We now come to the next point for consideration, and that too a most important one, viz., the probable yield of wheat. It would be impossible in the absence of details to form what may be termed a very close estimate of the country, or any given district. It will be recollected that at the time wheat was coming into ear we expressed our opinion—an opinion founded on the then prevailing state of the atmosphere, and the comparatively small number of grains amongst the breadths which came under our immediate notice, as well as that of several of our correspondents—that the prospect for a return of wheat was by no means cheering. In this respect it would seem we were, to a certain extent correct. Of barley but few complaints have reached us, and we think the yield will prove a good one. Oats, beans, and peas are all acknowledged to be good crops.

Although the new Tariff has attracted much attention from our graziers and others, it will be observed that the imports of live stock from abroad for our markets have been extremely scanty—they having amounted to only about 70 beasts, and 90 sheep, and pigs, mostly from Rotterdam. This stock has been of very middling quality, and some difficulty has been experienced in effecting sales at low prices.

The produce of the various grasses this year is stated to be good.

Although some time has now elapsed since the

first breaking out of the epidemic, we find that in most of our grazing districts several severe losses have been sustained by our graziers; while much of the stock exhibited in the various markets has sold on miserably low terms.

Our advices from Scotland are unusually favorable: even in the most northern parts immense quantities of grain have been secured in the best condition, and a conclusion of carrying is expected to be arrived at by, or shortly after, the first week in October. The corn markets have ruled dull, and prices have been with difficulty supported.

In Ireland, everything relative to farm labours has progressed with astonishing rapidity. As to the yield of the crops, it is very favourably represented. The shipments of new corn to London and Liverpool have been on a very extensive scale.

The turnip crop is well represented, but some rain is much wanted to increase the quantity.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market. The former have consisted of 11,690 beasts, 160,900 sheep and lambs, 1,420 calves, and 1,990 pigs; while the latter have ruled as follows:—Beef, from 2s. 8d. to 4s.; mutton, 3s. to 4s. 4d.; lamb, 3s. 6d. to 5s.; veal, 3s. 6d. to 4s. 8d.; and pork, 3s. to 4s. per 8lbs. to sink the offals.

Compared with some previous months, the demand for most kinds of stock—but particularly for the best qualities, arising from the warm weather having caused the arrivals of country-killed meat up to Newgate and Leadenhall Markets to be very scanty—has ruled steady, at full prices; but all other kinds have met with little attention. About 40 foreign beasts have been on offer.

In the dead markets a fair amount of business has been transacted, though the supply of meat has proved seasonably good. The prices of beef have ranged from 2s. 6d. to 3s. 6d.; mutton, 2s. 10d. to 4s. 2d.; lamb, 3s. 6d. to 4s. 10d.; and pork, 3s. to to 3s. 10d. per 8lbs. by the carcass. The arrivals from distant parts have been about 60 carcases of beef, 300 do. of mutton, 400 do. of lamb, 100 do. of veal, and 200 do. of pork.

AGRICULTURAL REPORT FOR SEPTEMBER.

The harvest is so nearly concluded, that we may allude to it as a thing which is passed, and, therefore, which demands all the evidence that observation and correspondence have enabled us to collect.

Of the weather since the middle of August, no terms can be deemed an exaggeration. Such a September we never witnessed; it was (to the 25th) a continuous display of glorious sun-beams with an average temperature so high as to rival the finest August; daylight decreased, it is true, but the noble and unclouded harvest moon rendered the nights of the second week perfectly splendid. Of the "in-gathering," therefore, all must be agreed, save those who delight in misrepresentation.

The accounts are extremely at variance with respect to the acreable produce of thrashed wheat, and hereupon we must be permitted to repeat what has been already insisted upon in some former reports. We believe it will be found that upon a considerable breadth of land, corresponding with the latitude of London, and extending, perhaps, from part of Essex on the east to beyond Reading, Berks, on the west, there is more or less (with marked exceptions) a deficiency of nearly one-third of grain, when compared with the yield of 1842. Now, throughout this district, which certainly comprises much very fine and rich corn land, the wheat plant was very strong and gay up to the second week of April; it then was attacked by three successive nights of very keen frost and considerable falls of snow, by which the growth was arrested, and the blade of the leaves so far decomposed as to become striped and blotched. The entire plant therefore assumed a very singular appearance and buff-coloured tint, from which it never recovered; half the foliage, at least, was thus diseased, and put out of office, and as a diseased organization can never act healthily, the vitality of the plant became injured in proportion.

This, then, was the origin of the evil, and we believe that were it possible to trace minutely, it would be found that the loss in bulk and yield of ear and grain would correspond with the extent of this organic affection.

Though all are aware that the very forward wheats and those upon the richest lands, have been the most unproductive, yet few persons appear to refer to the frost of April; they generally dwell upon the duration of cold blighting rains in May and early June; thus, our thoroughly practical correspondent in South Wales tells us that the spring was very fickle and wet—the two last weeks in May, and the two first in June, the wettest ever known. The harvest, however, has been unusually fine for highlands and lowlands—the grain crops were nearly secured by the 18th Sept., and oats are the only exception to a full average. This is a fine thing to be said of Wales, and it is nearly as gratifying to be informed that the turnips are now rapidly advancing, though the Swedes suffered severely, the fly during seven weeks having devoured them, and indeed every turnip, so soon as it came up.

In Berkshire, our farmers talk of an average yield of 2 quarters of wheat per acre; and many lugubrious stories are afloat of all but total failures; as for instance—of 10 acres producing but 12 sacks to the flail! and of another acre yielding barely a sack! Such recitals are made the most of—they *tell* at a market, and extend far and wide with rail-road speed. The truth is, that in some spots where, after the floods of May, the corn rushed up to a great height, with a spindling and weakened straw, it fell down, and was "lodged" with the first wind and rain after the fine weather of June, and was overgrown by "with-wind" and other stringent weeds. Such patches of corn were ruined; but we know that close at hand, within a few hundred yards of so debased a sample, other and poorer ground has yielded 10 sacks per acre.

We were assured, by the very party who was complaining of deficiency near Maidenhead, that at Watford, Herts, the product of two large farms was altogether good, quite superior to that of ordinary seasons.

It is perfectly true that in many counties the harvest, as reported, has been fine almost beyond record or precedent. Let the North speak, Lancashire, Cheshire, Yorkshire, and Scotland—carry the appeal to Ireland, and the few losses by disease, or by hail, will dwindle to a mere trifling exception; and at all events the immense breadths of wheat which have been stored in barns almost to bursting, and in ricks so numerous as to over-tenant the yards and encroach upon the fields, will amply compensate for the partial diminution which may be discovered on the floor. The straw, too, must not be forgotten: it is boundless, and supplies a deficiency that had become distressing: amply will the farmer be remunerated thereby.

All fodder plants are fine, and the turnips improve abundantly. Let us contentedly remain assured that there is abundant cause for thankfulness and hope.

In our next, we hope to allude to the dibbling of wheat, a subject on which we have looked in vain for the instructive lessons of our friend of the *Bury Post*.

SOMERSETSHIRE.

I have rather delayed this communication, for the purpose of ascertaining the yield of this year's crop of wheat. Our practice is, when reaped, to put the sheaves in stetches of ten each, and as our corn is generally reaped by the acre, there is not much difference in the size of the sheaves; but from its being thick on the ground, it is likely they were tied larger this than last year. It was found last season that about 25 sheaves, on an average, yielded one bushel of best wheat. The lowest number this year I have heard of, is 30, but 60, 70, and even 90, have been found necessary to make up a bushel. In one instance, 70 stetches, or 700 sheaves, yielded 17 bushels. Some, which were calculated to produce four bushels from 40, took nearly double. One piece, judged at 50 sacks, yielded on thrashing only 32. I might multiply many instances, all tending to show the badness of the yield according to the straw. Of course, that which was laid is the worst; but in all there is a great deficiency in comparison with last year. Now, as regards the yield per acre, and the number of acres to wheat last year, I think it must be allowed that where there was a deficiency of plant last year, in most instances the acreable produce will be greater this; but on the richest soils, where there was plenty of plant last year, the yield per acre is decidedly inferior. The quantity of wheat on the ground does not vary annually so much as is calculated on, and I do not think, although perhaps more than an average this, the difference can hardly be felt. The quality of the wheat, and condition of that which has been brought to market, is better than I expected to see, and from what I hear superior to the average quality of the season. I have seen some samples of white that would almost bear comparison with last year's, weighing near 64lbs., and some has come in 65lbs. per bushel; but these are extreme weights, and we cannot reckon it, on an average, more than 60 to 61lbs. per bushel. Over this weight there is very little old wheat offering, and the stocks of this are very light in the hands of millers; but the new, from the very dry weather we have, works much better than was anticipated—price, 5s. to 6s. 5d. Good red, for the season, may be purchased at 5s. 9d. to 6s.; and white, 5s. 9d. to 6s. 3d. per bushel. Flour, 37s. to 38s. per 280lbs. Barley is much better, both as to quantity and quality, than was expected; and I should consider it an average crop per acre. Oats I do not think equal to last year's in quantity, and I think the worst crop altogether that we have. Peas are good, and beans far exceed last year's in every respect. Vetches are very abundant, at 4s. 6d. to 5s. per bushel. The price of stock is lower than last year, and every kind may be bought cheaper. It is true, that after this time there was a great depression, which I do not calculate on this year. We have abundance of keep, and the cattle are doing well. Beef, 7s. to 8s. 6d. per 20lbs. Mutton, 4d. to 5d. per lb. Pigs, 6s. to 7s. per score. Four-years' steers, 11*l*. to 13*l*. per head. Sucking colts, 6*l*. to 13*l*. Cheese and butter rate 44s. to 56s. per cwt. Wool is rather improved, and a good demand, and a good deal bought up at prices ranging from 10d. to 11d. and 11½d. per lb. I see I have omitted to notice an essential crop—the potatoes. That the crop of this root will come very short of last year, there is every prospect; and this will be likely to make more difference in the consumption of bread-stuff; of which I do not consider, reckoning the foreign old and last year's crop, there is so much on hand as there was last year by three if not four millions of quarters. I may be under, but I do not believe I am much above the mark in this opinion.—Street, 9th month, 23rd, 1843.

NOTTINGHAMSHIRE.

The harvest may now be said to have terminated (with scarce any exception), and in taking a retrospective view of the bygone month, we have the greatest cause for thankfulness. A finer harvest we could not have desired, and grain crops of every variety have been stacked in first-rate condition; and now, from a minute observation of the shocking up in the fields of the produce during harvest, and the present appearance of the stack-yards, something like a fair statement of the bulk may be gathered. Wheat, on our best calcareous soils, particularly the marls, have cut up a splendid crop; but on the clay grounds, having a clay subsoil, a great deficiency is found. The quality is also extremely various, a great many samples having both shrivelled and smutted grains in them, while happily the reverse is the case in numerous instances, and the grain is fine and bold, without either smut or sprout. Opinions as to the yield are conflicting; some say but moderately, while others are satisfied. I think I may say, taking things in the aggregate, that the crop is nearly, if not altogether so, an average one. The Barley crops very generally have been found to be defective, and were considerably below an average. The Oat crop is found to be quite equal to what has been formerly expressed, an average. The leguminous were excellent, and taking the whole of the crops, calmiferous and leguminous, the bulk of straw, the yield (as far as we can now judge), and the quality, they have quite equalled our most sanguine expectations; exceptions there are, and exceptions there always will be, until the labours of the farmer are under the directions of a mind, and that mind familiar with the soundest philosophy connected with agriculture. When we take into consideration the general ignorance of agriculturists on the physical sciences so closely connected with their employment, we may well wonder that they should be so fortunate in the result of their labours. We are plentifully supplied with grass, both in the old pastures and the aftermaths. Turnips have very much improved the last month, but are generally small, in consequence of the lateness of the period when they were sown. The summer fallows are very clean, and in a forward state. Potatoes are much improved, but must, under the most fortunate future circumstances, be at least one-third short of an average crop. Stock generally is in good condition: the value of the same continues without any variation worth mentioning. Many of our late fairs have been glutted, and sales have been made with difficulty. The corn markets are liberally supplied with most descriptions of grain, and, with the exception of Barley, prices have a downward tendency. The demand for labour (as a natural consequence of the season of the year) is good. Wages have been during the harvest 10s.

per week, and victuals, with the drawing of the winter's coal. Potato lifting will now find for a short time continued employment, at similar wages. Trade generally is a shade better, and the Chartists are losing a portion of their energy. If corn continues to decrease in value, the data will be bad to reason upon.—*Sept.* 18.

YORKSHIRE.

Our report at this season being one rather of the harvest than of the month, we have deferred it, not only until some decisive account could be given of the harvest's progress, but also of the probable prospects of the yield; and now that we are able to speak as to both, we at once systematize our remarks, and observe as to the state of the harvest,—nearly the whole of the corn in this county, including even the spring wheat, is entirely cut, and fully two-thirds of it secured in barn and stack. The only exception to this is the small area of the moorland districts, where harvest is also busy, and the bean crops, which are not ready for the sickle. As to condition and sample—from the 26th of August, the time when harvest generally commenced, up to the present date (September 13), a more splendid season could not by possibility occur, not even a single rainy day intervening. The corn ripened very rapidly, and when cut, so hot and scorching was the sun, that it was fit for the stack in two or three days, and that in a condition fit for grinding. Any person who would have a moderate degree of patience, would have no difficulty in securing it in excellent condition. Several samples have found their way to market quite fit for the mill, but the corn is much smaller than it was last year, and has a much greater proportion of bran, and of at least 2lbs. to 4lbs. per bushel lighter. Several ears have, never come to maturity, but fallen and grown "deaf," long before the time for ripening; these remarks apply only to wheat. Barley seems to be a better sample, and oats proffer to be good in sample and excellent in condition. As to produce and yield—as regards wheat, the breadth sown, including spring grown, is very large, possibly one-fourth above an average, but every farmer complains loudly of the yield, both per stook and per acre. Many have tested, both by the flail and the machine, the probable results, and they are invariably that the yield will be one-third less than last year; and hence, with all the advantages of the extra breadth sown, it is more than probable that there will be less wheat by far, taking the county of York as a whole, than there was last year. What there is, however, is fit for immediate consumption. Of barley the breadth is smaller than usual, much of the wheat being substituted for that crop, especially the spring sown (which, by the way, is this year a decided failure)—but we never remember seeing the barley so good a crop; a fuller, brighter, better yield, we never remember seeing promised. How far it will be realised, there has been nothing yet thrashed to determine, as the quantity on the ground, the size of the ears, the weight of the sheaves, all speak of an abundant produce. Nothing but a return to pure malt and hops in the manufacture of ale, can realise good prices for barley. Oats are good in appearance, and augur favourably for a good yield—they are smaller in breadth than last year, one-third, perhaps, of the extra breadth of wheat being taken from them. Never in any season has the harvest been got over so easily and rapidly—many persons were not cutting more than 14 days.—Sept. 13.

CALENDAR OF HORTICULTURE FOR OCTOBER.

The month of September, to the 19th day, was so gorgeously fine that it ought to be chronicled by every meteorologist; its sun was splendid, and produced a temperature far beyond that of the estimated averages: the mid-day heat of the 19th was 77° in the shade! The harvest moon also lent its aid, and the nights splendid in the extreme. The cold, wet weeks of May and June had indeed protracted the harvest, and rendered it late; but the in-gathering has been brought nearly to a conclusion under circumstances so propitious as to become a cause of wonder and delight. On the 19th, with a high and rising barometer, a warm and copious shower occurred; this rain, where it fell, proved exceedingly refreshing to the whole tribe of brassica, whether in field or garden, for the ground became very hot and dry.

VEGETABLE DEPARTMENT.

Beet-root must be attended to; it will soon be fit for table. Some should be digged as wanted, and it makes a capital dinner vegetable when boiled till perfectly tender. The main crop may be left till fully swelled, when, like carrots, it ought to be got up and preserved in sand. Parsnips improve by winter frost, but not so carrot and beet-root.

Broccolis, of autumn, that is, white and green *cape*, are in season; each ought to be carefully examined, because the white butterfly has been abundant; and caterpillars will deteriorate the plants. Always remove every broccoli stump, as it soon becomes offensive. Spring broccolis must be looked over to keep them clean in every sense from vermin, as well as weeds.

Cabbages.—Some few are now set out in nursery beds to strengthen; the loam should be fresh, but not manured for these seedlings, but when finally planted for cabbaging, the ground ought to be rich. Cauliflowers sown late in August, may be reserved, some for late transplantation, according to Ball's method; others, forwarder, can be set at once in frames, or in pots, to be protected by hand-lights.

Kidney beans and runners, where they have succeeded, continue to bear well; let no one bean remain to ripen, unless upon those plants which are reserved for seed—"Gather beans, and have beans."

Winter spinach—So far as we observe, has grown to unusual perfection; it is strong and rich, and many gatherings have already been taken in thinning order. Nitrate of soda suits this plant well, at least when the loam is strong and firm in texture, when in a dry state.

Artichoke beds and rows are sufficiently protected by a good layer-dressing of tree leaves, half decayed, and over that, prior to sharp frost, by a bed of screened coal ashes; thus none of that laborious landing-up, formerly practised, is in any way necessary.

Asparagus beds and rows should be cleared at the shoots, when they and the seeds are ripe. After cutting over, it would not be a bad practice to collect and burn the refuse on some handy spot in a heap, scattering the ashes over the clean beds, as they would yield some useful alkali; a final dressing of semi-decayed leaves would complete the regulation. If in young asparagus plantations, made or sown in April, any manifest blanks are visible, three or four fine seeds might be pressed into the ground in those places prior to the manuring, for thus the blanks would be recovered in the spring at the earliest start.

Celery rows will demand attention; some plants will now be very large, and if October be fine, will still increase in size. Others will yield a plentiful supply; careful and timely earthing must be kept up to secure the succession. We have had ample proof this season that celery will prosper without dung in the trenches. In June two rows of sea-kale plants, that had borne for ten years, were digged up, and the lines of ground formed into two deep trenches; into these were digged nothing more than the green seeding plants of last year's winter spinach, chopped to pieces with the spade. In the ground so prepared, stocky plants of Seymour's celery were then set and watered, and the subsequent growth has been powerful and verdant.

Sow some radish and salading, for successional supply.

Attend to the entire routine of cleaning, hoeing, hand-weeding, digging, and clearing potatoes, ridging vacant ground, and sweeping walks. Prepare composts, first collecting turf heaps, leaves, and masses of horse and cow dung; mix together decayed turf, manure, and decayed leaves, and thus prepare for the growing season. A large heap of nice free loam, and nearly as much decayed dung, should be prepared for next top dressing of the strawberry beds.

FRUIT DEPARTMENT.

Peach and Nectarine.—After having selected all the bearing wood of next year, it is good practice to unnail, and thus set at liberty, the younger wood, as thereby air is admitted, and it becomes hardened throughout. The motion occasioned by the air tends also to promote health; but the tree must not be so far loosened as to endanger the snapping of the fruit-bearing shoots. Many persons, however, leave these trees, apricots, plums, and cherries, close trained, and yet obtain excellent fruit. Peaches trained already, or to be planted in houses and pits for early fruiting, should be fully exposed on the trellises to the open air, till it be time to put on the glasses. No peach bears forcing so well as the real *noblesse*, called also Mellish's favourite, and next to that the Royal George.

This is the season to prepare orchard ground, and it cannot be too speedily undertaken. Choose a free loam, remove the turf, trench two spades deep, and invert the turfs, placing them at the bottom of each trench. Into land thus prepared plant the trees at the end of the month, and prefer maiden trees of one year from the graft. Water freely, stake effectually, and mulch above the roots of each with littery dung.

Gather fruit when just ripe; pick it carefully, and pile apples in a heap to heat a little; then place them in sorts upon flat shelves, in a close, cool fruit room. Pears will be noticed next month.

Trim and secure the raspberry-bushes. Hoe, but never dig, and remove from the ground all wandering suckers.

Gooseberries and currants are not yet touched, but the ground ought to be cleaned.

In the forcing department, pines alone demand rigid attention; for grape-trees are to be exposed. Let succession pines be kept at 65° moist dung heat, in pits furnished with an economical hot water apparatus, to be duly described. The fruiting house at work must still be kept at 70° by day, till the pines be all cut. The preparatory house for spring fruit should soon receive its full-grown plants; but these are to be kept cool and dry till the season of fruiting commences, which will not be till a month or two hence. There are persons who retain their largest pines in heat at all times, leaving nature to its own free will, and the fruit to come on and ripen off without any rigid rule. Others subject their houses to strict discipline, and force an entire house at once.

Strawberries in pots should now be made dry, either by laying them down sideways, three deep, in secure pits, covered during sharp frosts with straw, or by placing them in cold turf or brick pits, which can be protected with straw hurdles or some such defence.

FLOWER DEPARTMENT.

Prune shrubs. It is needful to study the character and habits of every tree, otherwise it may be disfigured by the knife. Some shrubs produce bloom at the axillary joints; others, as the lilac, flower at the summit of the shoots.

Plant deciduous shrubs, preparing the ground and planting with care and caution, as in the case of orchard trees; always scatter fine, congenial earth among the extended fibrous roots, prior to watering and staking. Among choice shrubs we name the *Berberis aquifolia* and *Leycesteria formosa*.

Bog-plants, as kalmia, azalia, andromeda, rhododendron, &c., &c., should be set apart; for though some may do well in loam, all like heath-soil, leaf-mould, and sand. These plants, when once established, may be kept up in perfection by a winter layer of good semi-decayed leaves and a little sand.

Clean the beds and borders, removing old flower-stems, weeds, and litter of every kind. Do not manure the surface now, but make no scruple to permit falling leaves to form a natural winter cover to the ground. If kept within bounds, and not suffered to lie about walks and lawns, leaves do good to shrubberies and parterres; they mulch, protect, and finally enrich.

Herbaceous plants may be divided now, and replanted in new sites.

Finally, trim laurel, yew, and other hedges, to give neatness to the winter garden.

GREENHOUSE AND PITS.

All the tender plants which have adorned the flower-garden should speedily be lodged in some covered erection. Turf-pits or excavations, the walls of which are regular turfs, finished off with frame and lights, are capital defences, especially if supplied with a foot or more of dry saw-dust, wherein to plunge the pots. Air can at any time be given, and rain warded off; but, however fine the season, plants exposed to the elements are in peril. We have only to cite the fact, that on the 18th of this September the thermometer marked 74° max., and above 60° at midnight; whereas on the same day of the year 1840, a frost came on suddenly, which nearly destroyed half the dahlias then prepared for exhibition.

Another great reason for the early removal of plants, such as geraniums, &c., which have grown in the borders, is the difficulty with which they make roots late in autumn. It is then a season of repose, and if the roots be disturbed, a plant, by the loss of its supporting fibres, becomes an object of deformity.

As some heat will occasionally be required, every flue should be made clean and active, though we must yet urge the fact, that by thick and efficient coverings plants are maintained in greater health and beauty than they can be if kept in a heated atmosphere.

Sept. 20, 1843.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF SEPTEMBER.

Seldom has the weather been more favourable for harvest operations than it was during the month which has now arrived at its conclusion. In the home counties, and in those to the southward and westward of the metropolis, the wheat gathering has been concluded, and the crop of this article is much better than, two months ago, the most sanguinely disposed could have anticipated. That the British farmers are not protected sufficiently by the present Corn Bill is but too truly established by the fact of upwards of seven hundred thousand quarters of foreign wheats, of very superior quality, having been entered for home consumption about a fortnight ago, on the payment of the duty of 14s. per quarter. These wheats were generally purchased in the markets in the Baltic sea, and in those of the north of Europe, on very moderate terms; and had our duty continued at 20s. per quarter, still they would have left a fair profit even after its payment. This large importation of foreign grain cannot be of any benefit to any class within her Majesty's dominions, whilst it is extremely detrimental to our farming interest, that such an immense quantity of foreign wheat should be thrown on our markets for sale at that period when our new wheat crop is first brought forward into consumption. This competition in our markets can only increase the difficulties of our farmers, and tend further to depreciate the wages of productive labour throughout the United Kingdom. Agricultural property imported here from foreign nations, for the food of the British people, drains the empire of large sums of money, which, if paid to British farmers for the same purposes, would not be abstracted from the home circulation, but would be employed, not as now, in giving labour to foreigners, but amongst our industrious workmen at home. To the manufacturers themselves importations of foreign food are doubly detrimental, for they are injurious to the consumption of goods at home, and the money paid by us for these supplies of grain is embarked immediately either in the extension of foreign agriculture, or in the creation of new foreign manufactures, thereby injuring the markets for British goods in those very countries from whence we import grain. It is a perfectly established fact that agricultural improvements were making rapid progress in this country so long as sufficient legal protection was given to science, industry, and capital embarked in them; and had our import duties, and average prices by which these duties were regulated, not been altered, within less than one quarter of a century from the present time, Great Britain and Ireland would have produced food abundantly sufficient for the support of double our present population. These alterations, however, which have been made at the shrine of reciprocity in commerce, have placed, for the present at all events, an effectual bar to any further improvements in tillage at home, for they have destroyed all confidence in the safety of capital so invested. Our farmers cannot pay fair rents for their farms, heavy public and local taxes, and good wages to the workmen, if grain grown by Polish serfs, Russian slaves, German boors, and American helps, is to be at all times, and under all circumstances, admitted into our markets of consumption. To destroy our farmers' property, the Anti-Corn-Law Leaguers are sufficiently aware, is necessary to the reduction of the wages of their labourers, and therefore they continue active in their occupation of humbugging the British people by their orations against what they call "the corn monopoly." That depressed foreign commerce cannot now be the cause of their complaints, all the information received from, and published in, the manufacturing districts has latterly entirely contradicted; for manufactures, during the last half-year, have been in a most wholesome state. Their only object, therefore, for persevering in their hostility to agriculture is, that by reducing the value of living, they may have an opportunity still further to reduce the wages of those, by whose labours hundreds of them have acquired even more than princely fortunes. Their foreign export trade is now in a highly flourishing condition, and yet the corn trade is not as yet free amongst nations, nor can any commercial treaty with foreign states, even were it founded on fair principles of reciprocity, increase the consumption of British goods in those states. A certain portion of British goods is necessary, for instance, to the wants of the inhabitants of the United States of America, and that quantity is annually, and now plentifully, supplied; nor could it be increased by any quantity of wheat and flour which we might take from them. This consumption of goods can alone be augmented by the increase of population; whilst, on the contrary, in proportion to the quantity of foreign grain which we may hereafter import, must our agricultural produce at home decrease; for our people cannot consume *in abundance* foreign grain, and also consume *abundantly* the produce of our own fields. We are, therefore, well warranted in doubting whether, under the present state of our corn and custom-house laws, an abundant crop can ever be of any importance to our agricultural interest. If the present wheat crop be a large one, the importation now made, and making, of foreign wheat, is in every way detrimental to the best interests of the British farmers; and if the wheat crop on the contrary be a small one, prices will be kept by foreign grain much under those rates at which it can be profitably grown, in any part of the United Kingdom. The same causes must operate on the value of wages of all descriptions, for we cannot pay for foreign hats, boots, cordage, salmon, and numberless other articles of general use in this empire, and at the same time give employment to our own people in the production of similar articles of necessity at home. The theory of mutual labour we can comprehend, when it is put in practice amongst communities existing under a similarity in worldly circumstances, but how it can be put in force betwixt Great Britain and Poland, for instance, we cannot understand; unless it be proper that John Bull should be placed on a footing in living and intellect with the Polish serf. This Polish serf must either be raised to a level with the English people, or John Bull must sink to the rank of Polish labourers, before reciprocity in trade can, by any possibility, exist betwixt Great Britain and any European nation. To encourage agricultural improvements at home is necessary to the strength and greatness of the British empire, for on the successful cultivation of our fields does our national credit entirely depend. Unless field labours flou-

rish, the annual public expenditure of the country cannot be raised by taxation, and on the same cause the punctual payment of the half yearly dividends on our national debt mainly depends. Our internal industry of all descriptions must be fully protected against competition on the part of foreign pauper communities, and particularly that of agriculture. The Quarterly Review, however, has asserted that our agricultural produce is more perfectly protected by the Corn Bill of 1842, than it was by that of 1828. It surely is, however, an extraordinary protection, which a fortnight ago admitted the entry for home consumption of seven hundred thousand quarters of foreign wheat on the payment of 14s. per qr. of duty, whilst, at the same average (58s. to 59s.), the duty under the act of 1828, would have been 28s. 8d. per qr. Had the state of this year's crop rendered the importation of this large quantity of wheat necessary, the sacrifice of property would have been cheerfully submitted to by the agricultural interest; but with excellent and sound wheaten bread at 1½d. per lb., and potatoes lower than they ever have previously been quoted in this country, the injurious consequences of the corn law of 1842 to the best and general interests of the British people, must become abundantly obvious to all who are not wilfully blinded, either by hostility to the agricultural interest, or by admiration of her Majesty's present advisers. In the meantime our farmers must submit to sell their wheat at 8s. to 10s. per qr. under its intrinsic value, and nobody can benefit by this great sacrifice made to theory, of agricultural property. The cotton weavers, no doubt, may be enabled by these means, for a time, to place the wages of their labourers more on a level with those paid on the continent of Europe, but even this power to create discontent in the manufacturing districts, cannot long be for the interest of these gentlemen themselves; for by clothing, as well as by living, can this equality be alone rendered subservient to freedom in the corn trade, for which they so strenuously labour and contend.

For many years past, the quantity of land under barley cultivation in Great Britain has not been so small as it is the present season. On light soils, the wet and damp weather in the early part of the summer was of much benefit to the barley plants, and the conclusion of the harvest has in no manner since contradicted those favourable prospects. For the quantity sown the produce is fully equal to that of average years, and generally no fault can be found with the quality. On heavy lands, however, the rainy weather to which we have alluded above, produced opposite effects; the barley plants having run away too much into straw, and the quality of the barley itself being now coarse and too flinty to encourage the hope of its working kindly when placed under the operations of the maltster. The barley crop this season, therefore, is probably not an average one, either in quantity or in quality, but, at the same time, it will, with the assistance of foreign barley, be found fully sufficient for the yearly consumption of the distiller and maltster. The quantity now required for malting purposes annually, is less than four millions of quarters. During the malting season of 1842-3, the deficiency in the malt duty, as we mentioned in a former number of this publication, was nearly nine-hundred thousand pounds, and nothing has occurred during the last session of the Imperial Parliament to encourage any expectation of the consumption of malt being increased during the season 1843-4. Whilst our legislators were employed in the manufacture of corn laws and of tariffs, for reducing the duties on the importation from foreign states of various articles of foreign agricultural produce, no mention was made of, nor any attention paid to, the most outrageous manner in which barley is at present taxed in this country. The duty charged on the manufacture of malt is highly unjust to the interest of the barley cultivator, and to the clear rights of the beer consumer to purchase his favourite beverage at moderate prices. To the public revenue excessive rates of duty have universally been attended by effects widely different from those which were expected to arise from them. By reducing the malt duty to moderation, the sum paid into the treasury, from this most legitimate source of taxation, may be doubled, and the consumption of malt may be increased four-fold. Several millions of quarters of barley, by this reduction, would speedily be required by the maltster, in addition to the quantity now used by him, and three-fourths of the people would then become consumers of beer, who, under the present heavy taxing system, taste it not from January to December. But this would not be the end, but the beginning of the benefit. A million or two of acres of land, now totally useless, would be brought into cultivation for the growth of this additional quantity of barley, and would give productive labour to thousands of agricultural labourers and their families, who are at present either inhabitants of Union-houses, or existing in a state bordering on destitution itself. To lead these men forward into a state of comparative respectability and comfort, would surely be a far better plan for increasing the consumption of manufactured goods, than the encouragement of agriculture abroad can ever be. It is, besides, the duty of all governments in this country to protect the interests at home of the vast majority of the inhabitants; and not, under any circumstances, to permit them to be sacrificed to the sordid views of a dozen or two of cotton lords, who make splendid fortunes in a few years out of the sweat of the brows of their artisans, and who, as soon as their selfish objects are obtained, and their ambition gratified, turn out of employment those workmen by whom their fortunes have been acquired, and leave them to penury and destitution, until productive employment be again found for them on public works, on railways, or by agricultural improvements. The profits which would arise from the tillage of fields now useless would yearly increase the nation's wealth, after fully paying for the increased comforts of the people, and for the additional revenue which would be collected on malt, were the duty per quarter reduced to a rate consistent with common sense. Agricultural improvements, besides, for centuries are blessings to the human race, and do not ever decay; and surely advantages so extensive should not be put at hazard for the encouragement of manufactures which exist only by the breath of fashion, and which under no circumstances can be rendered useful to their consumers, or even endure at all, beyond a very few months. It is, however, not alone by the excessive rates of duty now charged on malt, that the barley-grower, the inhabitants generally of the United Kingdom, and the public revenue suffer; for the duty charged on spirits distilled in England, being fully three hundred per cent. on their original value, is

equally injurious to the best interests of the community. This excessive system of taxation encourages smuggling, which is the root of many crimes; and in the prosecution of this illegal system of trade much immorality has its origin. To import, duty free, more than one-half of the spirits at present consumed in England, is a most profitable trade, and its suppression would be a certain benefit. This effect could be perfectly accomplished by rendering the duty now imposed on the English distiller a moderate one; for the smuggling trade would speedily then become unprofitable. To equalise the home-made spirit duties throughout the United Kingdom, and to fix them at 4s. or 5s. per gallon, would remove the evil. It would then be unnecessary for Father Mathew longer to pursue his toils in the suppression of drunkenness, nor will Father Luke be required to sell his pledges for the conversion of the opposite sect from teetotalism. The two extremes of vicious habits may, by an alteration in our home spirit duties, be joined together in the promotion of the great cause of temperance; and mankind then generally would enjoy in moderation the many blessings which Providence confers on them. With respect to foreign spirits, their consumers can well afford to pay the existing rates of duty; and therefore no benefits which our manufacturers can obtain from commercial treaties with France and the Peninsula, can in any measure compensate this country for the injuries which even the smallest reduction in the foreign spirit duties must inflict on British agriculture, on British distillers, and on the health and morals of the British people. Within ourselves we have the means of manufacturing brandies not inferior in flavour to those of France, and certainly far superior to them in wholesomeness, and our rectifiers also can produce spirits far more healthy than those which the smuggler imports from Holland; but our wise excise laws stand in the way of these advantages. French and Spanish brandies and Dutch gin are admitted into legal consumption here at any strengths which suit the purse of the importer and the palate of the consumer, whilst the British rectifier is prohibited by these wise laws from selling his manufacture, unless it be at least eighteen degrees under proof. This weakness renders it impossible to impart that flavour into our rectified spirits which they would possess, were the laws which regulate their sale made similar to those which are applied to foreign spirits. The restriction imposed on the operations of the British rectifier is not attended by one solitary benefit, unless the encouragement of foreign agriculture, of foreign distillation, and of foreign smuggling, be advantageous to the British community. To friend Bright and his brother labourers, in their great efforts for reducing the wages of their labourers, these evils may perhaps be useful; but the reduction of wages appears not to be the wisest plan possible for increasing the happiness of the industrial classes of British society. To the Anti-Corn Law Leaguers, the destruction of British agriculture may be necessary; for the gain by them of immense fortunes within a few years may possibly depend on this sacrifice; but to the productive classes its ultimate consequences must be ruinous. To persevere in the present hostility which our free trade legislators have declared against British agriculture, and against the wages of British workmen, must also eventually sink deeply into the national credit, and render the collection of the public revenue itself difficult, if not entirely impossible; but without this general sacrifice the leaders of the Anti-Corn League have no chance of departing this life with millions sterling to leave behind them—a fair monument of their patriotism—and therefore no prospect exists of a termination to their toils, not for the public good, but for their individual interests, unless the returning good feelings of the farmers' friends in parliament place an effectual bar to any further encroachments being made on our internal industry by these cotton manufacturers and future would-be lords of the British soil.

Since our last publication we have had unusually large arrivals of oats for the season of the year, of which Ireland has furnished the greatest quantity, and from which the Irish labourers must have reaped considerable advantages. From various ports in the north of Europe the supplies of this article, as well as of barley, received weekly, have been nearly as regular as from any part of the United Kingdom; and they have nearly as regularly as they arrived gone into consumption on the payment of the duties levied under the corn act of 1842, leaving at the same time profit sufficiently remunerating to the importers. This, no doubt, the Quarterly Reviewers may some time or other adduce as a perfect proof that our corn laws now are far superior to the repealed one of 1828, in giving fair protection to our agricultural pursuits at home, and in encouraging native industry. From the present state of the oat trade, however, we strongly suspect that our home producers cannot derive much consolation, unless it be in the pleasing contemplation of the loss of their property, in the great cause of reciprocity in our commercial intercourse with foreign nations; and our agricultural labourers can find as little comfort in the transfer of a portion of their sacred property to the cultivators of foreign fields, unless they possess the same degree of patriotism. During the last twenty years the increasing growth of oats in Ireland rendered us, with a very few exceptions, entirely independent of foreign importations; and the prices were so extremely moderate, that complaints were not heard amongst the great majority of the consumers. The value was sufficiently high for the expenses of their cultivation in the north of England, in Wales, in Ireland, and in Scotland; whilst at the same time it was sufficiently moderate for the best interests of the consumers. Under the acts of 1815 and of 1828, the improvement of waste lands flourished throughout the United Kingdom, for by that law property embarked in these most important operations, was fairly protected against the competition of foreign agriculturists with the produce of these undertakings. The consequences of the corn law of 1842 are, however, the reverse, for they are as injurious to home industry as the tendency of the defunct acts was favourable to all classes in British society. Oats now, like all other descriptions of agricultural produce, are lower than they can be grown for profitably, either in Great Britain or even in Ireland, where wages are so low; and, therefore, until some change occur in the present corn laws, so far from agricultural improvements being prosecuted in future with advantage to the community at large, the quantity of grain grown amongst ourselves must annually decrease, and with the decay of agriculture must the means for productively employing the industrial classes be also annually diminished. Irish oats are now selling in the London market at 16s. to 19s. per qr.,

and 21s. is the highest price paid for the best qualities grown in that part of the kingdom. Freights from the west coast of Ireland to London are more than twice higher than they are from the opposite coasts of Germany, Denmark, and Sweden; and, therefore, after the payment of rent, church rates, and heavy taxes, the Irish oat farmer cannot compete with the foreigner in our oat markets on the eastern coast, so long as our corn duties remain at their present low scale. The best foreign oats are better in quality by 6s. per qr. than the average prices of Irish oats; and this, with the small cost of their production and cheap freight, gives the foreign oat grower a decided preference in the markets of consumption throughout the United Kingdom over the produce of Irish fields. In the mean time the oat crop of this season is certainly everywhere most abundant, and the quality generally is also excellent, but we fear that this circumstance cannot be of much advantage to our oat growers, because nothing short of a ruinous depreciation in prices can prevent foreign competition.

From the corn markets in the Baltic, and from those in the North of Europe without that sea, the letters received are in due course of post, but the information contained in them respecting the grain trade is not of much interest. The dulness in Wheat here, and the material decline which has latterly occurred in its value, have been attended by their usual consequences in all the ports of export in those quarters. In Dantzig, Stettin, &c., however, at these dates shipments continued to be made to this country, for at present no better market for the finest foreign wheats can be found, and it is the general impression that farther shipments will be forwarded so long as the weather permits. Prices were declining in proportion to the decline here and to the increased rates of duties; and a doubt, therefore, cannot be entertained of a considerable quantity being still imported here so long as the navigation may continue practicable between this country and the northern kingdoms of Europe. It will of course depend on circumstances whether these supplies on their arrival be entered immediately, or bonded until the approach of the next summer months. It is from this quarter we receive the great proportion of foreign wheats used in this country, and importations of them can be made at no other period than during the summer and autumnal months. The advocates of a free corn trade harp on the advantages which we may receive from importing foreign grain at any time when it may be wanted. An order from the Anti-Corn Law League, however, must be obtained to restrain a considerable power, vulgarly called *General Frost*, from shutting up the ports and navigable rivers in the Baltic, the German ocean, and in the Black Sea, at certain periods of the year, before freedom in the corn trade can confer this mighty benefit on the inhabitants of the United Kingdom. Messrs. Bright, Cobden, and Co. must, in fact, discover some new plan for regulating the seasons before they can establish the new doctrine so strenuously urged by them, of importing foreign grain at all periods of the year, exactly when our wants require foreign aid in this line of business; else we must continue annually to receive millions of quarters of foreign grain at that time when our home produced corn is first brought into the markets for consumption, for, even from the United States of America, no wise corn merchant would risk wheat shipments during the stormy season. So long, therefore, as the agricultural interest in this country remains without effective legal protection, so long must our markets be periodically deluged with wheat of foreign growth, by which our farmers must eventually be defrauded of the money which they have invested in the tillage and improvement of the fields of the United Kingdom, were it three times larger than it really is. The late change is most unjust to the farmer's property, and equally so to the wages of British workmen, of whom productive labour is the sacred property; and the master manufacturers have not any greater right to require that a portion of this property be transferred to foreign field labourers, than our working classes have to demand clothing from them, paying for the same only one half of the cost of production. The farmers in this country are to be sacrificed to those of foreign nations for the sake of the manufacturing interest, the wages of labour also are now depreciated for the same wise reasons, and, by these unjust means, is a road thrown open to our master manufacturers to make princely fortunes, and even to obtain, in some instances for them, seats among the peers of the British empire themselves. This is the only benefit which can by any possibility arise from a free corn trade.

From our North American possessions, and from the United States, information has been received by the Royal Mail steamer, *Britannia*, dated in the middle of last month. To our farmers and to their labourers, the news cannot be very cheering which has been communicated by this conveyance. The crops generally have this season been most abundant in quantity and excellent in quality throughout that part of the great western continent, and in the United Kingdom an ample channel for the consumption of the surplus produce of wheat was then confidently calculated on by the American agricultural interest. From the States in the far west, agricultural produce can this season be cheaply sent into the Canadas, by means of the Wabash and Erie canal, and the produce of those States which border on Maine, can be easily sent down the river St. John's, and shipped to the United Kingdom, where it will, after the 10th of this month, be admitted into consumption on the payment of only nominal duties. In Great Britain, therefore, the American land proprietors have a certain and valuable market for the sale of their large crops, and well therefore may we say that the news received by the *Britannia* is anything but cheering, for the expected supply from America cannot confer the slightest benefit on any class of Her Majesty's subjects. To our manufacturers themselves it cannot be beneficial for any length of time, for the Americans are already most abundantly supplied with British manufactured goods, and the prices have been kept moderate by the large quantities which the extravagant import duties throughout the United States have caused to be smuggled into that Union through our North American possessions. So far from being advantageous to our manufacturers, large importations of American agricultural produce must be attended by the opposite effect, for the home market for goods will be injured in proportion to the injury which these importations must speedily inflict on our agricultural interest at home. At least five out of six of the British people gain their daily bread by agricultural labour at home, and even if the consumption of a larger quantity of goods than is now used could be forced on the American

people by the free corn trade system, of which we are about to make the experiment, we are morally persuaded that eventually our manufacturers themselves must be heavy sufferers by this free trade experiment with North America. The reduction to poverty and to the Union-houses of a considerable portion of our agricultural population will soon follow a free corn trade betwixt this country and foreign nations; or, at an immense expence, many thousands of them must be transported to the wilds of America, there to cultivate foreign lands in preference to the many millions of acres of land now useless in this country, but which can by labour and capital be brought into the highest state of tillage. To give encouragement to the cultivation of American fields by the sacrifice of agricultural improvements at home is now, however, the object of the great body of our modern legislators, and is a policy perfectly unintelligible to common sense. Before the conclusion of this corn season we shall receive large quantities of wheat and flour, the produce and manufacture of the United States, fraudulently branded as the produce of the Canadas, and of the highly-favoured state of Maine; by the importation of which, the grossest injustice will be done to the property of our farmers, and on which duties, absolutely nominal, will be levied. The Finance Minister of this country must, however, discover ultimately that the national public expences cannot be raised by any system of taxation, when our agricultural interest does not prosper, and, therefore, two millions of families, now employed by the farmer, should not be sacrificed for the improvement of American fields, and for the support of American agricultural labourers. Under the American system of prohibitory import duties, the American markets are now crammed literally with British manufactures, quite adequate to the consumption of the American people; and we repeat, therefore, that no importation of American grain and flour into the United Kingdom, can much increase the consumption of British goods throughout that union, beyond the quantity now in use there already. American prohibitory import duties have not, and never can diminish the consumption in that country of that quantity of British manufactures which is absolutely necessary to the people, nor can any commercial treaty betwixt us and that model Republic, eventually, in any material degree, increase the natural consumption.

CURRENCY PER IMP. MEASURE.

SEPTEMBER 25.

WHEAT, Essex and Kent, new, red	48	52	White	50 53	57
Irish	48	—	Do.	50	—
Old, red	59	60	Do.	52	—
RYE, old	30	36	New	36	—
BARLEY, Grinding 27 30 Malting	34	—	Chevalier	35	—
Irish	26	28	Bere	24	26
MALT, Suffolk and Norfolk	60	62	Brown	56	58
Kingston and Ware	60	63	Chevalier	60	63
OATS, Yorksh. & Lincolnsh., feed	20	21	Potato	22	—
Youghall and Cork black	17	18	Cork, white	17	18
Dublin	17	18	Westport	18	—
Waterford, white	17	18	Black	17	—
Newry	19	20			
Galway	16	17			
Scotch feed	19	20	Potato	21	—
Clonmel	18	19	Limerick	17 19	20
Londonderry	17	18	Sligo	17	18
BEANS, Tick, new	26	30	Old, small	34	32
PEAS, Grey	32	33	Maple	33	34
White	30	33	Boilers	34	36

SEED, Rape..... 27*l.* 28*l.* Irish..22*l.* 26*l.* per last.
Linseed, Baltic....30 38 Odessa 41
FLOUR, Town-made 50 — Suffolk 40 — pr sk. of 280 lbs
Stockton and Norfolk, 40 — Irish 40 —

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	40	47			
Hamburg	40	44			
Rostock	40	45			
BARLEY	20	—			
OATS, Brew	16	18	Feed	14	17
BEANS	15	19			
PEAS	23	25			
FLOUR, American, per brl	24	28	Baltic	22	24

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Sept. 22nd, 1843.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Sept. 24th, 1842.	s.	d.
WHEAT	50	10	WHEAT	54	0
BARLEY	31	5	BARLEY	27	10
OATS	18	10	OATS	18	4
RYE	30	1	RYE	29	10
BEANS	31	2	BEANS	35	0
PEAS	33	3	PEAS	33	3

IMPERIAL AVERAGES.

Week ending	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
Aug. 12th	61	2	32	11	21	9	38	7	32	1	33	7
19th	59	9	33	11	21	5	37	1	32	6	34	9
26th	56	8	32	11	20	7	31	8	31	10	33	9
Sept. 2nd	54	2	31	11	20	5	31	1	32	4	32	1
9th	53	0	31	11	19	7	31	3	31	9	33	8
16th	50	10	31	5	18	10	30	1	31	2	33	3
Aggregate average of the six weeks which regulate the duty	55	11	32	6	20	5	33	4	31	11	33	6
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	17	0	6	0	6	0	9	6	10	6	9	6
Do. on grain from British possessions out of Europe	2	0	0	6	2	0	0	6	2	0	1	0

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 5th Sept., 1843; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption.	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat, from British Possessions	1076 1	2121 5	1322 1
Barley	689 5	167 1	7619 4
Peas, from do.	1537 3	1063 2	2310 3
Indian Corn, do.	—	749 4	143 7
Wheat, foreign	210405 2	83399 7	448087 3
Barley, do.	42783 7	9677 2	89024 4
Oats, do.	10047 1	7410 3	38932 5
Rye, do.	1015 4	192 7	880 3
Peas, do.	5708 1	1342 5	27308 5
Beans, do.	712 7	2914 6	110557 7
Indian Corn, do.	—	102 0	6109 4
Buck Wheat, do.	—	—	—
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour and Meal from British Possessions	21437 2 6	37790 3 3	5388 0 21
Flour & Meal, foreign	4597 3 9	3453 1 25	46649 2 1

STOCK OF GRAIN, &c., IN BOND, IN THE PORT OF LONDON, ON THE 5th SEPT.

Wheat.	Barley.	Oats.	Beans.	Peas.	Rye.	Flour.
qrs.	qrs.	qrs.	qrs.	qrs.	qrs.	cwts.
172,892	19,836	16,105	41,865	4,986	—	22,509

PRICES OF SEEDS.

SEPTEMBER 25.

Red Cloverseed is harvesting well, but is reported to yield but little. There is very little speculation in this or in white seed, and prices remain as last quoted.

There was an abundant supply of new Canary seed, and purchases might have been effected on low terms. Tares were also plentiful, and 6d. per bushel lower. In other articles no alteration.

Linseed Cakes, English..	9*l.* 10s. to 10*l.* per 1000					
Do. Foreign..	5*l.* to 6*l.* 10s. per ton.					
Rapeseed Cakes.....	5*l.* 5s. to 5*l.* 10s.					
Hempseed.....	35	38	per qr.			
Rye Grass, English.....	—	—	Scotch	—	—	nominal
Tares, winter	5s. 3d. to 6s. 6d.					
Canary, new.....	45	50	fine	—	—	per qr.
Carraway	—	—	new	—	—	
Clover English, red	46	65	white	none.		per cwt
Flemish, pale	44	52	fine..	54	70	
New Hamburgh ..	none.		do..	50	75	
Old do.....	42	52	do..	50	70	
French	42	56	do..	none.		
Linseed, English, sowing	50	60				
Baltic	—	—	crushing	36	41	per qr.
Mediter. & Odessa	40	43				
Large, foreign....	—	—				
Coriander.....	15	20	per cwt.			
Mustard, brown, new ..	9	11	white..	6	8	p.bush
Trefoil, none	—	—	old....	14	27	
Rapeseed, English new..	26*l.*	27*l.*	per last.			

PRICES OF HOPS.

BOROUGH, MONDAY, Sept. 25.

The market has been well supplied with new pockets, but business has chiefly been in Sussex and choice Wealds. The probability seems in favour of a brisk demand. A marked fall has taken place in the duty, which is now backed at only 130,000*l.* to 135,000*l.*, owing to the less favourable accounts of the yield. The Farnham duty is called 4,000*l.* to 5,000*l.*, and the Worcester 9,000*l.*

Sussex pockets, 108s. to 115s.
Wealds 115s. to 120s. Choice, 126s.
Yearling Sussex 95s. to 102s.
,, Kent 98s. to 105s.

WORCESTER, (*Saturday last*).—The new growth of Hops comes to market very sparingly, the whole of the supply brought for sale to-day not exceeding 300 pockets; not more than about one-half of which were sold; the prices obtained averaging from 115s. to 126s. 0d. per cwt. There was a better demand for fine yearlings, at an advance since last week of 3s. to 4s. per cwt., and fine old Hops are also in good request at higher prices; but inferior samples are little enquired after, although offered at very low prices. The duty is steady at 8,000*l.*, about which opinions seem very equally divided.

FROM THE SUSSEX EXPRESS.

MAYFIELD, Sept. 20.—Hops are very short in picking, both in bushels and weight, running 75 to 80 bushels to the cwt. It is very doubtful whether we shall produce as many as last year.

HELLINGLY AND WARBLETON, Sept. 20.—We are now in full picking, but the hops come rather short from what was expected.

HEATHFIELD AND DALLINGTON, Sept. 20.—The hops still look well, and the weight middling.

NINFIELD AND HOOE, Sept. 20.—The hops are still looking well, but weighing rather light—yet we shall not fall short in the close.

FARNHAM, Sept. 20.—Hop-picking is now almost concluded, or will be at the time of this going to press. We have had charming weather for the work; but the crop has been the most extraordinary and capricious we ever remember: some patches luxuriant beyond everything, and other spots blasted and unproductive. Perhaps on the whole there may be something near an average growth.

NORTHIAM, Sept. 21.—The hop-picking has now generally commenced—but it appears that they come down short of what was expected, as the hops weigh very light—there will, nevertheless, be a good many hops grown in the parish. Most of the farmers have more pickers than are wanted, as many people do not work near all the day; and, in consequence of there being no hops in Kent, there has been a most desperate set of travellers about, and many petty thefts have been committed.

PEMBURY, Sept. 21.—The hop-picking is regularly going on, and in every garden without exception they come down one-fourth short of expectation. We have thought lately that one parish would come nearly up to last year's produce: but the hops weighing so very light we shall fall very short, and we have no doubt other districts find the same deficiency. The duty here is laid at 130,0 .

FROM THE MAIDSTONE GAZETTE.

MAIDSTONE.—The hop picking has now commenced nearly everywhere. The planters also complain everywhere of their coming down very short of expectation, more particularly where they have been blighted; there they come nearly half short of what they were estimated at. There is no doubt the duty is calculated much too high.

MEREWORTH.—Some of the planters have begun picking as an antidote to the maggot, which eats the stem of the hop, and causes them to turn red and become "flyers;" whilst others who have begun go over a large quantity of ground, but do not get many hops. The hops being slight they hang clear from leaf, and are fair for the pickers, but all persons here agree that the crop will fall short of the general expectations.

TESTON.—Hopping time is come, but the hops are not come, and we are sorry to say that the vermin and blight have caused more nearly a total failure than scarcely any person in the parish could have predicted on the first of August. This year the crop will be a decided failure.

NETTLESTEAD.—The hops in this parish look very bad, and there cannot be many: but as picking has not begun generally, we cannot state to a certainty as to the produce. Nettlestead, Wateringbury, and Teston are principally in one survey, and bets have been made that they do not pay above one-third so much duty as last year.

WATERINGBURY.—Picking has been begun for several days for Mr. Alderman Lucas and Messrs. Goodwin and Wilcox, who are the largest growers in the parish. Mr. Alderman Lucas finds that his crop falls far short of the quantity that it was supposed he would grow; and Messrs. Goodwin and Wilcox will not grow more than three bags, where it was supposed by good judges that they would grow four. As regards the other planters in the parish, we must suppose that they will be similarly affected, and to the same extent; we are sorry to say that some of the small planters are likely to suffer more than the larger ones. The worst forebodings as regards the crop will probably in this parish be realised.

HORSMONDEN.—The hops generally in this parish come down short of what was anticipated, both in quality and quantity.

YALDING.—Picking has commenced, and will be general on Monday. In most grounds the hops come down considerably under what was expected.

CRANBROOK.—The picking has now commenced in good earnest, but the hops are what is termed platty, that is, some hills are good, while the next one is scarce worth picking. This observation, however, will only apply to some few grounds, for notwithstanding that the hops, when dried, fall rather short as regards weight, if our plantations are taken as a whole, they will fully maintain their character, as affording (this year) some of the best hops in the county. In consequence of the failure of the crop above the hill we have in our neighbourhood many hundreds of strangers from the Emerald

Isle and elsewhere, most of whom have found plenty of employment in picking.

BRENCHLEY.—The late warm weather having been so very congenial to the hops (especially to those which were saturated with water in the spring, and were consequently backward), they have matured beyond our expectation. Picking is now in full operation. Generally speaking, they come down very short of the estimation on the poles. Those which were "hit" with the blight have not recovered, and are considered worthless. Brenchley hops are still in repute in the market, and a few good sales have been made. We are of opinion that the duty will fall short of the present quotation in the Borough.

CAUTION.—Our Brenchley correspondent says—It may be well to remind your friends the planters generally, that it is the custom here to have a tub of water always ready in or near the respective oasthouses, in case of fire.

CRANBROOK, Sept. 20.—The weather has continued glorious for the in-gathering of corn and hops—the former is finished, and the latter is proceeding fast. The oast-houses are fully supplied, although some grounds do not produce quite so many bushels as were expected. There is a universal complaint of their weight, wanting from 75 to 90 bushels to a cwt., which must tend to lessen the duty, and fully maintain the present prices.

POTATO MARKET.

BOROUGH AND SPITALFIELDS, Sept. 25.

The arrivals of Potatoes from distant parts have at length commenced—we having received, in the past week, about 350 tons from the Channel Islands, 150 do. from Scotland, 250 do. from Yorkshire, and 600 tons from Essex, Kent, and Suffolk—while from France, Belgium, Holland, and Germany, nearly 90 tons have come to hand. The quality of the former is exceedingly good, but that of the latter is inferior. The present range of prices is from 3*l.* 10s. to 5*l.* 10s. per ton.

BUTTER, BACON, CHEESE, AND HAMS.

Irish Butter, new, per cwt.	s.	s.
Carlow, new	80	—
Sligo	66	—
Banbridge	66	—
Cork, 1st	80	—
Waterford	68	74
English Butter,		
Dorset, per firkin	48	—
Foreign Butter, cwt.		
Prime Friesland	92	—
Do. Kiel	82	84

Cheese, per cwt.	s.	s.
Double Gloucester	52	60
Single ditto	48	52
Cheshire	52	76
Derby	54	60
Foreign ditto	48	52
Bacon, new	34	42
Middle	38	40
Hams, Irish	64	70
Westmoreland	66	—
York	70	76
Fresh Butter 12s. 6d. per doz.		

WOOL MARKETS.

LEEDS, Sept. 22.—The demand for English wool continues steady, and prices are firmly maintained.

WAKEFIELD, Sept. 22.—We have an average business doing in all kinds of combing fleece wools, at the full quotations of last week. Short Wools for blanket purposes remain without any improvement either in demand or price.

LIVERPOOL, Sept. 23.

SCOTCH.—The reports from the Highlands represent a better demand for the staple there; here there certainly exists a better feeling, caused by the fine weather, and the prospects of a good conclusion to the harvest; otherwise, as regards prices, we have no alteration to report, except that the few transactions entered are now in favour of the seller instead of the buyer. These remarks will equally apply to all kinds of Scotch wool.

PRESENT PRICES:

	s.	d.	s.	d.
Laid Highland Wool, per 24 lbs.	5	6	to 6	0
White do. do.	8	3	8	9
Laid Crossed do. unwashed	6	9	7	9
Do. washed do.	7	3	9	0
Do. Cheviot unwashed do.	7	0	8	6
Do. washed	9	6	12	0
White do. do.	18	0	20	0

FOREIGN.

CITY, SEPT. 25.—The imports of Wool into London last week were only 311 bales, of which 250 were from Germany, and 61 from Russia.

The accounts from the manufacturing districts continue good, and the staple therefore supports its value.

Accounts from Berlin mention that the exports of the Zoll-Verein States increased again last year, and that while the imports from England and France are decreasing, the exports to these countries also are on the advance.

From Pesth, under date of the 27th ult., we learn that the fair was very active for ordinary cloths, Flannel and Woollen fabrics, good sales being effected. Of the raw staple sheep's Wool, 60,000 cwt. were in the market, most of which was in second hands, but not above half of which was expected to be sold, although there were buyers from Italy, France, and Holland. Fine single clip Wool was at 70 to 90 florins, and ord. at 50 to 60 florins.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Hunt's Bone dust, 16s. per qr.
Hunt's Half-inch Bone, 14s. per qr.
Hunt's Artificial Guano, 8*l.* per ton
Rape Dust, 6*l.* to 6*l.* 10s. per ton
Rape Cake, 6*l.* 10s. to 7*l.* per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 6*l.* 10s. per ton.
Gypsum, at the waterside, 32s. 6d. per ton; landed and housed, 38s. to 42s. per ton, according to quantity.
Agricultural Salt, 34s. per ton.
Lance's Carbon, 12s. per qr.
Ditto Humus, 14s. per qr.
Soap Ashes, 10s. per ton.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Poittevin's Highly Concentrated Manure, 30s. per qr.
Nitrate of Soda, 18s. to 18s. 6d. (duty paid) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Petre Salt, 4s. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* per ton.
Chie-fou, 21s. per cwt.
Daniell's new Bristol Manure, 8s. per qr.
Hunt's new Fertilizer, 13s. 4d. per qr.
Grimwade's Preparation for Turnip Fly, 10s. 6d. per packet, sufficient for three acres.
Wolverhampton Compost (Alexander's), 12s. per qr., subject to carriage to London, or forwarded from Wolverhampton.
Guano, 10*l.* 10s. per ton, 12s. per cwt.
Potter's Artificial Guano, 15s. per cwt.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Clarke's Compost, 3*l.* 12s. 6d. per hhd., sufficient for three acres.
Wright's Alkalies, 28s. and 42s. per cwt.
Soda Ash, 14s. to 16s.
Chloride Lime, 28s. per cwt.
Sulphuric Acid, 2½d. per lb.
Sulphur for Destroying Worm on Turnips, 16s. per cwt.
Sulphate Soda, 7s. 6d. per cwt.
The Liverpool Abattoir Company's Animalised Manuring Powder, 2*l.* 10s. per ton.

PRICES OF SHARES.

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	10s pr sh	Birmingham & Derby ..100*l* sh pd	
6,300	3s 4dpsh	Do. Thirds, iss. 8⅓ dis. 33⅓*l* sh 25*l* pd	
		Do. Eights.....1⅓*l* pd	3 a ¼
9,500	1*l* 4s p sh	Do. and Gloucester ...100*l* sh pd	
10,000	6s 0d	Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	58½ a 9½
7,500	2*l* 10s	Cheltnm.&G. Westn.100*l*sh 80*l* pd	
3,000		Clarence.....100*l* sh pd	
64,000	8s 0d	Eastern Counties ....25*l* sh 23*l* pd	8 a 7⅞
		Ditto Scrip..... 8*l* 6s 8d pd	10⅛ a ¼
	10s	Ditto New Registered.....	
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	
12,500	2½*l* per ct	Glasgow, Paisley & Ayrshire 50*l* shpd	
18,000	2*l* 5s p sh	Edinburgh & Glasgow .. 50*l* sh pd	49⅞ a ¾
18,000	7s 0dp.s.	Ditto New ..... 12½*l* sh pd	
16,000	7s 6dp.sh	Glasg., Paisl., & Grnck.,27*l*sh25*l*pd	
10,918	10*l*per ct	Grand Junction.....100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares .....50*l* sh pd	
		Ditto Quarter Shares .. 25*l* sh pd	
10,000	2½*l* per ct	Great North of England 100*l* sh pd	70
25,000	3*l* 5s p sh	Great Western .... 100*l* sh 65*l* pd	85 a ¾
25,000	2*l* 10sp sh	Ditto Half Shares ....50*l* sh pd	63 a ¼
37,500	12s pr sh	Ditto Fifths..... 20*l* sh 12*l* pd	
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
8,000	4*l* per ct	Hull and Selby ..... 50*l* sh pd	
8,000		Do. Quarter Shares..12½*l* sh 2*l* pd	
2,100		Leeds and Selby.....100*l* sh pd	
5,100	10*l* per ct	Liverpool & Manchester. 100*l* sh pd	
7,968	10*l* per ct	Ditto Half Shares.....50*l* sh pd	
11,475	10*l* per ct	Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l* 10sp sh	London and Brighton....50*l* sh pd	37 a 6¾
		Ditto Loan Notes..... 10*l* sh pd	10½
48,000		London & Blackwall Av. 16*l* 13s 4d	4
43,077		London & Greenwich Av. 12*l* 15s 4d	4
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	
	5*l* per ct	Ditto Bonds (183,300).....	
25,000	10*l* p sh	London & Birmingham 100*l* sh pd	218 a 19
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	
		Do. Do. New..... 2*l* pd	23¾ a 4
31,250	3*l* 4s	Ditto Thirds..... 32*l* sh pd	
	1*l* 14s	Ditto New..... 32*l* sh 2*l* pd	36½
		Ditto Bonds 1843	
46,200	3*l* 0s 0d p s	London&South West. Av. 41*l* 6s 10d	65½ a 5
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 15*l* 15s 9d	11¾
7,000		Do.Scrip,iss.50*l*dis.....10*l*sh 2½*l*pd	
13,000	3*l* 17s p sh	Manchester & Leeds 100*l* sh 70*l* pd	
13,000	1*l* 13sp sh	Ditto New Shares ....50*l* sh 30*l* pd	
	4s	Ditto Quarter Shares.....2*l* pd	
30,000	1*l*	Manchester & Birming. 70*l* sh 40*l* pd	39 a ¼
		Ditto Extension.....70*l* sh 7*l* pd	
10,000		Midland Counties.....100*l* sh pd	78½ a ¼
10,000		Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	
10,000		Ditto Fifths ..... 20*l* sh 2*l* pd	
	6s	Newcstl & Darlingt Junc. 25*l* sh 12*l* pd	17
15,000	3*l* 0s	North Midland..... 100*l* sh pd	
15,000	1*l* 10s 0d	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	
22,500	1*l* 0s 0d	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	
10,256	1*l* 5s	Northern & Eastern 50*l* sh 45*l* pd	38 a 9
3,136	15s	Do. Scrip..iss. 5 dis. 50*l* sh 15*l* pd	
12,208		Do. ¼ Shares.... .. 12*l* 10s sh pd	14½
80,000		Paris and Orleans..... 20*l* sh pd	
		Paris and Lyons .... 20*l* sh 2*l* pd	
72,000	1*l* 11s 10d	Paris and Rouen ....20*l* sh 20*l* pa	28¼ a 8
2,600		Preston & Wyre, appropriated50*l*sh	
9,600		Ditto, not all appropriated 25*l* sh	
1,200	5*l* per ct	Ditto, New Preference Shares appropriated..... 25*l* sh	
40,000		Rouen and Havre.... 20*l* sh 4*l* pd	
7,000	5*l* per ct	Sheffield, Ashton-under-Lyne, and Manchester ... 100*l* sh 82½*l* pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000		South Eastern and Dover 50*l* sh pd	26⅝ a ½
28,000		Ditto New, iss. 25 dis. 25*l* sh 25*l* pd	26⅞ a ¾
6,700	10*l* per ct	York & North Midland..50*l* sh pd	
6,700	10*l* per ct	Ditto New Shares....25*l* sh 20*l* pd	44½

Shares.	Div.	CANALS.	Price.
1,766	5*l* 10s p.c.	Ashton and Oldham Av. 97*l* 18s sh	
1,482	4*l*	Ashby-de-la Zouch Average 113*l* sh	
720	14*l*	Barnsley.....160*l* sh	
1,260		Basingstoke .....100*l* sh	5
1,005	5*l* 10s	Brecknock & Abergavenny 150*l* sh	
8000 1/16	10*l*	Birmingham 1-16th sh. 8*l* 15s and 7*l* Addl.	182
4,000		Birm. & Liverpool Junc. 100*l* sh pd	12
460	5*l*	Chelmer and Blackwater.. 100*l* sh	
500	22*l*	Coventry ..... 100*l* sh	300
460	18*l*	Cromford..... 100*l* sh	300
2,060¾	5*l*	Dudley ..... 100*l* sh	91
600	8*l*	Derby..... .....100*l* sh	115
20,000	4*l* per ct	Danube & Mayne..41*l* 13s 4d sh pd	
3,575¾	4*l*	Ellesmere and Chester Av. 133*l* sh	64
231	40*l*	Erewash.....100*l* sh	710
6,485	8*l* 15sp sh	Forth and Clyde.....100*l* sh pd	140
11,455	7*l*	Grand Junction ..... 100*l* sh	142
2,849½	1*l* 15s	Grand Union ..... 100*l* sh	25
1,500		Grand Surrey.... ..... 100*l* sh	17
	4*l* per ct	Do. Loan Notes..... 100*l* sh	70
3,096		Grand Western.....100*l* sh pd	
600	13*l* 12s 8d	Glamorgansh. Av. cost 172*l* 13s 4d	210
5,000		Gloucester and Berkley .. 100*l* sh	8
749	12*l*	Grantham .....150*l* sh	210
6,238		Huddersfield .. Aver. 57*l* 6s 6d sh	11
25,328	15s	Kennet & Avon Av. 39*l* 18s 10d sh	9½ a ½
11,699½	1*l* 10s	Lancaster....Average 47*l* 6s 8d sh	25½
2,897¾	3*l*	Leeds and Liverpool.....100*l* sh	660
545¾	10*l* 0s	Leicester.....140*l* sh	141
1,897	5*l*	Leicester & Northamp. Av. 83*l* 10s	71
70	70*l*	Loughborough....Av. 142*l* 17s sh	1375
2,409	8*l*	Monmouthshire .....100*l* sh	
700	5*l*	Montgomeryshire ..... 100*l* sh	100
250	10*l*	Melton Mowbray .....100*l* sh	117
500	20*l*	Mersey and Irwell ..... 100*l* sh	
3,000		Macclesfield ..... 100*l* sh pd	16
247	17*l*	Neath.....100*l* sh	370
1,786	30*l*	Oxford.....100*l* sh	540
2,400	3*l* 10s	Peak Forest Average about 78*l* sh	
21,418	17s 6d	Regent's (or London) Average 33*l* 16s 8d sh	21
5,669	4*l*	Rochdale.....Average 85*l* sh	50
500	8*l*	Shropshire .....125*l* sh	
800	10*l* 0s	Somerset Coal .....150*l* sh	160
36,000	6*l* per ct	Ditto Lock Fund Stock 12*l* 10s sh	11
700	28*l*	Stafford and Worcester....140*l* sh	
500	15*l*	Shrewsbury .....125*l* sh	
300	20*l*	Stourbridge .....145*l* sh	390
3,647	1*l* 10s	Stratford-on-Avon Av. 79*l* 9s 8d sh	29
200	18*l* 10s	Stroudwater.....150*l* sh	
533	15*l*	Swansea .....100*l* sh	240
3,762		Severn and Wye and Railway Av. 26*l* 9s 3d sh	28
1,300	2*l*	Thames and Severn, black 100*l* sh	
1,150	2*l*	Ditto ditto red..100*l* sh	
2,600¼	32*l* 10s	Trent and Mersey ¼ sh.....50*l* sh	500
8,149		Thames and Medway, Average 19*l* 5s 8d sh	
1000sh } 1000 ½ }	10*l*	Warwick & Birmingh. Av. 100*l* sh	
980	8*l* 10s	Warwick and Napton.... 100*l* sh	125
6,000	4*l*	Worcester and Birmingham, Av. 78*l* 8s sh	57
5,000		Wilts and Berks, Av. 67*l* 10s 8d sh	11
126		Wisbeach .....105*l* sh	
905	1*l*	Wey and Arun .....110*l* sh	

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

NOVEMBER, 1843.

No. 5.—Vol. VIII.] [Second Series.

NOTICE.

Through an unforeseen accident at the moment of our going to press, the engraving of a Drill, which should have appeared, is postponed.

PLATE.

CAMEL.

SIRE OF TOUCHSTONE, COTHERSTONE, &c., &c., THE PROPERTY OF MR. THEOBALD, STOCKWELL, SURREY.

Camel, a dark brown horse, was bred by the late Lord Egremont, in 1822, and is by Whalebone, dam by Selim, her dam, Maiden, by Sir Peter—Phenomenon—Matron, by Florizel—Maiden, by Matchem.

In 1825, then three years old, at Newmarket First Spring Meeting, Camel ran second to the Duke of Grafton's Crockery, for the Newmarket Stakes. Duke of Portland's Mortgage, Duke of Grafton's Cramer, Duke of Grafton's Bolero, Mr. Pettit's Retreat, Mr. Rogers's Flounder, Mr. Dilly's Sentiment, and Lord G. H. Cavendish's c. by Selim, out of sister to Remembrancer—also started, but were not placed. 3 to 1 agst. Camel. In the Newmarket Second Spring Meeting, ridden by Arnull, he won £50, for three-year-olds, beating Duke of Rutland's Adeliza, Duke of Grafton's Pigmy, Lord Jersey's Ariel, Mr. Thornhill's Surprise, Mr. Goddard's Pretension, Mr. Wortley's Scandal, Lord Warwick's Mephistopheles, Mr. Udney's c. by Muley, dam by Scud or Sorcerer, Mr. Vansittart's Darioletta, and Mr. Payne's c. by Octavins, dam by Gohanna. 5 to 4 agst. Camel. In the Newmarket Second October Meeting, ridden by Arnull, he won a Sweepstakes of 25 sovs. each, beating H.R.H. Duke of York's Dahlia, Duke of Portland's Mortgage, and Duke of Grafton's Tontine. 6 to 4 on Camel. In the Newmarket Houghton Meeting, ridden by Arnull, carrying 8st. 3lb., he beat Mr. Udney's Tarandus, 4 yrs., 8st. 7lb., in a match for £200. 5 to 4 on Tarandus. In the same Meeting he was beaten by Mr. Wortley's Scandal in a Match for £200, 8st. 5lb. each. 6 to 4 on Scandal.

In 1826, Camel only started once, when ridden by Arnull. He won the Port Stakes of 100 sovs. each, Newmarket Craven Meeting, beating Lord Exeter's Redgauntlet, H.R.H. Duke of York's Lionel Lincoln, Mr. Dilly's Hougoumont, and Mr. T. Scaith's Whipcord. 7 to 4 agst. Camel.

In 1827, Camel's third and last season on the turf, he only ran once, when ridden by Arnull; he beat Lord Exeter's Redgauntlet, in a Match for £200, 8st. 7lb. each, Newmarket Houghton Meeting. 6 to 4 on Redgauntlet.

In 1828, Camel served mares at Newmarket at 10gs. each. In 1829, at the same price, at Lord Westminster's seat, Eaton Hall, Chester. In 1830 he came to Stockwell, where, in 1832, his price was raised to 15gs. In 1835, in consequence of the performances of Touchstone, to a subscription of 40 mares, at 20gs., and for the last two seasons, 30 mares, at 25gs.

The following are the names of the principal winners by Camel:—Abbas Mirza, Argos, Archy, Antelope, Abracadabra, Alice, Burden, Black Bess' Brown Duchess, Caliban, Camlet, Constantia, Crocodile, Cyrus, Callisto, Caravan, Camelino, Camarilla, Clematis, Cambyses, Cameleon, Camile, Cecil, Dromedary, Elizondo, Grand Cairo, The Glama, Hester, Lady Anna, Loutherbourg, Launcelot, Lampoon, Lartington, Misdeal, Mule, Pickwick, Prism, Pickpocket, Pelopia, Queen of the Gipsies, Regatta, Reel, Revoke, Roderick, Sheik, Sir William (afterwards called Spider), Swallow, Simoom, Sea-horse, Sweet-meat, Touchstone, Vicuna, Wapiti, Wintonian, Westonian, Winton, Wilderness, Zara, Zerlina.

PRODUCTIVE FARMING.

We have received a small work under the above title, from the pen of Mr. Joseph A. Smith, which promises to be exceedingly useful to the practical farmer at the present time, when so much attention is directed to the scientific improvement of his pursuits. Mr. Smith professes to give a familiar digest to the discoveries of various writers in vegetable chemistry, with a view to their practical application to English tillage, and he does this in a style which is likely to render his work popular and beneficial amongst those to whom it is addressed. On that important point, the management of the dung-heap, he remarks —

"We have already alluded to the loss sustained by the fermentation of dung heaps. As we observed, in an earlier section, when it is considered that, with *every pound of ammonia* which evaporates, a loss of *sixty pounds* of corn is sustained, and that, with every pound of urine a pound of wheat might be produced, the indifference with which liquid refuse is allowed to run to waste is quite incomprehensible. That it should be allowed to expend its ammonia by fermentation in the dung-heap, and evaporation into the atmosphere, is ascribable solely to *ignorance* of the elementary outlines of that science which hitherto the practical farmer has thought it no disgrace, but rather an honour to publish; glorying in his utter disregard of all bookish knowledge, and substituting his own notions of wasteful and vague experience, for the calm deductions of sound and rational investigation. In most places, only the solid excrements impregnated with the liquid are used; and the dunghills containing them are protected neither from evaporation, nor from rain. The solid excrements contain the insoluble, the liquid excrements all the soluble phospates; and the latter contain, likewise, all the potash which existed as organic salts in the plants consumed by the animals which fed upon them.

"It is by no means difficult to prevent the destructive fermentation and heating of farm-yard compost. The surface should be defended from the oxygen of the atmosphere. A compact marl, or a tenacious clay, offers the best protection against the air; and before the dung is covered over, or, as it were, sealed up, it should be dried as much as possible. If the dung be found at any time to heat strongly, it should be turned over, and cooled by exposure to air. Watering dung-hills is sometimes recommended for checking the process of putrefaction, and the consequent escape of ammonia; but this practice is not consistent with correct chemistry. It may cool the dung for a short time; but moisture is a principal agent in all processes of decomposition. Water, or moisture, is as necessary to the change as air; and to supply it to reeking dung, is to supply an agent which will hasten its decay.

"If a thermometer, plunged into the dung, does not rise much above blood-heat, there is little danger of the escape of ammonia. When a piece of paper, moistened with spirit of salt, or muriatic acid, held over the steams arising from a dung-hill, gives dense fumes, it is a certain test that decomposition is going too far; for this indicates that ammonia is not only formed, but is escaping to unite with the acid in the shape of sal-ammoniac.

"When dung is to be preserved for any time, the situation in which it is kept is of importance. It should, if possible, be defended from the sun. To preserve it under sheds would be of great use, or to make the site of a dung-hill on the north side of a wall. The floor on which the dung is heaped, should, if possible, be paved with flat stones; and there should be a little inclination from each side towards the centre, in which there should be drains, connected with a small well, furnished with a pump, by which any fluid matter may be collected for the use of the land. It too often happens, that a heavy, thick, extractive fluid is suffered to drain away from the dung-hill, so as to be entirely lost to the farm."

ON SALT AND ITS COMPOUNDS AS FERTILIZERS.

By Cuthbert W. Johnson, Esq., F.R.S.

Many years have now elapsed since, in a work "On the uses of Common Salt in Agriculture," I first drew the English farmer's attention to the powerful agent he possessed in this fertilizer. Its introduction as a manure and as a condiment for live stock has since been gradually on the increase, and would be much more rapid if its value to the tiller of the soil was better understood; for it has certainly very considerable powers, and is perhaps one of the cheapest of fertilizers. A ton of it may, I understand, be now procured at the works in Cheshire for less than ten shillings. The owners, however, of these great works take, it would seem, few measures to increase the use of common salt in agriculture—no directions are ever given by them how the farmer can the most readily obtain it —hardly any attempts are made to diffuse a knowledge of its value as a manure, or its best mode of application as a condiment. In the cases too of the mixture of salt with other manures, the same remark applies. Soot and salt, for instance, mixed together, form by far the most economical and the most powerful dressing yet tried for the common red and Belgian carrot. On these its action is almost certain—it has not failed in any experiment with which I am acquainted. And, again, salt and lime produce the most excellent results on many lands —they form a powerful cheap manure, and from some experiments which I shall presently detail, it would further appear a fertilizer whose effects extend over a succession of crops. That increasing interest in the compound resulting from the mixture of salt and lime is felt by the farmers of England, is evident from the enquiries which I have noticed in the *Mark Lane Express* and in this Magazine. I will, therefore, in addition to a portion of the account which I have in another place given of this manure (*Farmers' Encyclopedia*) add some recent experiments of considerable importance.

That this is not a novel plan for enriching the land is quite certain. Glauber, a celebrated German chemist, one of the last of the alchemists, described it in the jargon of his craft nearly two centuries since, when he said, "*Sal mirabilis* (common salt), as it is of itself, is, by reason of its corroding virtues, which it as yet retains, plainly unfit for the multiplication of vegetables, for that being so used would prove more hurtful than profitable. Upon this account it is necessary that to one part of it be added two parts by weight of the best lime, which being moistened with water and made into balls, are

to be well heated red-hot for an hour, that so all the corrosivity being introverted, the sal mirabilis may be *alkalizated*, and used to vegetables for an universal medicine: for it conserves its attracting force, and loseth it not in the heating red-hot. (*Glauber's Works, by Packe*, pp. 2, 47.)

Christopher Packe, who, in 1688, published in English Glauber's folio volume, dwells at considerable length in his preface upon this mixture of salt and lime. He tells us that, "for the enriching of poor and barren land it is the cheapest of all mixtures, and is most easy to be done; for any ploughman having but once seen it done may be presently able to manage it."

Salt and lime was also recommended as a manure by Mr. Mitchell, of Ayr, many years since, and he, not knowing what others had already done with this compound, considered himself to be the discoverer. (*Aiton's Ayrshire*, p. 385; *Sinclair's Husb. of Scotland*, p. 194.) He thus described his process: —"Take thirty-two bushels of lime, and slack it with sea water, previously boiled to the saturated state. This quantity is sufficient for an acre of ground, and may be either thrown out of the carts with a shovel over the land in the above state, or made into compost with forty loads of moss or earth; in which state it will be found to pay fully for the additional labour, and is sufficient for an acre of fallow ground, though ever so reduced before. Its component parts are muriate and sulphate of lime, mineral alkali, in an uncombined state, also muriate and carbonate of soda. All the experiments have done well with it, but especially wheat and beans; and it has not been behind any manure with which it has been compared. There is one instance in which it was tried in comparison with seventy-two cartloads of soaper's waste and dung; and although this was an extraordinary dressing, yet that with this salt and lime manure was fully above the average of the field. Mr. Mitchell calculates that 3000 gallons of sea-water, boiled down to about 600 gallons, will slack sixty-four bushels of shell lime. These 3000 gallons of sea-water will contain about 700lbs. of common salt — a quantity sufficient for two acres. The expense of carrying the water from the sea, the evaporation, &c., he adds, will cost 20s. The sixty-four bushels of limestone cost him 40s., or 3*l.* for two acres.

The use of this mixture of salt and lime was also noticed in the year 1800 by Mr. Hollingshead, of Chorley, in Lancashire, who told the farmers of his day, "Lime prepared for manure should be slacked with salt springs or salt water: lime so slacked will have a double effect." (*Hints to Farmers*, p. 20. Edition 1800.) And in 1816, Mr. James Manley, of Anderton, in Cheshire, when giving his evidence before a committee of the House of Commons on the salt duties, mentioned that in getting marl (which is a mixture of carbonate of lime, alumina, and silica), he had found that, by mixing it with brine instead of water, the portion of the field on which the brined marl was used, yielded five bushels of wheat per acre more than that portion on which the watered marl was employed; and it may be well to remember that the celebrated salt sand of Padstow Harbour is composed of 64 per cent. of carbonate of lime; and that, in the experiments of the late Rev. Edmund Cartwright upon potatoes, of twenty-five manures or mixtures of manures, salt and lime were found superior in their product of potatoes to nineteen others. (*Communications to the Board of Agr.*, v. 4, p. 370.)

Every farmer has it in his power, even in the most inland situations, to procure this manure for the use of his farm, by means of a mixture, in the dry state, of two parts of lime and one part of common salt, and suffering them to remain incorporated in a shady place, or covered with sods, for two or three months—a plan which I suggested some years since. (*Essay on Salt*, p. 32, third edition.) By this process a gradual decomposition takes place, muriate of lime and soda are formed, the whole mass speedily becoming encrusted with alkali. There is another advantage to be derived from the adoption of this process, besides the formation of soda, viz., that the muriate of lime is one of the most deliquescing, or moisture-absorbing, substances with which we are acquainted; and in consequence, land which has been dressed with it attracts an increased proportion of the insensible moisture of the atmosphere.

By applying this mixture at the rate of from 40 to 50 bushels per acre, crops of turnips have been grown under my directions fully equal to any produced by twenty cubic yards per acre of farm-yard compost: and in 1840, the produce of ground thus dressed fully equalled that of some adjoining lands of the same field, which had been manured with the ordinary compost. And an excellent neighbouring farmer, Mr. Foster, of Great Totham, in Essex, in July 1840, made an experiment with turnips, entirely confirming those I had elsewhere instituted. He applied a mixture, per acre, of 30 bushels of lime with 15 bushels of salt, to ten acres of a field containing twelve acres. The land previously had a crop of rye, which was fed off with sheep; and on the two acres to which the salt and lime were not applied, the sheep had oil cake given to them, and, moreover, the land was subsoiled to a depth of eighteen to twenty inches. The field previously had a good summer fallow. The lime and salt was spread broadcast after the last ploughing, and harrowed in before the seed. The turnips were of the variety called green rounds. The land slopes to the south, and its soil is a light, mouldy turnip soil. In examining them in company with Mr. Foster, in the last week in August, he expressed himself abundantly satisfied with the result. The crop of turnips was equally good all over the field; if there was a shade of difference, it was in favour of the sub-soiled and cake-fed land; but the advantage, if any, was exceedingly inconsiderable.

In the spring of 1841 this field, without any other dressing was sown with oats and seeds. The oats growing on the portion dressed with the lime and salt, looked remarkably well in the spring, but the heat of the summer so completely burnt up the crop that no satisfactory report can be made by Mr. Foster of the relative advantage.

In 1842 the red clover crop was remarkably fine and superior on the ninth portion of the field dressed with the lime and salt, and that, too, on land which never had a plant of clover before.

In 1843 the crop of wheat on the same portion of the field was very excellent. From these extended observations Mr. Foster has no doubt of the effects of the dressing of salt and lime extending over a succession of crops; but he is inclined to be of opinion that on soil similar to his own the effects of this manure will be more beneficial on green crops than on the cereal grasses.

In the use of this mixture, I have found the moisture of the atmosphere highly advantageous in increasing the fertilizing operation of the lime

and salt; an observation, too, which is not confined to the dry, gravelly soils, on which my experiments were carried on. Thus, in 1839, on an exhausted, rather heavy turnip loam, 80 bushels per acre of a mixture of salt one part, and lime two parts, made three months previously, were spread in July, and sown with the white round turnips. The turnip plants came up equally well all over the field; but on the portions where the salt and lime were omitted, they speedily perished; but in every part dressed with the lime and salt, the crop was excellent.

In the dry season of 1840, however, another portion of the same field being treated in a similar manner, the effect produced by the lime and salt was not nearly so decisive; the plants were weak, the crop inferior. I would especially warn those who try the salt and lime, to attend strictly to the directions given for its preparation, and not on any account to use the salt and lime immediately after they are mixed; they should be allowed to remain for three months undisturbed. It is necessary to give the mixture time, since the decomposition proceeds very slowly, and is not to be hastened by any simple process. This compound fertilizer has been very successfully used on the chalks of Wiltshire, by Mr. Bennett; and on the clays of Sussex, by Sir Charles Burrell, and others, both for wheat and for turnips.

If, then, the mixture of salt with soot-lime produces such good results (and salt mixed with ditch scrapings, pond mud, &c., in the proportion of half a bushel of salt to a cubic yard, is also an excellent dressing for potatoes, &c), how important, in even a national point of view, is their employment? The supply, too, is inexhaustible, for in no other land is there found such enormous beds of both chalk, limestone, and fossil rock-salt as in England. We hold, therefore, within our own island the most copious sources of fertility, to which no hostile proceedings, or Tariffs of foreign states, can deny the English farmer access.

TRIBUTE OF RESPECT TO MR. T. CHAPMAN OF STONLEIGH.

On Thursday, Oct. 12, about fifty individuals dined together at the Warwick Arms hotel, Warwick, in the market-room of which the portrait was placed. In the votive offering, Mr. Chapman is represented in an easy standing posture. The position is exceedingly good, and the picture admirably painted, embodying all the characteristics of its original, and possessing great breadth as well as purity of colour. The back-ground consists of a landscape, with a few cottages. The picture is in an elaborately carved oak frame, the prominent feature being a bold running enrichment, in which the oak leaf and acorns are happily conspicuous. It is a true and spirited representation of "the man," and worthy of the pencil of Mrs. Wm. Carpenter, by whom it was painted. The chair was occupied by H. C. Wise, Esq., who was supported on the right by the Rev. J. Boudier, E. Graves, W. F. Wratislaw, R. Poole, J. B. Hanbury, and T. Morris, Esqs; and on his left by the guest of the day, Mr. Chapman, his son J. Chapman, J. Goodhall, W. E. Buck, and G. Moore, Esqrs., &c. The Vice President was Mr. T. Umbers; and amongst the company were, Messrs. Burbury, W. Umbers, S. Umbers F. Robbins, J. More, and J. Haddon.

The Chairman, in proposing the toast of the evening, said, they were assembled round the festive board, not only to pledge a bumper to an old friend, but to present him a substantial and lasting testimonial of their respect, in the shape of the magnificent picture which they saw at the bottom of the table. He was quite sure that it would be distasteful to Mr. Chapman to attempt, in his presence, to delineate the manly virtues of his character whilst, in the presence of so many friends and contemporaries, who had enjoyed such frequent opportunities of forming their estimate of that gentleman's merits, it would be labour in vain to attempt to convey, by language, their feelings of respect and approval. If as a true and sincere friend of agriculture,—if as a most superior judge of stock—if as a good steward between landlord and tenant—if as a kind neighbour, and cheerful companion, and what is more, a warm-hearted and unflinching advocate of the poor man's interests; —if these were qualifications for which he had a right to command a large share of the esteem of his fellow-men, then Mr. Chapman richly deserved it. But it was altogether unnecessary for him to resort to flattery or fulsome panegyric. That Mr. Chapman stood high in the estimation of those who knew him, would be satisfactorily established by the document which he (Mr. W.) held in his hand, and which could not fail to call up in Mr. Chapman's mind feelings of the highest order. It was the "roll-call" of Mr. Chapman's friends, who were most anxious to come forward to pay him that tribute of regard and esteem which he so richly deserved, for having gained for himself a character so worthy of such a distinctive mark of public approval. Mr. Chapman (said the worthy chairman, turning to that gentleman), it now only remains for me to present to you this picture of yourself; and, also, to express a hope that you may long enjoy the society of those friends who offer this tribute for your acceptance, and show by this day's proceedings what a high sense they entertain of your character; and, whenever your children look on that picture, with pride and satisfaction may they imitate and emulate all the virtues and usefulness of their father. The chairman sat down amidst long continued applause.

Mr. Chapman said, he had many times faced his friends, but now he wanted nerve to do so; and this would not be surprising to those who knew him —for the present occasion was no common one,— they had not offered him their praise by words merely, but by something more substantial. The chairman had spoken of him in his public character as an arbitrator. In that respect he claimed for himself no merit—he was always satisfied to find his friends pleased. He had only steered for one point, namely, to do justice. He had never attempted to go for more than he knew to be right, by which he had honestly avoided robbing those on the other side of the question. On such occasions, he had met with men who were quite as well acquainted with such pursuits as himself, and if, in supporting his own opinion, he had afforded satisfaction to the parties interested in the matter in hand, he had only done his duty. The chairman had likewise referred to the position he occupied between landlord and tenant. It was an easy task with such an employer as his, to work cordially with all classes. Lord Leigh had kindly confided in him—had adopted certain suggestions which he had thrown out; but for this he claimed no merit, —he had only done that which was right; and therefore it did not appear extraordinary, that

such a compliment as the present one should be paid to him. Throughout his life, he had endeavoured to do his duty; and that was not the first time he had assured his agricultural friends around him, that he had set out in life with a desire to learn as much as he could; he had, perhaps, gleaned much, but, in this respect, he trusted that he had not been a hog, but had freely imparted as much as he could. With regard to the labourer, he knew what his work was worth, and desired to see him rewarded accordingly. And for this, he was to be commended in a manner that could not be exceeded in the instance of warriors and statesmen—they could not be more honourably dealt with than he was, in the presentation to him of that picture. He conceived that the highest mark of respect that could be paid to any man, they had paid to him, not only in requesting his acceptance of the picture, but in accompanying it by a list of names, which, after he was dead and gone, would be left as a legacy to his family, and esteemed by them as much more valuable than money or possessions. He stood there supported by noblemen, clergy, and gentry,—for if those classes were not all represented on that occasion, he knew they were united in spirit in the object of that meeting,—and he repeated, that undeserving as he was of the legacy which he should be enabled, through their kindness, to transmit to posterity, he had striven to pursue one undeviating, straight-forward line of duty, both publicly and privately. He might go on multiplying words, but it was unnecessary that he should attempt to do so; all he possessed he freely offered them—*the thanks of a grateful heart.* He trusted they would extend their kindness a moment longer, and allow him to ask them to accept his sincere thanks, not only in his own name, but in that of his family, who shared with him the high gratification derived from that day's proceedings. (Mr. C. was repeatedly cheered during the delivery of his warm-hearted address, and resumed his seat amongst enthusiastic applause.)

The next toast was—"The Lord Lieutenant of the County, the Earl of Warwick," which was followed by "The Health of the Chairman," who returned thanks in a very feeling speech, which he concluded by saying, "They had endeavoured that day to do honour to Mr. Chapman, but there were others, nearly and dearly connected with that individual, who would take a lively interest in the proceedings then going on; he need hardly say that he meant Mrs. Chapman and family. He was sure they would be glad to drink the health of that lady. There was one member of the family then present, and what he had seen that day must have kindled the liveliest feelings of gratitude in his mind." The toast was drunk with three times three.

Mr. J. Chapman rose, and said that he felt very much indeed the honour of their drinking his health in connection with that of his mother. The name of mother was peculiarly dear to them all; and it had been his pleasure and advantage to have a good mother. And although great honour had been heaped on his father, he must say that not only some portion of it was merited by (he would use the term of his father's better half), but that a great share of the merit was due to his mother *(applause)*. He believed they all admitted that woman exercised a great influence in the formation of man's character; that much of the fortunes of the latter were made or marred by his connection with a help-meet; who either was a friend and supporter, or, on the contrary, really embittered his feelings, and nullified his exertions. As his father's son, they, perhaps, would excuse him when he said—with the sincerity of a man, although with the partiality of a son—that if an affectionate, good, confiding, and energetic spirit could exercise any effect on man, his father had had such a woman in his mother *(cheers)*. He was proud of his father—they had that day given him reason to be proud of him; and that was, indeed, the happiest day of his life on which he had been witness to such public testimony to the worth of his parent. They had been kind enough to bestow on his father that mark of their approbation—they would pardon him, as a son, if he said boldly, that his father deserved it *(cheers)*. They had seen the effects—the result of his father's activity and zeal; but he (the speaker) had seen the means by which that end had been gained. He would not say that his father had ever neglected his family to produce such a result as that of to-day; but he would declare, that he had never allowed family interests to interfere with public duty. He might say further, that his father had never asked a favour of any man for his family; and although, as children, they might have thought this a little hard, that day's proceedings proved the good effect of his determination. Had he done otherwise, it would have hampered him and crippled his independence; and, with his independence, that integrity of purpose which had so honourably met its reward. It is an old saying, that it is more blessed to give than to receive; and if the present instance be not an exception, he was sure the present company were happy to be the givers *(cheers)*. For himself, and also for his family, he would conclude by saying that that was the proudest day of their lives; and in alluding to the hope expressed by the chairman relative to the family, he re-echoed the sentiment, by trusting that his father's children would ever feel that they had no right to tarnish the example that he had set them, but to let it lead them on to future deeds, and prove themselves not unworthy of him *(great applause)*.

Towards the close of the evening, the Chairman proposed "The Health of Mr. John Moore," who had given himself much trouble and anxiety, not only in reference to the object of that meeting, but of others highly interesting to the agricultural body on previous occasions.

Mr. Moore returned thanks, and said, for the exertions he had made he was a thousand-fold repaid by the happiness of witnessing the presentation of such a tribute of respect to his good friend, Mr. Chapman. If ever there was an example which young men ought to follow, of integrity and sterling principle manifested throughout a long course of years—they had such an example in Mr. Chapman *(cheers)*. He (Mr. M.) spoke somewhat from his own knowledge, but much more from what he had heard from those who had gone before him, and in whose testimony he could place the utmost reliance. In every capacity of life, Mr. Chapman had fulfilled the golden rule of "doing unto others as he would be done unto." His quickness of discernment had been united with that fairness of judgment which enabled him the better to act on his conviction of what was right. In saying thus much, he was not afraid that he should be accused of using the language of flattery, for every one present knew that it was the language of truth. Might God grant that Mr. Chapman should live long amongst them in full possession of his bodily and mental strength, and might all present live to share the happiness of his society. —*Warwickshire Standard.*

FARM LEASES.

TO THE TENANTS OF THE PRIME MINISTER OF ENGLAND, THE RIGHT HON. SIR ROBERT PEEL, BART.

GENTLEMEN,—We took occasion in July last to address a short letter to you on the subject of the return of ten per cent. on your half-year's rent; and as your landlord introduced the topic of leases at the late agricultural dinner at Lichfield, and will most likely address you on this interesting subject at the Tamworth meeting, we are induced again to claim your attention.

Sir Robert Peel has declared his willingness to grant leases to his tenantry, should they be disposed to require them of him; a declaration which has excited a good deal of interest, and to which no little importance has been attributed. On the general question of leases there can be hardly two opinions. They may be highly advantageous, both to landlord and tenant; and may lead, under certain circumstances, to a rapid improvement in agriculture. This has already been the case in some parts of the United Kingdom. But, to be beneficial, the system should be universal. Yet it is very questionable whether the owners of one-fourth of the land in England would be disposed to grant leases under any circumstances. Landowners must take a much more extended view of their own interests than they have hitherto done, before this determination will be arrived at; and learn, too, to consider the national welfare of more consequence than political influence. The example of Sir Robert Peel might do much in his own district; but it is desirable to know precisely what he means when speaking of leases.

Your landlord says he will grant leases, if asked to do so; and the declaration is at once seized as something of importance. But if it is to be of any real use, the public must know for what period, and on what terms, these leases are to be granted. The Editor of the *Standard* newspaper would seem to give a very liberal interpretation to the Lichfield speech:—

"An expenditure of money, (observes the *Standard*,) a large expenditure of money, is necessary to successful farming; but men will always look for a guarantee *in proportion to the outlay*. A man who expects to hold his land but for a year, or to hold it only on such conditions as may terminate his tenure at the year's end—he will expend so much only as he may hope to reimburse himself by a year's crop, for all expended beyond that would [might] be thrown away; but such an expenditure plainly could not permanently improve the soil: so of *three* years, *seven* years, or any other short term. The farmer, how rich soever he may be, will proportion his expenditure to his interest in the land. But let a man be assured that a farm will remain to him and his posterity, and he will cast in his whole lot with it; and if he be rich and skilful, will cultivate it to the highest point to which the constantly improving state of agricultural science can direct him. Such is the importance to the whole nation of the tenant's guarantee."

The writer proceeds to observe that the form of the guarantee matters nothing; that it may be an unwritten one; but he is afterwards compelled to admit that, unless the tenant be secured by legal forms, he can reap but trifling advantage. No man can obtain the capital necessary to cultivate his farm, unless he is secure in his possession; and thus the most industrious and persevering farmers may be crippled, and placed at a grievous disadvantage. We are by no means disposed to lessen the confidence which exists between landlord and tenant, or to underrate the desirableness of this confidence; but a man who would urge that nothing further is required, must be simple indeed. The heir may be a gambler, or a spendthrift, and how long will he be bound by his father's pledge? Nay, in many cases, trustees may feel compelled to "make the best of the property;" and what becomes of previous agreements which have no legal authority?

On these grounds, then, we would urge you to ascertain from your landlord for what periods he is disposed to grant leases. His declaration on this point at the forthcoming Tamworth meeting would be interesting and useful. What he has already stated amounts to nothing at all. No practical application can be made of his advice. He may be disposed to grant the perpetual leases which the *Standard* states to be of so much national importance; or he may rest satisfied with offering short terms, which the same authority declares to be useless. At any rate a more specific declaration, now that the question has been voluntarily brought forward by the Prime Minister, is due to his tenantry, and to the agricultural interest generally.

Passing from the period for which these leases are to be granted, we come to the terms—the rental; and here Sir Robert Peel is equally inconclusive. You are not told whether a corn rent will be expected, as is the case in some parts of Scotland, or whether the rental is to be a fixed money payment, the universal system in England. We make no doubt that the latter would be the case: but how is this to be adjusted? Your present rents were fixed under the impression that wheat would range about 60s. per qr.; a very carefully considered corn law having been passed for the purpose of securing this price. But when the landowners of England obtained this corn law, they committed a grievous error by allowing the continuance of money laws, which had a directly contrary effect to that law, which was designed to keep up the price of your produce. The evils of the money laws were, however, for a considerable period, felt only at intervals by your class; but their effects on the manufacturing and trading interests were too grievous to be borne. The consequence has been a determined attack upon those laws which were seen to afford the agricultural body, at least to a great extent, protection from the operation of the money laws; and the corn law was last year changed by your landlord, with a view to equalise the pressure of his own currency system. We need not again explain how much your interests have suffered by the change; it is sufficient for our present purpose to show your position with reference to the question of leases.

It is generally allowed by practical men that under the operation of the Corn Bill of 1842, prices will range full 12s. per qr. lower than on the average of the preceding ten years. Taking the price on which your present rents are calculated, 60s. per qr., and the price of the twelve months ending at Midsummer last, say 48s. per qr., we shall at once see how this reduction affects your rentals.

	£.	s.	d.
1,000 bushels of wheat, at 60s. per qr..	375	0	0
1,000 do., at 48s. per qr.....	300	0	0
Difference.....	£75	0	0

So that, with present prices, you will have to sell twenty pounds worth more produce in every 100*l.* required for your rents; or, looking at this one payment of rent only, you must require a reduction of just 20*l.* in every 100*l.* to place you in the same position you were in when wheat was 60s. per qr. But what security can your landlord give you that even 48s. can be maintained? that the price will not fall to 40s.? He has in reality none to offer, for he well knows that if the present money laws are continued he must still further diminish your protection.

The calculation we have supplied refers to rent only; your tithes, taxes, and other fixed payments, as those made under family arrangements, interest of capital, &c., will remain just as they were when wheat was 12s. per qr. higher. You will suffer a loss to an equal extent on the whole of your produce; and how this is to be met we are totally at a loss to explain. The wages of the labourer cannot be further reduced, or he becomes an inmate of the workhouse, to be supported by you without any return.

On this point, also, we would urge you to appeal to your landlord. He cannot be ignorant of what is passing in various parts of the country, where the farmers, harassed and exasperated by the present unsettled state of things, are uniting to demand changes which would be alike injurious to them and to their landlords, unless they are attended by changes in our monetary system. Will not Sir Robert Peel, then, restore confidence to the agricultural body by some clear and specific declaration of his future intentions? He cannot take a more fitting opportunity than that which he will have when he meets his tenantry and his neighbours at Tamworth; and it is scarcely too much to expect that, after bringing forward the most important question of leases, he should be enabled to give to the tenant farmers some assurance that they may venture to employ their capital and industry with a hope of a fair reward.

We are, gentlemen, your obedient servants,

Birmingham, Oct, 10. GEMINI.

LEYLAND AGRICULTURAL SOCIETY.

Mr. T. TOWNLY PARKER, the chairman at the late meeting, stated they had expected that the eminent Dr. Playfair would have attended; he had promised to be there, but another and a more imperative call had prevented him fulfilling his engagement. He had seen that same week a very numerous assemblage of gentlemen interested in agriculture at Lytham; it was a most interesting meeting, not more interesting than the present one, however, and he had heard many good hints thrown out. Perhaps, however, the best were contained in two pamphlets which were there circulated, and the expense of which would be very little. They were the productions of practical men; one was on the important subject of turning tillage land to grass, which was a subject worthy of the best consideration by the farmers in the Hundred of Leyland. The condition of their meadows was of first rate importance. The other pamphlet was on the subject of draining. They could not but see that all their endeavours would be fruitless without first draining. He was reminded that both these publications were printed in Preston, one by Messrs. Wilcockson and Dobson, the other by Mr. Clarke. He would recommend them to pay attention to the pamphlet on turning tillage into grass lands. It was a very common practice in that part of the country for persons to be satisfied with the ordinary grass they found on the land; it might be economy, but it was most miserable economy. The writer alluded to the subject of artificial manures. He hoped that those gentlemen present who had made experiments with these manures would favour the meeting with the results of their application of them to their land, and give their opinion upon the respective merits of each. Having himself experimented a little, he would state his views. He, last year, made his first application of guano on his own meadow and pasture land. He could not say the results were so satisfactory as he could have wished; as he had also tried two other sorts, he would give them the account of all, and their complete expenses. He was glad to say that he had not this year burnt all his hay *(laughter)*, which had been the case last year. Experience was a harsh monitress, and they improved by it He had had good hay from the application of guano; he had applied that manure to both meadow and pasture land, but he would first give them the results of his experiment on meadows. He had, last year, put guano on to a considerable extent. He had about 3 cwt. to the statute acre, and he had pursued the same system this year. He must admit that the experiment of last year was not so satisfactory as was desirable. He had had an abundant crop of hay, but the after-grass was not so productive as it would have been from the application of ordinary farm-yard manure. He had, this year, put farm-yard manure on land tilled last year with guano, and he had an excellent crop. He had also put guano on a plot of land of 2½ statute acres, manured last year with the same, but had put on only half the quantity, 1½ cwt. to a statute acre, and on some he had put on the full quantity, and though he had had good crops, he had not had such abundant returns as he had been led to expect, but he would persevere with a moderate quantity for some time, and in three or four years he would apply farm-yard manure as a top dressing. They must know that constantly mowing their land had a tendency to destroy the grasses. He thought that by varying the manures, they had a greater variety of grasses, which was very desirable. He would not condemn guano, but he must say, that he was not quite satisfied with the return made, and from what he would expect after hearing the observations of Mr. Skirving, at Lytham, the other day. He would not attribute any interested motives to that gentleman, but he should be sorry if the experiments made by him under some advantageous circumstances should lead him to hold out more expectations than farmers would generally realize. In cultivating some potatoes he (the chairman) had applied of farm-yard manure 25 tons to a statute acre. He had applied to another lot of potatoes gallaxoide, a manure more recently introduced than guano, and from the use of which he was encouraged to hope beneficial results. Well, as between farm-yard manure and gallaxoide, he would first mention the cost. The situation of the farm, and other local circumstances, would, of course, vary some little the cost of the manure,

and would proportionally affect his calculations; he would, however, take 8s. per ton, and as he had applied 25 tons to the acre, it would give the cost 10*l.* per acre. Of gallaxoide he had applied 5 cwt. to the statute acre, and the cost of which, at 12s. 4d. per cwt., would be 3*l.* 1s. 8d. per acre. Gallaxoide, though not so beneficial to the crop, was, as seen, obtained at a much cheaper rate under any circumstances. He had also tried gallaxoide to pasture-land, and had found the result very beneficial. He mentioned this, as pastures were so neglected. They were left to nature for the benefit of rain and sun, but no effort was made to assist nature. In this part of the country, where milk and butter were such important articles of consumption, it was astonishing that farmers could neglect their pastures. He would, if they would allow him, give them a few further remarks on his experiments. He had measured off three statute acres of land, and had applied guano at the rate of 3 cwt. to the statute acre; the cost of which, at 10s. per cwt. was 1*l.* 10s. per acre. To another precisely similar plot of land, he had applied nitrate of soda, 1½ cwt., which at 20s. per cwt. would come to the same sum of 1*l.* 10s. per acre. In applying gallaxoide here, he thought it better, in order that his experiments might be the more fairly tried, to apply to the manufacturer to know what quantity per acre should be applied. That gentleman recommended that, for pasture land, five hundred weight per acre should be used, which at 12s. 4d. per cwt., would be 3*l.* 1s. 8d. per acre, or double the cost of the preceding manures. He took a gentleman unacquainted with the experiments he had been making, and he had asked him for his honest opinion of the comparative merits of the grass on the several plots. The plot on which nitrate of soda had been used was better than the other, it was of a more brilliant green. That one, pointing to the gallaxoide plot, was not half-a-crown better, he said, than if nothing had been put on. Here it had not answered. He should be a great rogue if he did not tell them honestly what were the actual results of his experiments. He thought that these manures would be only of the greatest service where, when a tenant came on a farm, there was no manure, or on a chilly land to which he could not get with farm-yard manure.

Mr. JAMES CLAYTON returned thanks on the part of himself and his brother judges, and said, in reference to the management of land, he considered that a farmer ought always to be aware three years before his term expires, whether he is to remain at the farm afterwards or not; for in the last three years of a lease much mischief might be, and frequently was, done to the land; for this there appeared one remedy, that when a tenant entered on land there should be no lease for the first three or four years, but there should be an agreement on the part of the landlord, that if after the expiration of such a period the tenant wished to leave or the landlord was dissatisfied with him, then all outlay made by the tenant should be re-imbursed by the landlord, to such an extent as two mutually chosen arbitrators might determine. At the conclusion, the speaker was loudly cheered, and

H. H. FAZAKERLY, Esq., the Vice-President, much admired the idea suggested by Mr. Clayton, of having tenants of farms remunerated according to the outlay they made, where they left within a given number of years, and he thought the system should be carried out on every estate in the country. He did not wish to speak to the feelings, but to the good sense of the landlords. If a tenant entered on a farm without a lease, he has no certainty of tenure in the land; he does not like to take a lease, and yet feels that without one he cannot expend any large sum of money in improvements, the benefits of which he may not receive. The fairest plan then would be, that the owner of the land and the taken should make an equitable arrangement. The owner might say, "You wish to take this land; we do nor know what is the actual value, and therefore cannot name a rent, which will be just to both; take it for four or six years, and whatever you lay out in permanent improvement shall be repaid." That he thought would be an honest principle. If a tenant took a farm, and in three or four years laid out 250*l.* or 300*l.*, he could not reap the benefit of it; but if he came on with an understanding that what he expended would be returned, he would be much more likely to improve the land. If he could not get the rent out of the land, it would be useless to endeavour to make him pay more than the substance of the land could fairly afford. And he did not consider that the farmers of that district would be in any degree behind their neighbours, if they might receive that encouragement to which they were entitled. He thought that leases ought to be taken for 12 or 14 years, and if at the end of three or four years a tenant agreed to remain, the lease should be extended; and whatever was laid out in improvements should be returned to him in the manner previously suggested. He was glad to have had an opportunity of explaining his ideas before so numerous a body of farmers, many of whom, he believed, fully concurred with him. He returned his best thanks for the honour done in drinking his health. The President reminded Mr. Fazakerly that he had not given them the result of his own experiments, to which Mr. F. answered that he had made some experiments with artificial manure, but had not prepared a statement of any decided results, and would not therefore state his crude unproved trials until he could ascertain what the second crops would be. So far as he had proceeded he was satisfied; in some instances they had produced effects almost incredible. On cold, undrained pasture land, which he had that year converted into meadow land, he had obtained 3 and 3½ tons per acre; and on upwards of 120 acres he had reaped on an average 4 tons to the acre. He would furnish them with full particulars at their next meeting.

Mr. WILSON PATTEN said, there was an observation made by Mr. Clayton which struck him very forcibly; Mr. C. had stated to them it would be a great advantage to the tenant if some understanding could be come to so that he need not leave his farm when his term ran out. A tenant of his who last year had two years of his lease unexpired wished to leave the farm he occupied at a rent of 170*l.* per annum, and asked if he might surrender the lease; the farm was valued, and another tenant offered to take it at a rate of 230*l.*; so that it appeared quite clear that the tenant to whom the lease had been granted had improved the land to the value of 60*l.* per annum, and he need not state to them that it was neither his interest nor the interest of the tenant that the lease should be surrendered without their coming to an understanding so that the man might remain; this was, he thought, a good illustration of the remark made by Mr. Clayton.

WITHAM AGRICULTURAL MEETING.

At the dinner which took place on the 5th October, T. W. Bramston, Esq., in the Chair,

"The Queen," "Prince Albert and the rest of the Royal Family," and "The Army and Navy," were toasted with the usual honours.

The PRESIDENT then said, he now came to what, under ordinary circumstances, might perhaps be considered the toast of the evening—that was prosperity to the agricultural society of which he was president *(Cheers.)* The president of a society usually took advantage of that toast to make rather a long speech, embracing all the topics he could think of; but here a different course had been invariably pursued. Certainly he recollected that at the first meeting he attended there, when one of their vice-presidents was in the chair, he introduced a custom of great importance in giving a peculiar tone and character to this peculiar society—(*Loud cheers*)—for he with his shrewd good sense avoided the usual custom of long speeches and complimentary toasts, because he thought this ought to be treated rather in the character of a committee meeting than a general assembly. Therefore, knowing as he did the character of this district for intelligence and practical knowledge, he thought it more consistent with the character of the meeting to endeavour to draw out from the members such observations as they might be kind enough to favour the meeting with on practical subjects than to adopt the course pursued on other occasions. And he (Mr. B.) must say that he felt indebted to him for giving that tone to the meeting, and to the members for having faithfully followed it out, for they could not but observe that the information given at these meetings was not confined to the members themselves, but they had seen it alluded to and commented on throughout the country at large *(Cheers.)* For himself he must say as a practical farmer, when not present at their meetings, he always read with great interest an account of the proceedings of their society; and he trusted that the proceedings of this day would not be deficient in interest to those that had preceded it *(Cheers).* But he must throw himself on their vice-president, for his able assistance to elicit from gentlemen present that information that would be acceptable to the company, and productive of advantage, as he had no doubt it would be to the country at large *(Cheers).* With these few observations he would give them sincerely and with all his heart, "Success to this Branch Society." *(Drunk with cheers).*

Mr. W. HUTLEY said, he felt he was in rather an awkward position, but as many of his neighbours had been trying experiments, which they were willing to communicate to the meeting, he would name some of them, and he had no doubt they should have much conversation, and elicit information which they should take home and profit by. One gentleman, Mr. Lungley, as a practical farmer, carried out his experiments with the nicest result, and such a man was always exceedingly useful to a so-society like that; Mr. Dixon would give some information on draining; Mr. Beadel on the growth of carrots and fatting sheep; and if there was anything he (Mr. Hutley) knew, which was likely to be useful, he should be willing to give it *(Cheers).*

Mr. S. LUNGLEY said, in consequence of a conversation between Mr. Beadel and himself, as to the effects of digging and forking land (for Mr. Beadel thought forking superior to all other modes and therefore asked him to try it against ploughing,) he undertook an experiment on the subject; he forked part of the land once, and ploughed the other part six times, and, with their permission, Mr. Beadel would read the results for him *(Cheers.)*

Mr. JAMES BEADEL then read the following statement:—

AN EXPERIMENT ON FORK CULTURE.

As recommended by Mr. Beadel, of Witham, Essex, and the advantages proved by Mr. Lungley, of Church Hall, Kelvedon.

The field was a few years since inferior pasture land, since which it has been cultivated as arable. In the summer of 1841 it was fallowed and manured for white turnips; they were fed upon the land, late in the spring of 1842, by sheep and lambs, with oil-cake given them. There was a bad crop of barley and no clover, arising from the dry state of the land in April, when sown. Immediately after the corn was cleared in 1842, and during the fine autumn, a part of the field was ploughed six times, and all the field manured alike, in November, with 12 carts, or 500 bushels, of good muck per acre. Three acres were cultivated as follows, viz:—

One acre, well hoed three times, and ploughed only once, in December, after the muck was laid on, produced as follows:—6 qrs. 7 bush. 1 peck, 4 quarts; straw (reaped close) 30 cwt. and 4lbs. Weight of Barley per sack, 15 stone 2lbs., or 53lbs. per bushel.

One acre, six times ploughed and four times harrowed, produced 6 qrs. 7 bush. 2 pecks; straw, 32 cwt. 2 qrs. 4lbs. Weight of barley, 15 stone per sack.

One acre, subsoiled with the fork in the following manner—manured on the top as before observed, one furrow ploughed 5 inches deep, then dug with a fork 12 inches deep, the same covered with another furrow, care being taken not to mix the subsoil. Produce—7 qrs. 5 bush.; straw, 35 cwt. 2 qrs. 2lbs. Weight of barley, 14 st. 12lbs. per sack.

As the season suited that description of soil, there was only half a peck per acre difference in the land once ploughed and the other acre six times ploughed, and 2½ cwt. of straw per acre more where the land was ploughed six times. The difference of the weight of the barley is accounted for by the crop being so much laid where forked.

VALUE OF THE CROP AS FOLLOWS:

One acre, only once ploughed, produced

Qrs. Bus. Pecks. Qts.	£.	s.	d.
6 7 1 4 of barley, say 30s. per qr...	10	7	3
To 30 cwt. 4lbs. of barley straw, at 6d. per cwt....		15	0
Per acre	11	2	3

One acre, six times ploughed, produced

Qrs. Bus. Pecks. Qts.	£.	s.	d.
6 7 2 0 at 30s.....	10	8	3
To 32 cwt. 2 qrs. 4lbs. of straw, at 6d.....		16	3
Per acre	11	4	6

One acre, forked, produced

Qrs. Bus. Pecks. Qts.	£.	s.	d.
7 5 0 0 at 30s..... ..	11	8	9
To 35 cwt. 2 qrs. 2lbs. of straw, at 6d.....		17	9
Per acre	12	6	6

	£.	s.	d.
One acre, forked, value produced....	12	6	6
One acre, six times ploughed.....	11	4	6
Balance in favour of forking	1	2	0

The expense of six times ploughing is about equal to the expense of fork digging, 2½d. per rod, or 33s. 8d. per acre, for forking 12 inches deep. The barley was drilled, 3 bushels per acre, all on the same day. The crops in rotation, clover and wheat, will be carefully watched, and the result of each year's produce will be reported.

Mr. Beadel added, he had had land dug at 2½d. a rod; the men drew 12s. a week and had something to take at the end of the job. The difference between that and ploughing was very trifling if any.

Mr. Wm. Hutley proposed "the health of their esteemed friend, Mr. Lungley," and said they could not do better than take notice of those who were useful to them. Mr. Lungley was a very useful man, and he must say that he beat all the young ones out and out. *(Drunk with cheers.)*

Mr. Lungley, in returning thanks, said he hoped every one of them would feel as much pleasure for 50 years in farming as he had done. *(Cheers.)* There were many pursuits in which men engaged themselves; some followed sports, some the chase, and other modes of amusement, but this amusement had been his throughout life; and he felt particularly honoured by the way in which they had drunk his health. (*Cheers.*)

The President said, if any gentleman had any question to ask Mr. Lungley in connexion with the statement he had favoured them with, it might be the means of eliciting further information; if not, Mr. Dixon would be good enough to accede to the wishes of Mr. Hutley.

Mr. H. Dixon said he hardly knew what subject Mr. Hutley alluded to, for he was not aware that he had any observations to make, or that he had gathered anything that would be useful to the meeting; and therefore he was not prepared for the way in which the introduction of his name had occurred. But Mr. Hutley had alluded to potatoes; now, in reference to that, his man had in the field some splendid specimens of potatoes, such as they were not accustomed to see in this county, though he was not able to compete for the prizes, as he was not a cottager; but as he (Mr. D.) had looked at his crop and weighed off a rod of the ground, when he found the weight most extraordinary, he thought he ought to show them. The character of the seed was very good, which he thought was a great thing not sufficiently looked to in this county, and the consequence was that one potato was ripe in May and another not at all. *(Hear.)* The quantity of these potatoes on one rod was 3½ cwts. 21lbs., and this was not a rod picked out, it had not been manured in any extra manner, it was the common soil of the field, and therefore it did not owe this production to extraordinary cultivation. It then happened that the man who had the first prize for potatoes, who was a gardener and well acquainted with their cultivation, acquired his prize by getting his seed from his (Mr. Dixon's) man. *(Hear.)* He did think when they looked to potato cultivation, which was of great importance, that more attention should be paid to it, particularly in reference to seed, than there had hitherto been: and he thought the better way to cultivate them was to put in whole seeds. *(Hear.)* He could mention an instance in point: a farmer in that neighbourhood put a large potato into a heap of ashes which were in his garden from burning his weeds; and as he (Mr. D.) saw it he asked him to give it room and leave it; he did so, and when it had come to maturity, Mr. Hutley and another gentleman went with him to dine with the farmer, when they took up the root, and the number of potatoes on it was 220; no bushel could hold them, and the weight was 65lbs. These came from a single potato in a garden at Witham. No potatoes, he believed, were so productive as those that were set whole, and the mode he adopted was to leave the seed with four or five eyes to throw out the shoots for the potatoes. As to draining, he had employed a man lately who had been engaged upon the railroad, and whose life had been spent in the service of Lord Digby; and he had been in situations where the land required to be deep drained to get rid of the water. This man had been irrigating and deep draining 25 acres of pasture land for him, and when the floods came, and it could be best seen, if any gentleman would come to his farm, they would say it was of the most extraordinary character. The same person was now engaged in draining at Tiptree, on boggy land which it had been even dangerous for cattle to go on; he had put one single drain through the bog at the depth of from four to eleven feet, and the consequence was that this single drain discharged 30,000 gallons of water in an hour. The difficulty in making use of this was to get pumps, but this had been effected, and the farmer had got this water, which was sufficient to turn a mill, carried it into his premises and from it again. The way in which this man set about the draining was this—he first ascertained the level of the water, and then by a spirit level he endeavoured to see if he could get a fall to carry it away; so that his draining was a matter of absolute result, and he did not attempt it if it could not be done successfully. This man had many jobs in the neighbourhood; Mr. Hutley had engaged him, and he thought it would give them information on a subject they knew little or nothing of, if they would go and see him at his work; for he thought there was much land now comparatively useless that by tapping the spring might be made good sound land. *(Hear.)*

Mr. Yeomans.—The person's name is John Pearson, and he lodges in Hatfield.

Mr. Dixon.—I hope you have found him a straightforward man.

Mr. Yeomans.—I have.

Mr. Dixon.—I wish he would teach you to farm better. *(Loud laughter.)* There was one circumstance which had come to his knowledge last week he would mention to the meeting. Mr. Errington, of Colchester, had sheep that had been on his land, and to carry out the last business of fatting he put them with cake on Swede turnips, and the consequence was that a number of them died in three days. Now turnips were much blighted this year, and he should like to start this enquiry, whether the diseased state of the turnips from the six weeks of dry weather was the cause of this mortality in the sheep, for they were on the land before and were healthy. He thought the injury done to the blade of the plant, which was the lung of the plant, was the cause of it, for what reason he could not say; and he thought the state of the turnips was the cause of the death of the sheep. This might be a guide to others, and if any one had any observation to make upon it he should be glad to hear them.

The President.—Were the sheep opened?

Mr. Dixon.—No, they were not, that he was aware of. He stated this as a fact which had come to his knowledge, and he thought they ought to wait till the rain came before the turnips were meddled with. *(Hear.)* As to carrots his crop

was good, and he thought they were an excellent article to fat with. He had been very successful in his cultivation, though not so much so as Mr. Beadel; and he was quite satisfied that a crop of carrots for usefulness would beat either turnips or mangel. *(Hear.)* He would now with their permission propose a toast; it was that from which they derived much useful and sound learning—"The Agricultural Press of Great Britain," to which he would append the name of Mr. Cuthbert Johnson, who was present. *(Drunk with cheers.)*

Mr. CUTHBERT JOHNSON said, he begged, on behalf of the agricultural press of the country, to return their best and warmest thanks for the honour they had done them, and he was quite sure that if they were present there, they would all individually express the same feeling. Ours was a humble task indeed, and through the extraordinary progress that had been made within the last few years in the union of science and practice in the cultivation of the earth, it had been a task easy and delightful, for we were not in the situation of the annalists who waited upon our forefathers, who searched in vain about this great country for an experiment that would elicit the appearance of novelty; but now, wherever we turned our eyes, we beheld farmers of much talent engaged in the great and glorious race of endeavouring to unite scientific knowledge with the cultivation of the earth. *(Cheers.)* And he was sure that so long as that great and glorious spirit pervaded the cultivators of the country, of looking to men of science to aid them in that noble race, so long the produce of the soil would be increased, and there would be no lack of the supplies of food in this country totally independent of the aid of foreign nations. *(Cheers.)* With these few observations he sat down, and he was sure his brother scribblers would feel duly honoured by the compliment paid them. *(Cheers.)*

The PRESIDENT said, much obliged as they were to Mr. Dixon for introducing Mr. Cuthbert Johnson, and glad as they were to drink his health, that was no reason why they should not pay their debt of gratitude to Mr. Dixon himself, for the sound, practical, and intelligible information with which he had been pleased to favour the company. He would, therefore, propose his health. *(Drunk with cheers.)*

Mr. GROVE asked—What state did Mr. Dixon leave his land in after carrots for mangel and Swedes?

Mr. LUNGLEY said he wished to know the expense of cultivation in producing them?

Mr. DIXON said, he must tell them that he was but recently a farmer himself, as many knew, but he happened to have lived where carrots were grown, and therefore he assumed that he knew something about them; his father grew 1,200 bushels an acre, which in the glorious time of war were then worth 10d. a bushel. To come to the expense—putting the land at 30s. his expense was under 6*l.* 10s. and his produce was 25 tons an acre; he weighed them and sold them by weight, which was the safe way of dealing with them, and 48lbs. would go into a common bushel. Therefore the expense, if kept clean, which it was necessary they should be, was at the outside 6*l.* 10s. including putting into carts to be carried out of the field.

Mr. R. BAKER.—Does that include the rates?

Mr. DIXON.—It included everything; but he must tell them he did not double dig his land, he subsoiled it, and he put that at 16s. an acre. Then he was asked what crop followed the carrots; now he always left the carrot blades, which were considerable, on the land, and they were thus ready for manure for the crop which was to follow. He never put on any muck for carrots, but to get a fine crop he put them after turnips; or if sown after wheat a little well-made manure might be advantageously put lightly on the top. The cultivation should then be commenced at harvest, and a good fallow made; the seed ploughing should be a fine one; the land should be as firm as they could get it, having got a good fallow underneath; the drill should be put on, and no harrow should follow it. He should not grow wheat after carrots; he should rather grow peas after them and wheat to follow; that was the system he had adopted this year, and he asked Mr. White, who had seen his crop, if they were not as good a piece of peas as ever grew. If they had a piece of land too fine for wheat, he thought there they would grow good carrots. Mr. Beadel had dug his land for carrots; he (Mr. D.) had not—he had subsoiled it, but he was satisfied that digging was the best, and in all cases where gentlemen used the fork they would be fully compensated by the produce, he was convinced. *(Hear.)* He now begged to thank them for drinking his health: he hoped on all occasions of this kind he should be there when he had an opportunity, that he should spend his days in Witham, and that prosperity to agriculture would be the order of the day. *(Cheers.)* He trusted he had not offended Mr. Yeomans by what he had said, but he felt he might improve if he tried, and he knew he could not go backwards. *(Laughter.)*

Mr. YEOMANS said, if they all grew carrots they should not grow Swedes, and what was to fat their cattle and make manure? He knew that a bushel of Swede turnips would fatten a beast better than two bushels of carrots. He had seen them fat cattle in Cheshire on potatoes only, and one gentleman had an oven to bake them, and another a copper to boil them for that purpose *(laughter)*.

Mr. ROBT. BAKER said, at a former meeting he presented himself as the representative of mangel and Swedes against carrots, and he then made an injudicious bet, but one he hoped was beneficial to the society, which he lost, that the produce of his turnips would be superior to Mr. Beadel's carrots—in fact, that he could produce a greater quantity of turnips off an acre than Mr. Beadel could carrots. As he said, he lost it, for Mr. Beadel produced 37 tons of carrots, while his turnips were much less; but he was still of the same opinion that carrots never would be grown to any extent in this county, because there was little land adapted to the cultivation, and the expence was so great that few would attempt it. Mr. Dixon told them that the best way to get carrots was after turnips; but they could sow with corn or any other produce after turnips had been folded off; their object in growing green food was to put the land in a situation to grow corn crops, and not to get it into the highest state to grow a green crop, which they must do by Mr. Dixon's plan. The four-course system perhaps was better than any other in this county: they first fallowed the land, as it must be cleaned, and it was then sown with turnips to produce manure for good succeeding crops. Now if they took carrots after turnips and peas after them, they got in effect two fallows; but he should take barley after turnips, and then get a good crop of wheat. Therefore he maintained that carrots would never be introduced

so as to supersede turnips. They might be useful for horses, and particularly for storing, though there was great difficulty in that, as he had lost his from storing them in a building, but with turnips he was always successful. With respect to the point started by Mr. Lungley, as to forking land, he agreed that the barley crop would he better after forking than after ploughing; but he thought if a wheat crop were attempted on the same principle it would fail *(hear)*. He had on his farm sub-soiled a certain portion of each field, and he had invariably found that the barley crop was better for it, but the wheat crop was worse; and therefore he thought he gained so little by it that he had given it up, except for green crops. He thought sub-soiling should be done in the spring months to be effectual, and was better than when done in the winter; they would then get better barley and better oats, but his wheat was very inferior in those places *(cheers)*.

Mr. DIXON said, he did not think it necessary for securing a good crop of carrots to have them after turnips—that was the way to have a large crop; but he had grown them after wheat, and commonly did so. Mr. Baker said he had failed in storing carrots; the best way was to leave them in the field as long as possible without being affected by the frost, then carry them into a building, and a little time before Christmas turn them over and take out such bad roots as they should detect; and he pledged himself they would have less loss than with mangel or turnips if they took that course. He took that course last year and the carrots lasted longer than the turnips. They should be put in a place accessible to the air, and in a dry place, and the bad ones picked out, for one bad one would rot the whole lot; and they might then keep them till the next summer. As he had said before, with a little manure spread lightly on the soil they would succeed well after wheat.

The PRESIDENT proposed "The health of their Honorary Secretary." *(Cheers)*.

Lord RAYLEIGH proposed "The health of the President." (Drunk with three times three).

Mr. BRAMSTON returned thanks.

Mr. C. JOHNSTON proposed the health of the vice-president, Mr. Hutley *(cheers)*.

Mr. WM. HUTLEY, in returning thanks, said, it had been observed that his qualities were those of a good farmer, and if that was his character he felt highly honoured by it, for he considered that a good farmer was a good thing in a neighbourhood *(cheers)*. They could not go on without the poor—without a vast deal of manual labour, and any class of individuals employing a great portion of manual labour was a great good in a neighbourhood, as it tended to make the poor man happy and contented *(cheers)*. As far as manual labour was concerned he liked to see all employed, not only the great ones, but the little ones, and the women also, and many of his neighbours were so employing them, but when they got into the back-slums of Essex they found they were degrading the poor and driving them to the union-house *(hear, hear)*. Therefore, wherever he went, he always deprecated such a system, and though he sometimes got into hot water by it, he was generally able to defend himself and get out of it again. *(Cheers.)* But he was quite satisfied that the system of giving only 7s. or 8s. a week was no benefit to the employers themselves, while the poor were starved, and he trusted he should live to see the day when that would be done away with. *(Cheers.)* Mr. Dixon had alluded to Mr. Mechi's draining; he (Mr. H.) saw ten drains across that piece of bog, and some of them were no more use than nothing; but the moment this man came and cut a drain through it, he took the water away, not only from this part, but from all the wells in the neighbourhood. *(Laughter.)* But Mr. Mechi had been draining this, and it was so beneficial and so permanent, that he (Mr. H.) was sure any member going there to view it would go home and do a vast deal of good in his district, for he believed if cultivated at top it would now grow as much corn as any land in the neighbourhood, when before it was of no use at all. The water was now running in torrents from the drain, when before it used to ooze out at the top and destroy the corn. *(Hear.)* They had had a vast deal of conversation on carrots, and Mr. Dixon had made a statement about Mr. Errington's turnips, but he did not tell them the whole, for his statement appeared to leave an impression that the sheep were turned into them, but the fact was, that they were cut and put into troughs.

Mr. DIXON: I meant to say so.

Mr. HUTLEY said he should fancy that the blades would have a bad effect, but after cutting he should not think the mildew would have the same effect. It was extraordinary that they should kill 10 sheep out of 50.

The PRESIDENT said it had been stated that Mr. Beadel would favour them with some observations, and as he had lately been practically engaged in Ireland—a country which stood so much in need of draining—perhaps he could give them some information on it. There was an observation fell from Mr. Dixon as to the great want of care in the selection of sorts of potatoes, and those who knew the importance of this, not only to the farmers but to the cottagers, must lament to see so many of those light blue blossoms as they did throughout the country. His attention was called to that circumstance some time since, and he had endeavoured to introduce amongst his own labourers a better description of potatoes; and when, in passing, he saw them taking up their crops, they always thanked him for it.

Mr. HUTLEY said Mr. Blood had tried some experiments with potatoes, and perhaps he would state the result to the meeting.

Mr. BLOOD, in apologising for his little knowledge of farming, said his experience of it was, that it was the most unprofitable business that a person could follow. *(Laughter.)* He had expected that Mr. Hutley, in his observations, would have given them something that they could recollect, and that he would have told them how he got that splendid display of straw and stacks which they saw around his farm to-day. *(Cheers.)* All he (Mr. B.) could say was, that he was rather frightened at his own produce of potatoes; his servant planted twelve whole potatoes in a row in his garden, two feet wide, and the other day, when Mr. Pattisson was looking over the cottage produce, he thought he would see what they yielded; his man took them up, and there was on the average a peck a root; they were weighed, and the produce worked out at fourteen bushels a rod. *(Hear.)* They were planted whole, and certainly the produce was very large.

The PRESIDENT: Allow me to ask what distance they were apart?

Mr. BLOOD: Two feet.

The PRESIDENT: What sort were they?

Mr. BLOOD: The Kent red, I believe.

Mr. JAMES BEADEL said he need offer no apo-

logy for addressing a few words to the meeting, after the observations from the chairman; but he must confess that the discussion of the evening had this good effect, that it curtailed the observations he had intended to make. He believed he was pretty well the first member who suggested the advantage—for he considered it one—of growing carrots; he also thought he was the first who tried fork-cultivation in that neighbourhood; and it was therefore satisfactory to him to hear the clear statement he had from Mr. Dixon, which satisfied him that it would be a great advantage to grow carrots. He did not follow the same course in their cultivation that Mr. Dixon did, and that gentleman appeared to be of opinion that his (Mr. B.'s) was the most profitable: he dug for his crop with the fork, the tops were folded off upon the land by sheep, and he thus got his land in a good state to carry a large crop of wheat. He had this year a piece of wheat grown after carrots in this way, which had been seen by all his neighbours; and whether there would be four and a-half or five quarters per acre he could not tell, but that was what they set it at, and when he had had an opportunity of thrashing it he would communicate the result. (*Cheers.*) In the present season many of the plants had entirely failed: he had three acres of carrots, but he believed, partly from the badness of the seed, and partly from his own mismanagement, he had not succeeded in getting an equal plant of carrots; but as a proof that carrots might be grown on land they were accustomed to think not suited to them, he had got three different soils on the land on which the crop was growing: one part was gravel, so hard that he could not fork it, but had to stub it up with the pick-axe, yet there were fine carrots on there; another part was a fine loam, and another a mixed soil, and there were some good carrots throughout the whole field, though not a good crop, but that might happen from the circumstance he had stated with any other crop. With regard to using the fork, he never contended that it ought to supersede horse-labour; he only maintained that if any plan could be found out by which manual labour could be more extensively employed with a profit to the occupier, a great advantage would be conferred on the whole community. He belived that fork cultivation could be adopted with advantage; and he would say, there was one fact in connection with it so clear that all must be satisfied; it was this—that if there be one thing to stamp a value on land more than another, it was the depth of the top-soil: he never heard one person who ventured to assert that land was better with two inches of soil than it would be with six; therefore, if by turning up the soil they let it be acted upon by the air and the atmosphere, and manure, and then by turning it up again they got a fresh soil and added to the depth of the land, he thought it must be a great good. (*Cheers.*) They knew that in some agricultural districts, more perhaps in others than in this, there were many men out of employ, who, if they did not get work must become the inmates of the union-house, or resort to crime for the purpose of procuring the necessaries of life; we were therefore morally bound in our respective stations in life, especially if we could do so without positive loss, to give every possible encouragement to any plan that showed on the face of it a prospect of affording increased employment to the labouring population. (*Cheers.*) Therefore he would ask them when they saw men out of employ, to try the system on one acre or even on one quarter of an acre, which would only cost them 8*s.* 6*d.*—just let them try it and draw their own conclusions upon it; for he could assert that in no one instance and under no circumstance had he ever been deceived in fork cultivation. (*Cheers.*) He would take the opportunity of detailing to the meeting the substance of a letter received from a practical person living at Black Notley, who commenced fork cultivation for carrots, and as far as his crops had gone there was a decided advantage, which was contrary to the principle laid down by Mr. Baker, that forking would be injurious. He stated that last year he grew three acres of carrots, two acres being ploughed and the other part being forked; and the result was, that he had nearly as many carrots on the acre forked as he had on the two acres ploughed, and the quality was much better. The field was then all treated alike, ploughed and sown with wheat; when it first came up it looked much alike, but a month after the forked land took the lead and kept it throughout the season; there was a visible difference at harvest, and he had no doubt when it was thrashed that difference would be borne out. (*Hear.*) He (Mr. B.) was sorry that the letter did not deal in pounds and quarters, because they all knew where they had not an experiment worked out as Mr. Lungley did it, there was room to doubt the statement. The chairman had alluded to his having been in Ireland: he had been so, and the business upon which he had been engaged there had been of a novel character—he had been employed by a gentleman who at a considerable expense had been embanking and in fact reclaiming a large quantity, about 2,000 acres, of land from the sea, and his business was to advise as to draining, dividing, and selling it. Two thousand five hundred acres more were in process of embanking, and nine hundred acres in addition would be finished in three weeks; the proceedings were under an act of parliament, and they had power to deal with something like 32,000. As to the nature of the land, the soil appeared to be vegetable mould, varying in depth from six inches to two feet; under that was a thin stratum of shells, and a thin substratum of tender loam, which had been tried to the depth of twenty feet without finding the bottom of it. But it would show the nature of the soil when he stated that some of the loam had been used by the late Mr. Conolly Gage, who applied it on a sand-bank, and the land so dressed carried excellent crops. He (Mr. B.) took off a part of the land reclaimed last year a root of barley and a root of oats, and if it had not been for the inconvenience and the distance—for they were as high as he was—he would have brought them to that meeting: they were seeds put in by the men and the plants taken care of to see what the land would do, and a more extraordinary produce he never saw. On enquiry as to the amount of what the land would let for, he was informed that a similar description had been let at prices varying from five guineas to 13*l.* per acre, immediately after it was enclosed.

The Chairman enquired in what part of Ireland it was.

Mr. Beadel. In the North of Ireland.

Mr. Grove. In what quantities is it let at that rate?

Mr. Beadel. In small quantities. That was the statement made to him; but he did know, from enquiry, that the opinions of all farmers in the neighbourhood was, that this would be extraordinary land when it was reclaimed into cultivation.

Mr. Dixon. It is a salt water deposit.

Mr. Beadel explained, that the tide ran in a strong current up the river, and the fresh water from the mountain streams was driven back by the tide on to levels, and left a considerable deposit. Thus it was almost a fresh water deposit, and, therefore, the more valuable. On going through Ireland, he, as an agriculturist, noticed their system of farming, but he must say there was little he could learn from them: they were generally bad farmers, with good land, with the exception of the bog land. Their course of farming was the most extraordinary: they appear to mend the land but once in five years, and that is for their potatoes; they took wheat after the potatoes, then oats, then barley, the land remained two years in clover, and was then planted with potatoes as before; and he did not know anywhere where they farmed, generally speaking, so badly as in Ireland. (*Hear.*) Could a cause be found for this? He thought it could, and it was this—there was one link in the chain of agricultural society lost in Ireland: we found no Hutleys there—there were no tenantry composed as in England of men who had got their capital embarked in the soil; for, as far as he had discovered, the occupiers were mostly perpetuity tenants, who occupied about fifty acres, and did the work by themselves and families; and we all knew when we did the work ourselves we found plenty of excuses before we would work very hard. (*Cheers and laughter.*) But then he must say he thought the Irish were much belied in their national character, for in the part of the north where he was, he never saw quieter or more properly behaved men—he was never amongst a more civil or obliging people, or more free from many vices that disgraced Englishmen. (*Cheers.*) He could mention instances of this: on the works of the place he was engaged at, there were employed from 350 to 800 men, and the inspector told him that he had never seen a case of intoxication or a fight, or heard an angry word amongst them. He (Mr. B.) spent thirteen days there, and he could bear out this statement. (*Cheers.*) On one occasion he required the assistance of some of the labourers who were standing about, and he asked them to assist: he kept them five or six hours, and at the conclusion tendered them the same payment that he should have done in England, but they said no, they could not accept it—they were employed and their master paid them. Did they think they could find a parallel case to that in England? (*Hear, hear.*) He did not think that Ireland was near so bad as it was represented; that it was disturbed he admitted, but that was confined to certain parts of Ireland, and he thought he could live in as perfect ease and as perfect security in the North of Ireland as he could at Witham itself. (*Cheers.*) He thought if the people were properly treated they would be a great deal better than they were; and he hoped that ere long it would be considered the duty of gentlemen who possessed property there to reside in Ireland, that by employing means for the physical and moral improvement of the people, they might make it what it had been so often said to be—

"Great, glorious, and free;
First flower of the earth, and first gem of the sea."

He thought she might be so, and to effect it required the best and earnest exertions of those who were interested in the welfare of that unfortunate country. He could only say that as far as his acquaintance went he thought far better of Ireland than he did before he visited it, and so would every gentleman who went there with his mind open to conviction and prepared to make some allowances for a people not so far advanced in the scale of civilization as those perhaps among whom he lived. (*Cheers.*)

Mr. J. H. Pattisson said he fully coincided in Mr. Beadel's remarks as to the North of Ireland, but to the other parts of that country he thought they could not apply them. As to cultivation of land by the fork a great authority had said, that when we arrived at perfection in agriculture we should revert to the spade; it appeared to him that bringing up the soil and getting it prepared by the atmosphere, by the wind and the sun, was the only way to get large crops; and if the use of the spade was introduced the increased produce required for the increasing population might be met without recourse to any foreign country. (*Cheers.*) He now wished to propose a toast which he was sure they would all drink with delight, as it was the health of a nobleman who was always received with so much satisfaction amongst them—he meant "Lord Rayleigh." (*Drunk with three times three.*)

Lord Rayleigh returned thanks.

The President inquired of Mr. Dixon if he had seen anything more of the dodder.

Mr. Dixon said, he had seen it often lately, and he had seen some large specimens taken from where it had got in the wheat crop, but it flowered out so late that the wheat escaped it, and then it fastened on the knot grass, which it ate up, as it did the clover. It was satisfactory to know that it did not touch the wheat, and he believed it was because the wheat was ripe: he thought if it was the habit of the plant to grow early in the spring the wheat would be destroyed, but it was too fast for it, and where, as in the case he had mentioned, it did make its appearance, the wheat was not injured at all. He had taken some of it from the field, part of which he had sent to the office of the *Chelmsford Chronicle*, and if they inspected it there they would find that it was fastened on the knot-grass, and not on the wheat. He had seen it in clover, and there not a single head of clover came to maturity. He never observed it till this year, and his impression was that it had been brought over in foreign clover seed.

The President said, in regard to the dodder, he had seen it for the last four or five years, more or less, but of late years much more; and his attention was first called to it five years ago, when shooting over one of his farms. The description of Mr. Dixon was correct, that it over-rode everything. But the subject had been very practically treated on by the Rev. Mr. Rham, in one of the early numbers of the Royal Agricultural Society's Journals, for Mr. Rham had resided a considerable time in Belgium, and had seen there the ravages of this plant on the clover; he stated that the mischief was propagated by the seed, and he showed how they might distinguish the clover seed from the seed of this plant, which had very much the same appearance. Therefore he (Mr. B.) referred them to the article in question for information on the subject.

Mr. Dixon said, he thought Mr. Bramston had made a mistake—that referred to a plant totally distinct from the dodder.

The President said, he believed he had.

Mr. Dixon.—The dodder had never been noticed till this year. Last Sunday three weeks in the *Gardener's Chronicle* there was a communication on the subject from Professor Henslow, and on

the Monday morning he (Mr. D.) in the first clover field he went to, saw six or seven large patches of it, which he had never seen before. That was the dodder; but the plant Mr. Bramston referred to was totally distinct — that was the orobanche. That was also a parasite: it was a bulb resting on the stem of the clover, and was sure to destroy the plant. He had an idea that it grew nowhere but where clover grew; and as he saw it in a field of Mr. Forster's some years ago, he had an idea that he had plenty of it if that field was clover again.

After some other toasts and speeches, the PRESIDENT gave "To our next merry meeting," and the party separated.

ASHTON AGRICULTURAL SOCIETY.

INSPECTORS' REPORT.

The inspectors of the Ashton Agricultural Society take the liberty of placing in the hands of the committee their sixth annual report. They have completed their survey with much labour and care, and if their decisions do not meet with universal approval (which they can hardly expect), it will not arise from a want of thorough inquiry into the merits of each case, or anxiety to arrive at a just conclusion.

They have much pleasure in being able to confirm their report of last year on the progress of improvement as shown in the growth of the turnip and beans, in draining, and in general cultivation. They perceive that the tenantry are for the most part beginning to set a proper value on their turnip crop, without which it is impossible to have any farm well managed or stock kept in good condition throughout all seasons. They trust too that the system of sowing beans in the drill is gaining more favour, assured as they are that the more it is tried the more it will be appreciated. The advantages of draining are now from experience too obvious to be denied; the progress of improvement has been steady and unchecked. About 23 miles of drains and 2 miles of watercourses have been completed during the last year. The inspectors observed also that old fences had been removed to the length of 5 miles, which they cannot but consider a great step towards the better cultivation and neater appearance of the farms.

The inspectors, however, observed that the strife after improvement is not so general as they could wish. Some of the tenantry began their exertions several years back, and are steadily following out their plans; others appear to have begun well, but after getting their farms into a most praiseworthy state of cultivation, they seem to have relaxed in their efforts. This is observable chiefly in a want of neatness in fences, farm-yards, and premises generally. Amongst the smaller farmers the inspectors are sorry to say they perceive the least emulation, they would therefore urge *them* especially to use every exertion in their power; for the smallest farmer in the same proportion as the largest will receive benefit from industry and management, and injury from negligence and want of skill.

It may be said that farmers throughout the country, are much dispirited by the depressed state of the markets. It cannot be denied that the value of agricultural produce has latterly been considerably reduced; but, however much it may be regretted, so far from being dispiriting, it ought to act only as an incentive to renewed exertions. Now is especially the time for the farmer to double his efforts, that from industry, management, and judicious outlay, the produce may be so far increased as to balance the depression in price.

The inspectors may here remark that they have observed on their survey the very striking effect of the guano manure, and would therefore press it on the notice of the tenantry. Its lasting qualities have been often questioned; but they have seen it applied on pasture land, the effects of which have been very visible the second year. They have seen the result of its trial on meadow and on turnips, where the produce has been remarkable for quantity; and on the same field where guano had been applied to one portion and farm-yard manure to another, when it was sown for turnips, the crop of wheat which succeeded was considerably better on the part covered with guano.

The inspectors now proceed to state their decisions on the respective claims.

CLASS 1.

Premium 1.—To the occupier of any farm, not being less in quantity than 100 statute acres, who shall have the same in the most improved state of cultivation and best general condition, the sum of 8 sovereigns.

For this prize there were four competitors, all of very considerable merit. The inspectors have decided in favour of Mr. Geo. Fishwick, of Scorton, in Nether Wyersdale. The extent of his farm is 136 statute acres, and the relative proportion of his crops is as follows:—

	a.	*r.*	*p.*
Meadow	31	0	0
Pasture	96	0	0
Oats	3	0	0
Turnips	3	0	0
Wheat	3	0	0
	136	0	0

The inspectors cannot speak too highly of Mr. Fishwick's outlay and management. The committee will understand this when they hear that on his farm 3600 yards of old fences have been removed, and 8247 yards of stone drains have been laid within the last two years; that his outlay in manure has been very considerable, particularly in guano, which has been tried in various ways, and with certainty of results which will render it safe for others to follow his experiments. Guano has been applied to 6 acres of pasture, 6 acres of meadow, and 2 acres of turnips.—The quantity has been 3 cwt. to a statute acre.

The inspectors feel that Mr. Fishwick has some advantage over those tenants who are dependant on their farming for a livelihood; and had the claims been such as to render the adjudication difficult, they might have taken this into account; but meritorious as were the other candidates, they have not hesitated to award the premium to Mr. Fishwick, in consideration of his judicious management and extensive improvements.

Premium 2.—To the occupier of any farm not being less in quantity than 50 statute acres, who shall have the same in the most approved condition, the sum of 4 sovereigns.

The inspectors have awarded this prize, for which

there were two competitors, to Mr. Isaac Daniel, of Cleveley.—His farm contains 152 statute acres.

	a.	*r.*	*p.*
Meadow	17	0	0
Pasture	69	0	0
Clover	16	0	0
Oats	10	0	0
Turnips	2	0	0
Wheat	22	0	0
Summer Fallow	16	0	0
	152	0	0

The inspectors were very much pleased with the general management of this farm. They beg to notice Mr. Daniel's judicious rotation of cropping, the neatness and thorough cleaning of his land, and particularly the cultivation of the closes for pasture and mowing. He has completed 14,000 yards of drains, and purchased 940 windles of lime, and expended 30*l.* in manure during the last three years. The dairy department too is well conducted. Mr. Daniel deserves the greater praise from the fact of his farm being very poor when he entered upon it.

Premium 3.—To the occupier of any farm not less than 60 statute acres, which shall be applied in the best and most improved manner to making of cheese, the sum of 3 sovereigns.

This premium has been awarded to Mr. James Curtis, of Heald Farm, in Barnacre. Too much cannot be said in favour of the dairy, under Mrs. Curtis's management; it is superintended with the utmost judgment, skill, and care. The cheese is excellent in quality, and in quantity extraordinary, considering the high position of the Heald Farm. From 19 milch cows the quantity made this season between the 1st January and the 25th September, is 3 tons.

The inspectors beg to notice the dairy of Mr. James Hall, of Nether Wyersdale, which reflected much credit on the female department of his establishment. The cheeses were excellent, and the quantity considerable. In Mr. J. Curtis, Mr. Hall has met with an opponent of more than ordinary merit, but on another occasion he will have every chance of succeeding.

Premium 4.—For the best Moss Farm. No claimant.

Premium 5.—To the occupier who shall in any one year lay down the greatest quantity of land, in proportion to the size of his farm, for meadow or pasture, in the best manner, and cleanest from weeds, and sown with white clover, and other well-selected permanent grass seeds, the sum of 3 sovereigns.

For this premium there were several competitors, all of great merit. It is awarded to Mr. James Curtis, of Barnacre, for his excellent and well managed crop of clover laid down for pasture.

Premium 6.—Red clover, 2*l.* To Mr. John Hathornwaite, of Cabus, for a heavy and luxuriant crop.

Premium 7 and 8.—For planting and draining.

There are several competitors, to all of whom from their observation, the inspectors can give great credit; but to examine the drains thoroughly, the mode of their execution, and the propriety of their position so as to secure the greatest advantage, would occupy more time than they could well spare. They would therefore desire the committee to take the responsibility of this decision.

Class 2.

Premium 1.—To the occupier, in proportion to the size of his farm, who shall grow the heaviest and best managed crop of Swedish turnips in drills, (the quality of land to be considered) not less than two statute acres, the sum of 3 sovereigns.

To Mr. John Welch, of Cabus, for a superior, clean, and well managed crop.

Premium 2.—Swedish turnips, not less than one statute acre, 2*l.*

Four competitors, all very deserving. Awarded to Mr. Jas. Curtis, of Heald Farm.

Premium 3.—Common turnip, not less than one statute acre, 2*l.*

Six claimants. The crops nearly equal in merit, and each very creditable to the owner. Awarded to Mr. James Sandwell, of Scorton Hall.

Premium 4.—Drilled beans, not less than 2 statute acres, 2*l.*

Three competitors. Adjudged to Mr. Thomas Winder, Cleveley, for a very excellent crop, clean and well managed. For this premium there was no claim last year. The inspectors have therefore to thank these three applicants for the example they are setting to others. The crops exhibited were deserving of much praise.

Premium 5.—To the occupier who shall, on the day appointed for the annual ploughing match, plough a piece of land, the breadth of which shall be hereafter determined, in the best and neatest manner, the sum of 2 sovereigns.

Awarded to Mr. Thomas Bradley, of Cabus.

Premium 6.—To the occupier (as in premium 5) for the second best, 1*l.* 10s. Awarded to Mr. Isaac Daniel, of Cleveley.

Premium 7.—For the third best, 1*l.* To Mr. John Welch, Cabus.

The inspectors have to express their great satisfaction at the manner in which the ploughing was performed, in which the spectators on the occasion were unanimous in joining.

Class 3.

Premium 1.—General stock of store cattle, 4*l.*

Three competitors. It was awarded to Mr. Fishwick, but as he has obtained the premium for the best managed farm, he is not entitled to this also; it is given to Mr. Thomas Winder, of Cleveley. His stock is very good and useful, consisting of 24 milch cows, 7 heifers of three years old, 25 of two, 10 of one year, 10 calves and 3 bulls, all of the improved short-horned breed, 25 Leicester sheep, 6 work horses, 3 store pigs, and 1 breeding sow.

PRESTON AGRICULTURAL SOCIETY.—The Preston show came off on Saturday se'nnight, and was held in the New Cattle Market, North Road. The weather being favourable, there was a good attendance The show of live stock, especially of horned cattle and pigs, was remarkably good, as well as extensive, and the whole exhibition was a wonderful improvement on those of previous years. The in-calf cows and heifers were spoken of in terms of high commendation—their quality and condition were all that could be desired. The horses were not very numerous, nor much above mediocrity. There was a scanty supply of roots and vegetables, but a good collection of agricultural implements. The judges of stock were Mr. Fryer, Catterick, Mr. W. Dale, Manor House, Catterick, Mr. W. Hunt, Dilston, near Hexham, Northumberland; and the inspectors of farms were Mr. Henry Fisher, Carleton, and Mr. Robert Walker, Thistleton. Their decisions met with general approval.

LICHFIELD AGRICULTURAL ASSOCIATION.

(FROM THE TIMES.)

LICHFIELD, SEPT. 27.

The annual show and meeting of this association commenced yesterday, and terminated, as usual, with a public dinner at the George Hotel this evening. The customary ploughing match took place in a field adjoining the domain of General Dyott, Whittington-heath, but either from the scarcity of competitors, or the little excitement occasioned by such slow sport, it drew together but a very small company. This morning, however, the cattle and implement show, which took place in a field on the Birmingham road, was very numerously attended. Amongst the company on the ground were the Marquis of Anglesey, Viscount Villiers, Sir R. Peel, the Right Hon. W. Yates Peel, Lord Hatherton, Mr. Blackstone, M.P., Viscount Leveson, M.P., Lord Ingestre, Mr. Pye, Mr. Grove, and a numerous body of the landed interest of the neighbouring districts. Sir R. Peel, who was accompanied by his son-in-law, Viscount Villiers, entered the ground shortly before 2 o'clock, and, as a matter of course, became the object of universal attraction. The right hon. baronet looked extremely well and appeared to be in the highest spirits. The show of cattle was described by judges to be exceedingly good; but, notwithstanding the contiguity of Birmingham, there was but a sorry display of agricultural implements. Those which attracted most notice were two steam-mills for the grinding of grain. Winnowing-machines, harrows, scales, &c., were the next objects in point of importance and attraction; but it is to be feared that very few sales were made by their possessors. The following is a list of the prizes awarded:—

CATTLE.—Class 1. Mr. C. Booth, Oakely, 13*l*. 2, Mr. H. Brown, Ashby-de-la-Zouch, 5*l*. 3, Mr. J. Levett, Winchnor, 5*l*. 4, Mr. Norton, Little Onn, 5*l*. 5, Mr. Norton, Little Onn, 5*l*. 6, Mr. Salisbury, Dordern, 5*l*. 7, Mr. M. Cartwright, Stanton-house, 10*l*.

SHEEP.—Class 1, Mr. J. Dester, Bramcote, 5*l*. 2, Mr. Salisbury, Dordern, 3*l*. 3, Mr. E. Peel, Bonehill, 3*l*. 4, Mr. Salisbury, Dordern, 3*l*. 5, no merit. 6, Mrs. Goodall, Packington, 3*l*. 7, Mrs. Goodall, Packington, 3*l*. 8, Mr. Shuker, Whittingten, 3*l*. 9, Mr. K. Bourne, Fisherwick, 3*l*. Commended.—Mr. Dester, Bramcote; Mr. J. German, Edengale.

HORSES.—Class 1, not shown for. 2, Mr. Horabin, Sutton Coldfield, 5*l*. 3, Mr. J. Winter, Broadfields, 3*l*.

PIGS.—Class 1, Mr. Farmer, Fazely, 2*l*. 10s. 2, Mr. Swinfen, Swinfen-hall, 2*l*. 10s. Mr. M. Cartwright's brawn highly commended.

IMPLEMENTS.—10*l*. was divided among the successful candidates for implements.

CATTLE COMMENDED.—Mr. Worthington's fat heifer, highly. Mr. Brown's bull. Mr. Salisbury's bull. Sir R. Peel's heifer, in extra stock. Mr. Cartwright's heifers and stirks. Mr. J. Brown's long horned cows, and Mr. Norton's cow and offspring.

The dinner at the close of the show, took place at the George Hotel. Lord Hatherton, as President of the Association for the year, occupied the chair, and Sir R. Peel officiated as Vice-President. The novelty of Sir Robert's position created no small degree of interest; although for some days previous it had been announced that the right hon. baronet would be present, few people, even up to the latest moment, believed that he would attend. When, however it was known that he was on the show ground in the morning, the scepticism of the doubtful began to clear away, and a great demand for tickets was the consequence. The large room as well as the smaller adjoining one at the George was crowded with one of the most influential companies ever before assembled in the county of Stafford. Amongst the company we noticed Lord Ingestre, Captain Dyott, Lord Leveson, Mr. Pye, Mr. Grove, Mr. J. B. Phillips, Mr. Hanbury, Mr. Manley (high sheriff of the county), Mr. W. Palmer, Mr. Shaw, Mr. Flyer, Mr. Mott, Mr. Fell, Mr. Chawner, Colonel Monkton, &c. The dinner and wines provided by Mr. Sharpe, the host of the George were excellent. Upon the cloth being removed,

The noble PRESIDENT proposed "the Health of her Majesty;" which was drunk with three times three.

The healths of the Queen Dowager, Prince Albert, the Prince of wales, and the rest of the Royal Family succeeded; and were each received with great applause.

The Noble PRESIDENT said, he had great pleasure in proposing the "health of Earl Talbot, the Lord-Lieutenant of the county." (*Cheers.*)

Lord INGESTRE, in the absence of his father begged leave to return thanks for the flattering manner in which his health had been proposed and received by the company. He need scarcely say that Lord Talbot was most warmly attached to the pursuits of agriculture, and that he was more particularly attached to the society the anniversary of which they were that day met to commemorate. (*Cheers.*) He thanked them sincerely for the honour conferred upon his father.

Lord HATHERTON again rose, and said, that as many of the gentlemen present had to travel home long distances he was anxious to come at once to what might be considered the toast of the evening—"Prosperity to the Lichfield Agricultural Association." He did not think it necessary to enlarge upon the subject of the improvement of the science of agriculture—a subject which engaged the attention of all parties throughout the land, and all well-wishers of their country. He was old enough to remember when a very inferior description of stock existed in all parts of England. About 40 years ago some spirited gentlemen turned their attention to the improvement of the various breeds of animals, and associations for that purpose then took place. Their immediate object, when originated, was little more than the improvement of horned stock and of sheep; but since then great alterations had taken place, and the first thing which struck foreigners upon their arrival in this country was the very superior quality of the cattle of this nation over that of all others. Indeed he knew this, and had conversed with several persons from France, Germany, and the United States, who had visited England this year, for the purpose of purchasing animals to improve the breeds of their own countries, and he trusted that at no very distant period England would become as famous for stock as she now was for that superiority of her breed of horses, which was admitted all over the world (*hear, hear*). At a period subsequent to that to which he had referred, agricultural associations did not confine their operation solely to the improvement of stock, but also the cultivation of land, as one great principle of agriculture. And Lord Althorp, a nobleman beloved by all parties throughout the country (*cheers*), conceived the idea of instituting an agricultural association for all England, not only for the improvement of cattle, but for that of farming implements and the system of cultivating the soil; and here he was happy to pay a tribute of respect to his right hon. friend who faced him, for, although at that time opposed to Lord Al-

thorp, he did not hesitate to come forward and attend the great meeting at the Freemasons' Tavern, not confining his co-operation to a mere acquiescence, but, whilst many persons were opposing the society on narrow grounds, declaring his anxiety for its welfare, and his determination to give it his strongest support (*cheers*). It was a pleasing feature of meetings like the one then assembled that the discussion of all political subjects was excluded, because where they were once introduced party feeling invariably followed, and all good effects were destroyed. It was also well known that the Royal Agricultural Society, besides acting as a spur towards the improving of stock, had accomplished another object which promised to be accompanied with extraordinary success. It had become the depository of agricultural statements, recording day by day as they occurred, great improvements and new discoveries in the system of cultivation, new manures and their application; added to this they were the means of publishing theoretical discussions likely to produce the most important results. The noble lord, after adverting to the excellent show of implements at the late Derby meeting, referred particularly to the revolving harrow, invented by his own agent, Mr. Pratt, and which he had tried with the greatest efficiency upon his own farms. His lordship next proceeded to inculcate the necessity of farmers themselves and of their children visiting those parts of the country where the best systems of cultivation were known to exist. They would then become acquainted by ocular survey with many advantages of which they had previously been unaware, and be enabled to apply them with efficiency in the tillage of their own land. For the last 24 years he (Lord Hatherton) had been a practical farmer, and had never less than 2,000 acres of land on hand. He was happy now to say that vast improvements were taking place in his own neighbourhood, that some of his tenants, distinguished for their enterprise and skill, had visited Scotland and the northern parts of England, and the result was, that they were knocking down their hedges, removing timber from encumbered land, laying out their farms on new plans, incurring increased expense in draining and subsoiling, reducing their fences, filling up ditches, and employing labourers in hand-weeding; all of which operations had been for years in practice in those parts of the country to which he had referred, and to which the farmers were indebted for the good results witnessed in those districts. There was, however, one other topic to which he could not help referring; it was of the utmost importance—the economizing of water. Many farmers were not aware of the nature of water which was drawn from the land by draining, and instead of esteeming it as a precious gift from heaven, treated it as an enemy, suffering it to be entirely lost. Now he himself, acting under the advice and experience of Mr. Bright, had caused his waste water at Teddesley to be directed into one stream, and at the small expence of 1,000*l.* he had obtained a mill power, whereby he effected a saving of 450*l.* per annum in thrashing, cutting straw, sawing, grinding malt, and other agricultural operations. His lordship then directed the attention of the company to the beneficial effects of stall-feeding, and stated, that as he had become an enthusiast in the cultivation of land, and knew from his experience as a stock farmer that it was impossible to succeed where game was rigidly preserved, it was his intention to destroy all the rabbits and hares upon 900 acres of his land (*loud cheers*). The noble lord apologized for occupying the time of the meeting, and concluded by proposing "Prosperity to the Lichfield Agricultural Association" (*cheers*).

Mr. Chawner, the secretary, then read the report of the society. It congratulated the members upon the decided progress which the science of agriculture had made during the last year, and the great improvement, as evidenced that day, in the show of cattle.

The Right Hon. W. Peel then rose to propose the health of the President (*cheers*). Any language which he (Mr. Peel) could use in commendation of the noble lord's patriotic exertions in the cause of agriculture would fall short of his deserts. It was a fortunate circumstance for the county that many landed proprietors cultivated their own property, and followed the excellent example set by the noble chairman to his brother farmers. It could not, therefore, be surprising, that in the cultivation of the soil, Staffordshire was in advance of several other districts. It afforded him (Mr. Peel) additional pleasure in being present at an assemblage of friends and neighbours engaged in agricultural pursuits, where all considerations of party and political motives were merged in the great common objects of the improvement of agriculture and the encouraging labourers and servants in habits of industry, sobriety, and honesty (*cheers*). The right hon gentleman concluded by proposing the health of the President, with three times three.

The toast was drunk with great enthusiasm.

Lord Hatherton briefly acknowledged the toast.

A number of agricultural labourers were here introduced, and presented with rewards, of various amounts, for long servitude and good conduct.

The noble President said, the next toast he should propose would afford the inhabitants of the neighbourhood who were best able to appreciate his character, an apportunity of testifying their regard for his right hon. friend who now occupied the vice-chair. (*Loud cheers.*) No one esteemed the right hon. baronet more highly than he (Lord Hatherton) did; and he could affirm in the strongest possible terms, that although the right hon. baronet had many political opponents, he had not one political enemy throughout the country. (*Loud cheers.*) The members of this association must, he was sure, be highly sensible of the honour done them by the presence of the right hon. baronet, especially when they considered the immense occupations of a Prime Minister of this country; indeed, it might truly be said, in the words of a Minister of France who at that time little thought of ever being in power—"That power was a great burden, and mankind a hard taskmaster." In conclusion he begged leave to propose "the health of the right hon. baronet, who, by the suffrages of his political friends, was now placed at the head of his party, and by his sovereign at the head of her councils."

The toast was received with immense applause.

Sir R. Peel, who was received with general cheering, said,—My Lord Hatherton and gentlemen, nothing could be more gratifying to my feelings than what has just taken place in this room. My health has been proposed by a noble lord from whom I have the misfortune to differ in politics, but whom I have known from my earliest years, and from whom no difference in politics has ever alienated my feelings of attachment and esteem. (*Hear.*) We have under different administrations held the same political office in connexion with the affairs of Ireland, and we are now united, by the bond of a common interest in the promotion and success of agriculture, to do all that we can to insure its prosperity. (*Hear,*

hear.) Gentlemen, the proposal made by my noble friend has been received by you in a manner which must make the deepest impression on my mind. It has been received with marks of great personal attachment and esteem in a company a great portion of which consists of personal friends and neighbours, whose good opinion and respect it must be the great object of my life to conciliate and obtain. (*Hear, hear*). Gentlemen, I shall not forget that the only capacity in which I am entitled to address you on this occasion is my capacity of Vice-President of this institution. (*Hear*). I must forget altogether the political capacity in which I am, for I consider it to be essential to the success of these institutions that we should be entitled to meet here on neutral ground as regards politics; and that for this day, and on this occasion, we should forget altogether those party differences that may separate us elsewhere. (*Hear, hear*). Let us exercise on proper occasions and in a proper arena the right which we possess as free citizens under a free constitution, to maintain with earnestness and zeal our political opinions; but let us studiously avoid prejudicing that great cause in which we feel a common interest, by interrupting the harmony of a meeting of this nature with any of those differences as to political topics which, under other circumstances, may divide us. (*Hear, hear*). Gentlemen, if anything had been wanting to convince me of the advantage to the country of institutions and meetings of this nature, it would be what has passed in the course of this evening. It would be in the opportunity afforded to the noble lord who sits opposite me—who has applied his mind to experiments in agriculture—to the application of science to the cultivation of the soil—of animating you to exertion in the same course which he has pursued, in the excellent practical discourse which he has delivered to you. (*Cheers*). Gentlemen, I cordially concur with him—so far as I with my own limited experience, may presume to confirm what he said—in all the advice he gave you. Nothing can, in my opinion, be more sound than the opinion which he expressed, that the greatest benefit would result to the agricultural interest of this and other localities if you would yourselves take the opportunity of watching the result of successful experiments in other parts of England. (*Hear, hear*). If age or infirmities should prevent yourselves from going, send your sons, to see what is the practice in other districts, to compare that practice with your own, and if you see that there is in those districts an improvement, then studiously to imitate the practice of those districts in your own. (*Cheers*). There are now peculiar facilities afforded to you for taking that course. The railroads now convey you within 24 hours to places which ten years ago you could not have visited without a great expense both of time and of money. (*Hear.*) Depend upon it, there is a greater advantange to the agriculturist in himself going to the spots where agriculture is studied as a science—if he be a landed proprietor, sending his agent, if an occupying farmer, sending his son or going himself—than in calling from those distant localities the natives of them, and hoping to induce them to transfer the improvements which they practice at home. (*Hear*). For instance, there is a difference of habits and a difference of language which render it disagreeable to the Scotchman to settle in this country. He is not able to apply his mind with the same success that he could in the district in which he was born. (*Hear*). On the other hand, a native of this locality visiting a distant one would return with greater opportunities of benefiting the agriculture of his own district than any foreigner could possibly have. (*Cheers*). Gentlemen, I know nothing in English society that presents a prospect more truly gratifying than a rural district well cultivated, in which subsist relations of mutual confidence between the landed proprietor and the occupying tenant, and, let me add, the farm labourer. (*Cheers*). Politics, gentlemen—that is to say politics that in any way partake of a party character—are wisely excluded from our proceedings; but it would be absurd to exclude that great and comprehensive policy which must see in the success of British agriculture one of the great foundations of national strength and national prosperity (*hear*)—and again I repeat, that neither this country nor any other can present a more gratifying sight to the true patriot—to him who is interested in the maintenance of the national greatness and the honour of England—then a well cultivated rural district, in which harmony subsists between the landlord, the tenant, and farm labourer. (*Hear.*) Now, it is supposed by some that it is necessary, to complete success in agriculture, that the occupying tenant should have a more permanent interest in the land than that which he can have where the duration of the tenancy is only from year to year. If that be so, I must say that I think it would be of the greatest importance to the landed proprietor fully to consider the policy of granting such more permanent leases, and so to facilitate and promote the better cultivation of the soil. Whatever may be the custom of the particular part of the country the landlord's property may be in, it is his interest to give the tenant that more permanent interest, if by so doing he would promote the better cultivation of his estate. Upon that view of the subject, looking beyond the mere narrow view of his own immediate interest, and looking to the interest of his children and his remote posterity—unless, in fact, he were to take the most selfish view of his position, it must obviously be the interest of the landlord to grant that more permanent tenancy. (*Hear, hear.*) Much depends upon the custom of the country. In the north of England, and in some parts of Scotland, no tenant can be found who would expend his capital on a farm unless he had the benefit of a lease. That practice does not prevail in this part of the country, but I hope that a feeling of reciprocal confidence between the landlord and tenant has more the effect of giving the same feeling of security to the latter than the leasing system gives in Scotland. (*Hear, hear*) I believe, in fact, that where the practice of tenancy at will exists, there exists also an almost universal feeling of reciprocal confidence between landlord and tenant. But at the same time I do not hesitate to say, though I have not a single lease on my estate, because it is not the custom there, that if any tenant of mine did say to me that he would feel his character exalted by having a greater permanency of tenure—that it would induce in him a greater disposition to embark his capital in cultivation—or that it would be more agreeable to him to have that permanency of tenure which a lease would give, I should hesitate very long before I declined to accede to his proposition (*cheers*); and therefore I state publicly, that if any tenant of mine signifies to me that he wants that guarantee of his full enjoyment of the benefits that may arise from the full employment of his capital, which a lease would give in preference to tenancy from year to year, on that representation being made to me I should be very much disposed to accede to his wishes. (*Cheers.*) At the same time, from the course which is generally pursued in

this part of the country—from the feeling of security which the farmer has, that advantage will not be taken by his landlord of the expenditure of his capital—for these reasons, I do not think it likely that any such application would be made *(hear, hear)*, and I need not say that I should rejoice to find that such a feeling of confidence existed; but, on the other hand, I should be perfectly ready to accede to the application if it were made. *(Hear, hear.)* Of this, however, I am confident, that unless there be that feeling of reliance on the part of the tenant, either by a lease or by a full confidence in the generosity of the landlord, a full assurance in some way or other, either legally or morally, that advantage will not be taken of his improvements, that neither political differences nor any other cause will be allowed to disentitle him to the benefits derivable from the capital he may expend—I am certain, I say, that unless this condition be complied with, agriculture will not make that progress which I consider to be essential to the best interests of the country. *(Cheers.)* Now, one word as to the condition of those who are immediately occupied in the cultivation of the soil. I think it is impossible not to see that it is of immense importance to the possessors of property that the farm labourer should have a deep interest in the soil. *(Hear, hear.)* The question was agitated last session with reference to the policy of allotments to farm labourers, and much important evidence was taken upon the subject before a committee of the House of Commons. I have read that evidence, and the impression on my mind, whether in a political or a moral point of view, is in favour of allotting to the respectable labourer on a farm such a small portion of land as would afford occupation to the vacant hours of himself and his family, and give him an interest in the soil common with the great proprietors. *(Hear, hear.)* I do not know a better occupation for the few leisure hours he has to devote to the superintendence of his family than the attention to a small portion of land for the increase of his means of subsistence. The committee of last session fully investigated the subject; and as this is a practical meeting, and as I hope we shall long continue to meet for practical purposes *(hear, hear)*, I will read to you the conclusion to which the committee came. They say—"Your committee cannot conclude their report without pressing upon the attention of the House, and of every landowner, this method of fulfilling the duty which they have to perform towards a class less fortunately situated than themselves, who have no landed property fenced round and protected by acts of Parliament, but whose whole property is in their labour, constantly, though unavoidably, interfered with by improvements in machinery, changes of fashion, alterations of duties, and various other causes producing distress and misery, against which the most prudent cannot guard, but which the possession of a garden allotment, your committee have abundant evidence to prove, tends most materially to alleviate. They would therefore urge upon such landed proprietors as possess property where allotments could conveniently be provided, to give every facility for the purpose; and upon all those having rights in unenclosed lands in the neighbourhood of towns and villages where an enclosure is contemplated, to unite in setting aside some portion of them to effect this object, the advantage of which your committee are of opinion that no one, whatever his previous opinions may have been, will fail to appreciate after a perusal of the evidence which is appended to this report." I am now speaking of farm labourers only, and not referring to those in towns and villages; and I must say, as far as my experience goes, limiting the quantity allotted to what may be cultivated by the labourer and his family—not converting him into a small occupier of land, but giving him only a garden allotment—that I consider such a system of allotments would have a great tendency to raise the moral character and increase the happiness of the class of farm labourers. *(Cheers.)* Attention to the condition of the labourer will do more to raise these institutions in general estimation than any improvements we can make in machinery or in stock. *("Hear, hear.")* You who have witnessed the scene of the last quarter of an hour, who have seen respectable labouring men called forth to receive prizes for their good conduct—cannot have seen it without feeling that these institutions have a tendency to strengthen the bonds of connexion between the tenant and the landlord. *(Hear)*. Gentlemen, if my life and health are spared, I shall have the satisfaction of presiding at your next meeting. *(Cheers)*. Meetings of this kind have a great tendency to remedy one evil under which the agricultural community labour. From the extent of your farms you live separately, and do not possess those means of meeting frequently and of profiting by mutual intercourse which are possessed by persons in the manufacturing districts. These meetings bring you together in unrestrained and free intercourse, and tend to destroy that unhappy prejudice among farmers that the particular course of agriculture pursued by each is the best. *("Hear," and a laugh)*. Why, there was not a competitor here today who did not leave home under the perfect conviction that his beast was the best. *(Laughter)*. I myself participated in that delusion when I left home, but I found out that I was unsuccessful. *(A laugh)*. So with the farmers generally. When they come to these meetings they see better beasts than their own; and they go away with the opinion that they have not yet arrived at the utmost limits of success, but that increased attention will lead to more improvement. *(Hear, hear)*. I hope all who have been successful this day will strive to maintain their position next year, and that the unsuccessful will try to deprive them of the advantage they have gained. I do hope, gentlemen, that I shall have the satisfaction of meeting you again next year. I am afraid that from the occupation of my time, and my want of experience, I shall not be able to give you so excellent a lesson as my noble friend has delivered to you this day; but this I can assure you, that I shall equal him in the desire to promote the prosperity of this institution, and that there is no one, however versed he may be in practical agriculture, who feels, whether on private or on public grounds, a more sincere desire than your vice-president entertains to see the agriculture of this country so prospering that it may improve the condition of those who pursue it, and add to the strength and resources of the British empire. (The right hon. baronet sat down amidst loud and general cheering).

The noble PRESIDENT next gave "The Members for the County." *(Cheers)*.

Lord INGESTRE said it would ill become him, after the speeches to which they had just listened from their noble president and vice-president, to detain the company with many observations; but, as one of the representatives of the county, and he hoped he might also say as the representative of that company, he begged to express his thanks to the right hon. baronet for his attendance on that occasion.

(*Loud cheers*). It was, indeed, a most gratifying sight to witness in this free country, as they then did, the right hon. baronet, at the head of affairs, surrounded by all classes and by all parties, endeavouring by his presence and by his counsel to promote the best interests of their common country. He thanked them most sincerely for the honour conferred upon the members for the county.

Sir R. PEEL then rose to propose "the Health of Earl Spencer, and the Royal English Agricultural Society." If his noble friend had not so fully and ably stated the circumstances under which that association was formed, he might have attempted one or two observations. It was true that he (Sir R. Peel) did most zealously co-operate with Earl Spencer in the formation of that society. Little praise, however, was due to him (Sir R. Peel) on that account, for no one who had watched Lord Spencer's public life could possibly entertain any other feeling for him than that of esteem and attachment, and a deep conviction that there was no other nobleman or gentleman in the country to whom British agriculture was more indebted. That society might fairly be called the parent of those other local ones which had followed its example. When the services of Earl Spencer to agriculture were considered he felt sure that they would receive with particular satisfaction the health of a nobleman who might almost be looked upon as the founder of this society. The right hon. baronet then proposed the toast with three-times-three, himself leading the cheering.

The toast having been drunk with loud cheers,

Lord HATHERTON then proposed, "The Health of the Members for the city of Lichfield."

Lord LEVESON said, as one of the members for the city of Lichfield, he returned thanks for the very kind manner in which his health had been drunk in conjuction with that of Lord Alfred Paget and he begged to assure the meeting that the circumstance of his lordship being in a distant part of the country alone prevented his being present that day. He (Lord Leveson) did not presume, in the presence of so many competent judges to offer a decided opinion upon the excellence of the stock exhibited that day, but it afforded him great pleasure to state that every time he attended that meeting, in his mind great improvements invariably took place. He would not allude in any way to politics, but he must say that no one could witness without rejoicing the noble lord the president of the association, who had been a whig member of parliament and a distinguished member of a whig administration, uniting with the right hon. baronet, the prime minister of England, the head of a conservative administration, to support the interests of agriculture. (*Hear*). Although the breeds of whig and tory were very different, yet all must agree that when they met for one common object, and in social intercourse, the cross was always attended with the happiest results. (*Laughter*). He had been requested by the committee to propose "Protection to the agriculture, manufactures, and commerce of the country." He felt great pleasure in doing so, because he was convinced that the prosperity of each was inseparably connected with the other. He had frequently been told that the plough and the steam-engine were natural enemies, but they had that day witnessed the contrary; they had seen steam engines working agricultural implements, and whilst they did so work together, England would maintain that high position in the scale of nations which she now held.

Lord HATHERTON proposed "the Health of the Honorary Secretary," which was drunk with applause.

Mr. CHAWNER returned thanks.

The usual agricultural toasts followed: "the Judges," "the Committee," with "the Yeomanry Cavalry," "Sir Francis Lawley and the Farmers' Clubs," and the noble chairman and the right hon. baronet left the table about 9 o'clock. The company then broke up.

ON THE PREVAILING DISEASES OF THE POTATO.

In the "Farmer's Magazine" of July last, in reading the report of a meeting of the Probus Farmer's Club, I met with a paper written by Sir Charles Lemon, Bart. (and read at that meeting), on the subject of an unnatural and morbid growth of the potato plant, which paper, it appears, created a good deal of discussion amongst the members of the club, without leading to any satisfactory conclusion on the subject, as to the real cause of the evil now complained of.

During the last quarter of a century I have paid some attention to the growth, and have also had a good deal of experience in the cultivation of the potato, and have myself more than once had defective crops from the disease complained of, the cause of which I believe I traced to its origin at the time; therefore, considering the importance of the subject, I without further preface tender my experience and opinions on the cultivation and growth of the potato, and the cause of the disease now so prevalent.

My opinions with regard to the origin of this disease are certainly in some respects at variance with those of Sir Charles Lemon; but, at the same time, I certainly incline a little to the opinion of the other gentleman that Sir Charles alludes to in his paper, and who believes that "potatoes have degenerated and are degenerating," because I think that of late years the potato plant is, on an average, less hardy, strong, and healthy, than it was twenty-five years ago. But yet I believe, by proper attention to the cultivation of the potato, there is still very little to be dreaded, in an average of seasons, from the disease alluded to—viz., "bobbin Joans," which disease Sir Charles Lemon describes as follows:—"When the ridges are dug up, it is found that these abortive sets have formed each a little button, about two or three inches from the surface, and, as it were, gone to rest after the effort." The cause Sir Charles supposes to be, in some instances, planting at too great a depth. Now in this respect I beg to differ from Sir Charles, as I fancy that more crops are injured for want of depth of soil upon the sets, than by having too great a depth. And, in support of this opinion, I may here remark, that in the early part of my life, when it was the general custom (in my neighbourhood, at least) to plant the potato sets at the bottom of the rows, and lay the manure upon the sets, I cannot call to mind a single failure from disease of this description coming under my notice; but subsequently, when less expensive methods of planting the potato became prevalent, and the manure was first put in the rows and the sets planted upon the manure, I have frequently observed partial failures in the crops, and in many instances, I believe, from no

other cause but want of depth of soil upon the sets, but more particularly in droughty seasons.

The most extensive failures from this disease I have no doubt arise from the evaporation of the juices of the potato, when cut for planting, by being in many cases too much and too long exposed to the sun and air in a dry atmosphere previous to being planted, whereby the juices or life-blood of the potato are so far absorbed and exhausted, that it has not sufficient strength left to produce natural vegetation, and hence the disease spoken of. The same evil may arise in dry weather, by leaving cut potato sets that are planted upon the manure too long exposed to the sun and air before being ploughed in; and here I may name an instance in which I had a small portion of my potato crop injured from the last-mentioned cause.

One season, some years ago, I was later than usual in completing my potato planting; it being then in the early part of May, it happened that part of my men were at the hirings, and being myself from home also, about half an acre of potatoes was that day cut and planted upon the manure, but in consequence of the men's absence were left unploughed-in until the next morning, and were thereby too long exposed to the air (it being sunny weather), by which means both the potatoes and the manure were much dried before being ploughed in. The consequence was, that not more than one-third of the plants came to anything like perfection; the other two-thirds — part of them never grew at all, but died of what is called in this neighbourhood dry rot, and the remainder was not able to reach the surface, and formed "bobbin Joans." Now, in this case, I believe that a great portion of those which came to perfection were of the small-sized potatoes, which were planted without cutting, and by that means they had not suffered materially by exposure; and therefore I think this circumstance goes far to show that it is the safest way to plant (particularly in a late season) such sets as do not require cutting at all; but when this cannot be done, it is certainly then very important that care be taken that the cut potatoes are not much exposed to the drought after being cut; and when planted upon the manure, the rows ought to be closed before the juices and moisture have time to evaporate from the potatoes and manure.

When potatoes are planted in March or April, in soils adapted to their growth, and where the land is properly drained, cleaned, and cultivated, the sets of a proper size planted whole at the bottom of the rows, and the manure laid upon the sets, and the plants afterwards properly cleaned and cultivated during their growth, I should say that on an average of years a fair good crop may be expected. And, in fact, this is the system under which I have in every case, without exception, had the greatest crops, and which I consider decidedly the most sure method for obtaining a strong and healthy crop that I know of, and which I never knew to fail.

Planting potatoes under the manure requires certainly a little more labour, and cannot always be proceeded with so rapidly as when planted upon the manure, but the difference and certainty of the crop will at all times amply repay for the extra trouble. My method when planting under the manure is this:—I generally contrive to have the planting progressing in two different parts of the field at the same time, so that the planting and manuring is going on in one place, whilst the rows and manure are preparing in the other. It is necessary, in the first place, to open and plant as many rows at one time as the manure can be conveniently thrown over—say five, six, or seven; then the manure is laid in heaps from the carts along by the side of these rows, sufficient for the purpose, the potatoes being then planted in the bottom of the rows; a man then throws the manure upon the rows, which is immediately spread pretty evenly along the rows upon the sets, by women employed for that purpose. In the mean time, other rows are made, and manure laid in the other part of the field, as before stated, so that the planting is next proceeded with in that part, whilst the last planted rows are closed, and others prepared adjoining them.

The method I adopt for obtaining sets which do not require to be cut, is, when gathering those potatoes which I intend for seed the following year, I direct part of the gatherers to proceed first and to gather all the potatoes that are too large for sets to plant whole, and to leave all the smaller-sized potatoes behind; then the remainder of the gatherers follow, and gather up all those intended for sets, which I then have tied up in the field until the following spring that they are wanted for planting. By this method a little more time is certainly required, yet upon the whole it is a saving both in labour and seed, as there is the labour of cutting saved, and those smaller-sized potatoes go further for seed than the same bulk of large ones when cut.

Although I have here advocated the planting of such potato sets as do not require cutting, yet, so far as I have individually been concerned, I have found that in the early part of the planting season, when planted under the manure, cut sets have with proper care answered very well; but as I have a greater dread of failure in the crop by cut sets bleeding to death, as it were, than from any other cause, I consider that in a late season cut sets ought to be very carefully used, and are certainly not so sure as when planted whole.

I have now given a general outline of my experience, practice, and opinions on the cultivation of the potato; and, as it is a subject of considerable importance, should any explanation be requisite with regard to anything said in this paper, I shall be glad to give it on application.

THOMAS DIXON,
Agricultural Engineer and Land-surveyor.
Darlington, 28th Sept., 1843.

ON THE DRILL HUSBANDRY OF TURNIPS.

BY BARUGH ALMACK, LATE OF BISHOP-BURTON, YORKSHIRE.

(Concluded.)

(From the Journal of the Royal Agricultural Society.)

IV.—*The Distance between the Rows.*

I find it is now more common with some of the best farmers in the neighbourhood where I lived to have the rows of white turnips on level at twenty-two inches asunder, "because they are better to clean:" that is, any common ploughman may scuffle them at twenty-two inches, whereas it takes a choice workman to do them at eighteen inches, especially if the rows are not quite straight.

I had for several years a servant who was at that time considered the best leader of a drill horse in the county (although I have since known three or four equal to him), and I had therefore little difficulty in getting the rows properly scuffled or horse-hoed, although only eighteen inches apart. I considered I could, when the soil and the seed were favourable, get very nearly, if not quite, as good turnips *in each row* at eighteen inches asunder as at any greater distance, supposing the quantity of manure *per row* to be equal. I have seen no good reason for changing that opinion; indeed, experience has confirmed it. I was once induced to try part of a field with rows on level at about twenty-seven inches apart, using the same quantity of bone manure *per acre*—that is, more per row in proportion to the greater distance they were apart. When the sheep had eaten all the turnips in the field, I asked the shepherd what he thought of the wider rows; he replied, "he did not like them at all, he had his nets to remove too often." This observation coincided with my own opinion of the crop.

As a proof that on some soils and in some seasons, white turnips may be got as large as it is desirable to have them for sheep, with the rows only eighteen inches apart, I have occasionally seen crops sown at that distance which were said to have only one fault—they were "rather too large for sheep." This case, however, would seldom occur. Some *species of turnips* have larger tops than others, and some soils will, *from the same seed*, grow larger tops than others; different manures also have each their peculiar effect in this respect. The larger the top of the turnip is likely to be, *from the nature of the soil*, the greater will be the space requisite for bringing the bulb to perfection. The large turnips obtained by eighteen-inch rows, before alluded to, were only seen on some particular fields, and always on soil and from seed peculiarly adapted to prducing small tops and large bulbs. Thus it is necessary to take every peculiarity of soil, manure, and species of turnips, into consideration before we can properly decide at what distance the rows ought to be. Of course we must bear in mind the particular purpose for which the crop is wanted; for where turnips are intended to be drawn off for cattle, it may be desirable to have them larger than when for consumption on the land by sheep. For details applicable, in consideration of this subject, I beg to refer to my calculations as to the comparative size and value of turnips of different diameters when speaking of the hoeing.

Some think that turnips drilled on level cannot be horse-hoed at all; and, as the difficulty certainly increases as you diminish the distance of the rows from each other, it may have been in some instances desirable to have the rows of white turnips more than eighteen inches apart. But, as there are now drills said to be adapted to make straight rows on level, with only common skill in the drill-horse leader, that difficulty may to a certain extent be removed. It has been said, also, that where the rows are wider, the sheep do not soil their food so much; but this disadvantage of eighteen-inch rows might be overcome by drawing every other row for cutting into troughs. However, it must be admitted that what may be good policy in some cases would not do in others, and that this will be considerably affected by the relative demand for labour, as well as by the abundance or otherwise of turnip land.

I had observed that, although swedes require deeper and richer soil than white turnips, this could not be the only difference they needed, because I *never* saw good swedes grow near a high hedge, although, by the sheep lying there, &c., the hedge-sides are generally the richest part of the field. On the other hand, if you sow white turnips they will be larger as you approach the hedge—as *a consequence of the richer soil*—just about in the proportion that the swedes become smaller *notwithstanding the richer land*, because, as I concluded, they require more air than white turnips. I therefore used to drill the swedes in rows about twenty-seven inches apart, whether on level or ridge. For the reason above given, I used to sow the *outsides* of the fields, especially where the hedges were high, with *white* turnips, thereby gaining an immense quantity of turnips, which, from the richness of the soil, could all be spared for drawing off and consuming elsewhere, from land which, if sown with swedes, would scarcely have had any produce.

I observe Mr. Grey, in his able report of the state of agriculture in Northumberland, says—"Swede turnips, with dung, are sown upon drills of the width of twenty-seven inches from centre to centre, and white turnips on drills from twenty-eight to thirty inches, with bone manure; and, for spring food, a width of twenty-six inches is sufficient." From this there appears reason to suppose that the farmers of Northumberland think white turnips require more room, in order to attain the proper size† (I will not say the heaviest produce per acre), than swedes do.

My own opinion I have already given. I fully agree with Mr. Grey in the following passage:—"A large weight cannot be produced but from large bulbs. A moment's consideration will show that the last inch in the diameter of a large turnip will of itself be equal to several small ones: even in this, however, a medium is to be observed; for very large turnips, if not consumed early, do not stand long, and are inferior in nutritious quality." I would also add, this deterioration in quality, as the size becomes large, is *much more observable* in white turnips than in swedes.†

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† Because, in Northumberland, if the season be favourable, the white turnip throws out so much top that the extra space is required both to admit a sufficient supply of air and to give room for the growth of the bulb.—JOHN GREY.

† As the Society wish to know the different modes of cultivation employed by practicable farmers in considerable districts, I here beg to draw their attention to G. in my schedule. This gentleman lives between Brigg and Barton-on-Humber; he is acknowledged to be one of the best farmers, if not the best, in the county of Lincoln; and his name may readily be known to any one travelling that way who will enquire for him by my description. In his letter to me of February 21, 1842, accompanying that return, he says, "I have filled up your schedule according to the customary mode of turnip husbandry practised by me and most agriculturists in this neighbourhood. I dare say you will be surprised at my remark respecting drilling so near as fourteen inches; but I am of opinion that, where the same quantity of manure is applied, as great a weight per acre may be produced, and they will be much better food for sheep. Still the distance is objectionable on account of not being able to use the horse-hoe."

V.—The Manner of performing the Hoeing.

In considering how turnips ought to be hoed, it is necessary to bear in mind the following three points:—

1st. At what distance from each other *in the rows, under their circumstances as to manure*, &c., turnips in rows any given distance asunder would attain the largest size per turnip?

2nd. How far a greater number of turnips in the rows may make up for their being of smaller size?

Turnips, considered as spheres or balls, are in proportion to each other as the cubes of their diameters.

That this point may be more generally understood, I will show in figures the comparative solid contents of nine turnips, whose diameters are, 4, 5, 6, 7, 8, 9, 10, 11, and 12, respectively:—

	4	5	6	7	8	9	10	11	12
	4	5	6	7	8	9	10	11	12
	16	25	36	49	64	81	100	121	144
	4	5	6	7	8	9	10	11	12
	64	125	216	343	512	729	1000	1331	1728
Solid Contents.	33½	65½	114	179½	268	381¾	523½	697	904¾

Where the diameter is doubled, the solid contents of the turnip are increased eightfold—512, the cube of 8, being equal to 8 times 64, which is the cube of 4; and 268, the contents of the turnip, being also 8 times 33½. Where the diameter is trebled, the size of the turnip is increased 27 fold—1728, the cube of 12, being equal to 27 times 64, which is the cube of 4. Thus a turnip which is 8 inches across, is equal in bulk to *eight* turnips which are only 4 inches across, and a turnip 12 inches across is equal in bulk to *twenty seven* turnips which are 4 inches across.

3rd. At what size turnips afford the greatest nutriment to the animals which consume them in proportion to their bulk?

It is well known, that white turnips degenerate in feeding qualities when they get beyond a certain size, especially if not consumed early; therefore our attention must not be devoted to size only, in growing them, although it is very desirable to attain as much bulk per acre as is consistent with good quality.

Where the young turnip plants are very thin in the rows they may easily and readily be singled by the hoe alone; but, where turnips are very thick in the rows, it is desirable, if not actually necessary that singlers should be employed. A man, with an active boy or girl, of about ten years of age, singling after him, will do in this case quite as much work in a given time as two men, equal as hoers, where they single their own plants. I have often heard this stated by good turnip-hoers; and in proof that they believed the advantage of singlers even greater than I have stated, I have seen men take it in turn to single after each other early in the morning, before their children arrived in the field, although, from the length of a man's back, he would much rather hoe than single. A child that will attend to proper directions, may single turnips quite as well as a person fully grown; and indeed any increase of size tends to disqualify for the work. In all rows of turnips, some of the plants *from the first* take a decided lead of the others, and the difference would daily increase. Therefore the hoer must not be *too* particular about leaving the plants at regular distances; but take out those that are decidedly marked as dwarfs, even if he makes a space of two or three inches beyond what would otherwise be desirable, and for the same reason he must in some cases leave the plants nearer together, rather than go to the usual distance to leave one much inferior. The same reasoning will apply in singling, and the child should have directions accordingly. Where the hoeing is done by men, with children following them to single the plants, the hoe ought to be rather shorter than when each sets out his own. Therefore, if the average distance required is 10 inches, a hoe of about 8½ inches in length will be sufficient, and that is the common size in the district I more particularly allude to. I think that where this average distance is not adopted, a greater would be more desirable than a less space, especially for Swedes. The hoe requires drawing through the plants just below the surface of the soil, with a firm and steady hand; for if the "chopping" system is followed, the work will be imperfectly done; in some places the soil will be removed too deeply, and probably the manure along with it; and in others the plants intended to be removed will be imperfectly cut, or taken off above the ground, and after a few days they will so far recover as to seriously impede the growth of those intended to be left single. The singlers should take hold of the very best plant left by the hoer with one hand, and with the other draw out all the plants adjoining it. The holding with one hand will generally secure the choice plant intended to be left. I am quite convinced it is much the best plan to have turnips as well hoed as possible the first time over. They are never afterwards so good to set out singly at proper distances. If the land is clean, and the turnips have been well hoed once, it is of comparatively little importance whether they are "run over" again, except that the breaking of the soil about the plants makes them grow more rapidly, whilst those not properly singled, the first time of going over, soon smother each other, and then are in a worse state than ever.

I have heard, from very good authority, of turnips having cost a guinea per acre in hoeing three or four times over; and, *after all*, my informant and I thought them a much worse crop, *through bad hoeing only*, than they would have been if well hoed only once over, which they might have been for 7s. per acre. A few years ago I used to get 18-inch hoes well hoed once over for 6s. per acre; but the price of labour in the district of which I am speaking has since increased at least one-sixth.*

The cost of hoeing turnips is of course in proportion to the distance the rows are apart; and the manner in which the first has been done will regulate the cost of the succeeding hoeings. Of course the land must be made perfectly clear from weeds at this stage, if that has not been accomplished before.

* The prices named here for hoeing once over will no doubt be considered very high; the reasons why they were given were—

1st. The wages of agricultural labourers are higher in that district than in most others.

2nd. The turnip-seed being sown very thickly, for the reasons already stated, the turnips were proportionably worse to hoe.

3rd. The farms being large, and at a distance from any village, the turnip-hoers lost nearly two hours daily in walking to and from their work.

4th. From being determined to have the work performed as well as possible (which I maintain will be found good policy), it was necessary to give liberal prices in order to command at all times a sufficient number of good workmen for the great extent of turnips sown.

General Observations.

Having endeavoured to describe the drill system of growing turnips, as now practised by some of the best farmers on the wolds of the East Riding of Yorkshire, I will point out some of the effects of this system as increasing the produce of the land in that district, and employing its industrious population.

Within the last forty years the wolds of Yorkshire were considered as quite unfit for the growth of wheat; but now they grow fully as good crops of wheat per acre as the average of the kingdom. As a sample of the change in this respect, a friend of mine sold the late occupier of the farm B, mentioned in the annexed schedule, wheat for the use of his family, because that farm would not then grow wheat, or rather because it did not then grow sufficient, for the use of his family. Both the parties I allude to lived to see that farm grow wheat, 100 acres together, which was supposed by the best judges to have five quarters per acre. This was told me by the individual who sold the wheat, and who had afterwards seen the beautiful crops I have described. I do not say the farm grows, on an average, five quarters per acre, but the crops of wheat on it will generally be found decidedly above the average of England; and all this resulted from *high* cultivation, *long* continued.

There are several farms in that district now producing excellent crops of corn, &c., which only a few years ago were rabbit-warrens; and others, which, during the same period, have changed from sheep-walks (that is, land on which a few sheep would barely exist until two or three years of age, and then fetch a trifling price) to good corn-land, in addition to the well-known fact, of their now keeping about as many sheep as before, which are generally *sold fat* when shearlings.

It might be unbecoming in me, a party interested, so far as the credit of my native county is concerned, to put forward statements merely as my own opinion, therefore I will not only give the opinions of others, but afford my readers an opportunity of judging for themselves what the sheep of those wolds are at the present time. On the 25th September, 1839,* at Weighton fair, I heard a very intelligent Scotch gentleman, who farms extensively in the East Riding, and who is himself well known to possess an excellent breed of sheep, say that he thought it probable that there were not in the whole world 200 sheep of the same age in the possession of any other person so good as the 200 wether shearlings belonging to Mr. ———, which he was pointing out. The observation was worthy of more weight as coming from one who certainly seemed to have no reason for speaking more highly of what he saw there than he really thought. It was not addressed to the owner of the sheep, nor to any of his particular friends, but in the open market. I will not say here that I thought the gentleman might be right; but I will venture to say that, if any of my readers see the sheep shown by Mr. —— of B—— B——, and Mr. —— of G——, at Weighton fair, they will probably find them such as would be difficult to match by 400 *of the same age in the possession of any other two individuals.* I know that the average price for the last four years at which one of these parties has sold his 200 wethers yearly (they then being about 17 months old) has exceeded 65s. per head, and that they were supposed to weigh from 30 to 33 lbs. per quarter each. I am aware that much confidence is not placed in supposed weights, therefore I name what was under the average price.

Another consequence of the rapid improvement in agriculture in that district is, the comparatively high price of labour. I think I am justified in saying, there is no other district in Britain where the wages of good agricultural labourers are so high as in the East Riding of Yorkshire. Many men are now employed there who have come from other parts of the kingdom; but at first they have to take lower wages; simply because they are scarcely ever worth so much as those trained there. Large farms are common in the East Riding, and they afford the occupier opportunity of selecting men for each particular kind of work, according to their peculiar qualifications for it. Thus on such farms each kind of work may generally be seen executed in a superior manner. By having good examples generally before them, the men are more likely to acquire a desire to excel in some particular part of their work; and, as soon as their master has observed a decided superiority, he will take care to afford all the opportunities he can for practising. I have been told by persons in different parts of the country, that they ridge at 27 inches apart, merely because they can then use the horse-hoe. To such I would only further say, I have seen hundreds of acres of turnips drilled on level *as straight and at as regular a distance as I ever saw cabbage rows in gardens at Fulham*, and in consequence of that straightness as well horse-hoed or scuffled as possible at any distance although only 18 inches asunder,* Therefore they must not suppose that, because it is difficult, and they have not yet succeeded, none can accomplish it. Those who can lead a drill-horse well are almost sure to be good ploughmen, if they have had practice; but it by no means follows that excellent ploughmen could, if they chose, lead a drill-horse straight. The man who can walk straight with a plough to support him sometimes fails completely when he makes the attempt, not only without such assistance but with the drawback of having to lead a horse at a certain distance from him.

To lead a drill-horse straight on level land, with a common drill, requires a person with a firm, steady step, and who, of course, can walk perfectly straight. He must also keep his attention constantly on his work, and his horse at a regular distance from him. For this there is quite as great a difference in horses as in men. I have known instances where the drill-horse could not be relieved at his work by another without spoiling the appearance of the drilling, although there were upwards of thirty good plough-horses to choose from.

In gaining the experience on which the foregoing observations are founded, my maxims were,—"Observe thy neighbour's practice and the effects that follow it, whether he has the reputation of being clever or not. Above all, be cautious not to pin thy faith too closely to those who have the reputation of best knowing their business. Pay the utmost attention to what they do or recommend, that thou mayest SELECT *only such* of their modes as are suitable to thine own circumstances."

11, *Great George Street, Westminster.*

* Market Weighton is about nine miles from Beverley, on the road to York.

* I know several cases in which the horse walks in the 14-inch rows without leading, and without doing damage.—G. KIMBERLEY.

SCHEDULE.

County, &c.		Estimated Extent of Occupation.	Estimated Extent of Arable Land.	How drilled. Swedes.	How drilled. White Turnips.	Distance of Rows. Swedes.	Distance of Rows. White Turnips.	Time recommended to Sow- Swedes.
		Acres.	Acres.			Inches	Inches	
YORKSHIRE Wolds.	A.	1450	1300	Level generally.	Level.	27	22	From middle to the end of May.
	B.	1150	950	On ridges.	Level.	26	22 and 26	Last week in May.
	C.			Level.	Level.	26	26	About the 20th of May.
	D.			Level.	Level.	22	22	About the 14th of May.
Strong land or Clayey Loam.	E.	200		On ridges.	On ridges.	18	18	Last week in May.
Part strong land, and Part "carr" or fen-land.	F.	500		On ridges.	Does not grow white turnips on strong land. Level.	26	26	First week in June.
LINCOLNSHIRE. Wolds.	G.	1500		On ridges.	Level.	24	16	From May 25th to June 1st.
NORFOLK. Light gravelly soil.	H.		1000	On ridges.	On ridges.	27	27	In May.
SUFFOLK.	I.			Level, if light land, and to be fed off. Ridges, if to be carted from heavy land.				End of May or early in June; if heavy and cold land, earlier. If light and hot, not so early.
	J.							Middle of June.

SCHEDULE.

mended for ing.	Quantity of Seed per acre.		Kind of Manure.		
White Turnips.	Swedes.	White Turnips.	Swedes.	White Turnips.	
	Lbs.	Lbs.			
Last week in May to the 21st of June.	4 to 5	3 to 4	Bones, or farm-yard manure and bones.	Bones.	These two parties occupy similar land, each having about an equal proportion to the other of thin and deep soil. They sow part of the latter with rape, to be eaten off by sheep.
Last week in May to the 21st of June.	3	3	Farm-yard manure and bones.	Bones.	
From last week in May to 15th of June.	3	3	Farm-yard manure and bones.	Bones.	
Last week in May, and first week in June.	2	2	Farm-yard manure and bones.	Bones.	
Second week in June.	4 to 6	4 to 6	Farm-yard manure.	Farm-yard manure.	More stock is kept on this farm in proportion to its extent than on any other I know.
Second or third week in June.	2 or 2½	2 or 2½	Farm-yard manure with bones and ashes.	Bones and ashes.	This gentleman says he moistens the turnip-seed by rubbing it through the hands with fish-oil, afterwards drying it in the sun, or at a distance from the fire, which promotes early vegetation, and since adopting this plan never suffered from the fly. After hoeing and scuffling two or three times over, banks the turnips in the "carrs."
From the 1st to the 21st of June.	3	2½	Farm-yard manure, bones, and ashes.	Farm yard manure, bones, and ashes.	Formerly drilled white turnips 14 inches apart, with same quantities of manure, and got quite as good crops, but prefers 16 inches, as being better to scuffle and clean.
Third week in June.	4 to 5	4	Farm-yard manure.	Farm-yard manure.	
Early in July; if heavy and cold land, earlier. If light and hot, not so early.	3	3			
Middle of July.	3	3	Farm-yard manure.	Farm-yard manure.	Mixes sulphur with turnip seed (about 1lb. to a peck of seed) "to prevent jacks or flies." His land is generally low, near the river Stour, and on gravel. If sown earlier than the times stated, the turnips become mildewed.

ON DRAINING.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I have not been in the habit of seeing my name appended to remarks of any sort, or upon any subject, in print; but latterly having had a good deal of leisure time upon my hands, more from necessity than choice, I have just completed a work upon draining, which I trust when published will have the effect of placing this subject in a very different light to what it has yet been viewed.

That it is a subject requiring in the present day the most serious attention on the part of landlords, but that it is of no use their attempting to drain unless they follow the advice laid down by my friend Mr. West, of Collingham, in your number for June, and appoint proper persons, not only to set it out, but also to superintend it and see that it is properly executed—that it has been one universal system of blundering, few men (that is, practical men) can deny. Thousands of tiles have been used, and tens of thousands put into the land, which, if cracked up and laid upon the roads leading to some of the strong-land farms, would have enabled them to get to their land, and would have been of more benefit to the farmer in making his roads good, than placing them in the land in the manner which they have been for the purpose of drainage.

There are exceptions to this system of blundering, and it is well there are, and there are also scores of parishes that have been drained under the direction of practical men—parishes which I could name, where, thirteen years ago, not one in the whole number of farmers could pay a year's rent, and which have within the last few years been able, from the effects of drainage upon their land, to pay the half or whole year's rent when it became due. I knew of one parish of strong clay land, about twelve years ago, where the agent attended to receive the half-year's rents, amounting to more than 1,000*l.* for the half-year, and did not receive over 300*l.*, not because they did not attend, but because their crops were so deficient that they had not the money to pay with; and since then, by drainage and improvements (not by changing the tenantry nor lowering the rents), they have all been able to pay at the regular half-yearly rent-days. The land is improved; the crops are improved; and each succeeding year, as it brought more grain into the stack-yard, was the means of carrying out an additional quantity of manure, which the land wanted for the growth of the next year's crop. Why this, of itself, speaks volumes for draining when it is requisite, and should act as a stimulus to noblemen and gentlemen to proceed with it immediately.

It is stated that there are at the present time ten millions of acres which require draining—an immense quantity, certainly. If one-tenth of this can be done in one year, and by so doing it will produce one million quarters of corn more than it has done, we shall want to purchase just that quantity less from our neighbours on the continent, and so keep our gold at home. This one quarter may be as much as any reasonable man can expect in the first year, unless the land is in very good heart; but if (and I hate the word if), for I have seen land produce two quarters more after it has been drained, why at that rate five hundred thousand acres would produce the like quantity in one year, why then it would require a space of twenty years to effect the entire drainage of the country. Look what an immense opening is here for labour and investment of capital—safe, secure, and certain; for where is the investment so secure as in land? Where does the great capitalist, the merchant, the manufacturer, the retired physician, surgeon, lawyer, or tradesman, invest his spare money? Why, whenever he has the chance, in land. They may talk as they will about the corn laws, but here is always something to look at for their money.

But, to return to my subject—if landlords would adopt one universal system with their tenants, by fixing them at fair rents to begin with, and make up their minds to lay out so much each year in improving their estates, and more particularly draining. By fair rents I mean a rent put upon the land, which the practised valuer having to put on, would, if the farm was to let, agree to take it at; and then, when any real good and substantial improvement was effected by drainage, and no notice had been taken of it in valuing, a per centage of 5*l.* or 7*l.* upon the amount expended might be added to the rental, according to circumstances. If this plan were adopted, there would then be no necessity for a change every now and then in the rents; the landlord would have a secure and certain rental; his estate would be gradually improved; there would be no necessity for these returns of 10*l.*, 15*l.*, and 20*l.* per cent., which gives the landlord a fictitious rental, and, taken as a whole, benefits the farmer in a very trifling degree. But I shall reserve for a future occasion any further remarks on this subject.

And next, let me ask, who are the parties who have been selected to overlook estates, and have committed the majority of the blunders which have been made in draining? the answer will be found at page 185 of the Magazine for September, 1843; and there can be no doubt that it is quite as essential for a man to learn the profession or routine of business of an agent or steward, as it is for him to learn physic, law, or divinity, or any other trade which he may wish to follow; and this is not learnt by sending a youth to a gentleman to drink wine and ride a good horse to market two or three times a week for a twelvemonth, but he must be taught his professional duties amongst the farmers themselves. He must be brought up a clerk to an agent or surveyor, and he must have his eyes open to everything; for there is nothing too much for him to know; and his ears open to the farmers' best interests; and by so doing he will be best fitted for the duties of his office, when it should please Divine Providence to place him in that position. And when he studies the farmers' interests, they are those of his employer as well. Both row in the same boat. When once they are fairly afloat together, it is as much the interest of the landlord to look to the tenant's welfare, as it is for the tenant to manage his land properly. The landlord cannot live without tenants; he could not farm all his land himself, and he therefore improves his property by the industry and skill of his tenant, who has likewise his capital, though smaller, invested in his farm.

I have been led away in making the above remarks, in consequence of seeing men appointed very often to look after estates, who, beyond the collection of rents, know nothing about the way or mode in which land may or can be improved. How many instances might be enumerated in draining, when, beyond giving the tiles and paying

the bill for them, the agent has known no more of the plans which have been adopted in drainage, as to width, depth, distance apart, the sort of tiles used, whether put into all sorts of soil, and whether flat tiles have been used, or it was necessary to use them, than the man in the moon. I say, beyond the tile bill at the rent-day, he has known nothing at all about it.

And is this the system to be pursued to secure a proper and efficient drainage? Why, it would be as likely that a man should undertake to bottle off the Trent, as that, under so many indifferent, and ridiculous, and mismanaged ways, the work can be done properly.

But, in addition to these, we have those in the field who have given out that one description of draining will do upon all descriptions of land. I defy the author of this, or any other man accustomed to draining, to prove this assertion. This description of draining, known to scores of farmers as furrow draining, or shallow draining, is now called thorough draining—a corruption of the word furrow into thorow or thorough, which any one conversant with farming has heard over and over again used by farmers and their servants in the eastern counties. And then we have stones recommended to be used in three different ways —by rearing against the sides, by being placed against each other, and by filling up a portion of the drain, when cut, with broken stones. Then we have sticks or brushwood, kidded; we have sods, turfs, or peat; wood drains, concrete drains, drains made with the mole-plough, and, last of all, with tiles.

I will only stop here to inquire of any reasonable man the effect which this sort of draining by stones, upon a light loam, with a light sand subsoil, would have in a few years? I will answer, that the porous nature of the soil would cause it to fill up the stones, and would render it as bad as ever. I have seen it on scores of acres, and pulled them up to make room for draining really intended to be beneficial and permanent. There is but one description of land where you can reasonably expect it to stand, and that is of a strong, retentive nature. It will not do upon soft clay; for the stones will sink in, and their value for drainage be lost.

I shall pass over the others, by stating that where you cannot get the materials proper for your drains, then use something for a few years, if only partially to drain it, so that you may derive some benefit. With the drain-plough a great deal may be done upon grass land, if strong clay, and will answer for several years; but it will not do upon a light soil, or where stones obstruct its course. The very fact of its driving an underground drain, is sufficient to satisfy any one that if the soil is loose, as the plough leaves it, it will sill up; but if it is clay, it will mould itself into the form of a tile. Upon arable land it is ridiculous, as, from constant ploughing in the regular course of husbandry, this would fill up firmly the open space left by the coulter.

There is but one safe, sure, and effectual way of draining, and that is by the use of tiles. There is but one way of shallow-draining land, but there are three separate and distinct modes of draining in this country necessary before it can be completely or thoroughly drained, besides the important one of having all the sewers and large drains kept sufficiently low to afford proper outfalls for these drains when they are completed. What are they? The first and most important is deep draining, for cutting off the supplies of spring water, by which large tracts of land are injured; and if filled with two feet or three feet drains at two yards apart, would not cure it; and where one drain, cut judiciously and carried out by a practical man with one or two working men accustomed to this sort of work, who have done it and know how to lay the tiles, which require as much skill and care in laying as the slates or tiles upon the roof of a building; and this description of draining will average in its progress (depending upon the outbreak of the water, and the depth it rises before it does break out) from six to twenty feet in depth; and even then, although perhaps the depth may appear great, will not be effectually removed without boring, as I have sometimes found that although a drain was ten feet deep, in the progress of the work that the water has been sixteen feet under the level of it, and yet has found some open measure where to break through and drown a whole range of land. So that description of draining is not perfect without boring; and to tell when to use the boring rod can only be by a practical man.

The next is bastard draining, upon low tablelands, where the soil varies very much, being black mould, black peat earth, or black sand, and sometimes a light hazel sand; the subsoil under it varying quite as much—sometimes yellow clay, blue clay, gravel, sand, mixed gravel and clay, white sand, red sand, and sand rock. This description of land is very full of water, sometimes arising from spring water underneath it, and at others from soakage water. The drainage varies from thee feet to six feet, and rarely exceeds this, on account of the fall requisite to carry it off; and this description of draining is very often incomplete without piping—that is, raising the water from below the level of the drain four or five feet, and passing it down the tile with the drain-water, and is only known to practical men.

The last is shallow-draining, for the purpose of taking off the top-water, or that which falls from heaven, which is kept on the surface by the strong and impervious nature of the subsoil, which will not allow it to percolate through the earth. Where the land is of this character, and for all shallow-draining, there is but one outfall generally required; as if there happens to be a part of the field where the water will not come at the depth of the drains, it will be necessary to deepen one of them perhaps more than the others, in order to bring all the water from the field out at one mouth. The outfall drain requires to be about three feet on the average, and the other drains from twenty to thirty inches. If the subsoil is strong, retentive clay, or stone shale, eight yards apart and twenty inches deep, will be sufficient. If the land is of a better quality, and the subsoil more open, it may be advisable to go deeper than this; but if you deepen the drains, let your lands be increased in proportion to ten or twelve yards apart: that which you lose by deepening may be gained in the distance apart. It is not requisite to put anything upon the tile but a small quantity of stubble, and then fill up the drain with the top soil, the clay being cast at the time of digging upon the land.

The limits of this statement will not allow me here to enter more fully into this subject, but having given each matter connected with the art of draining in my forthcoming work, what is here deficient will be fully described with prac-

tical illustrations, which I trust will be sufficient to convince those who take the trouble to read it that draining does not consist of theory, but practice; and that it is not every one who cuts a drain or suspects the cutting that is qualified to drain land. HENRY HUTCHINSON.

Walcot, near Stamford,
Sept. 19th, 1843.

P S. To your correspondent H. F. E., p. 204, some of the foregoing remarks will apply. To Filo, p. 225, I would remark that the land in his neighbourhood may be as completely drained and subsoiled as any other land, provided the water in the main or sewer drains is kept sufficiently low, so as to give an outfall for the shallow-draining, particularly the clay land; but if the water is allowed to reach within a foot or eighteen inches of the top of the land, and perhaps all round it to the same height, where would be the use of tile-drains? They would always be backed full of water, nor would it be at all practicable to subsoil it, being completely saturated with water. I should imagine the herbage is more likely to be destroyed from having too much than too little water; and it is no uncommon thing to hear parties talk of what land used to do, and what they used to get off it; and it is not often we hear of land being worse in quality, unless it is from mismanagement.

H. H.

THE WIRE-WORM.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In looking over the last number of your valuable magazine, I observe an enquiry by "A Subscriber to the Mark Lane Express," regarding the best mode of destroying the "wire-worm;" and now beg, with your permission, to communicate the result of an experiment I have made, and continued to adopt for the last three years, relative to this object, trusting that your correspondent, if he chooses to try my plan, which is a simple one, may have the pleasure of profiting as much to his satisfaction as I have done.

In 1840 we ploughed up a field in the Earl of Stair's Horne farm here, containing 56 acres of very old lea, which was sown with potato oats, and presented a very beautiful braird. In a short time, however, the young blade, in spots here and there, appeared delicate, became yellow, and soon died away. I suspected the cause, and, on making a search, found that the wire-worm prevailed to an enormous extent. Having heard of various cures, and known as often of their failure in eradicating this vexatious intruder, it occurred to me that the application of common rock-salt might be effectual in checking its ravages; and accordingly I took up a handful or two of earth from the field, which contained a number of the worms, and, on going home, I divided the earth into two portions, putting each into a small earthenware pot. With the one I mingled a small portion of dry salt—the other I moistened with a solution of salt and water. Both pots were secured so as to prevent the worms from escaping, and at the lapse of six hours I examined their contents, and found the greater part of the worms dead where the salt was applied *in solution;* and in the other case, a few were dead and the remainder lying close on the bottom of the pot, not one being found in the soil.

This experiment very naturally led me to believe that the application of a portion of salt to the ground would either destroy the wire-worm, or cause it to descend so deep into the earth as not to injure the tender roots of the corn. I therefore took a portion of salt to the field, and sowed a few patches in different parts, where the "cutting" was most severe, with a moderate quantity, marking of course where the salt was put on; and on inspecting the ground the following day, I found my supposition completely realized, the worms having descended entirely beyond the reach of the corn roots, and not a few of them destroyed. The success of this experiment induced me to purchase as much salt as dressed the whole field, at the rate of about 2 cwt. to the acre, after which the crop revived astonishingly.

In 1842 I adopted the same plan, as soon as any appearance of "cutting" was observed, and with like success. This spring (1843) we used salt as a top-dressing for all our oat-fields, at the rate of 2½ cwt. per acre, and with a very decided benefit; indeed, so much so, that several of his lordship's tenantry, who had an opportunity of noticing his fields this year, have resolved to make a trial of it next year on their own farms. I am much of opinion that salt ought to be more extensively used in an agricultural point of view than we generally find it to be, either as a top-dressing for white crops of every description, or in making up dung-heaps, in which, I think, it would be of special service, and might in this way prevent the destruction of both turnips and potatoes by the wire-worm, which, in many districts of the country, is not unfrequent.

I have also found guano to be a very effectual preventive for "cutting" by the wire-worm. For some years this insect was so very numerous and so very destructive in our kitchen-garden, that we could grow neither onions nor carrots. This season we tried a few yards with guano, and have succeeded admirably, not so much as one spoiled root having yet been seen.

If your correspondent has not yet used guano for raising turnips, I think he should at least give it a trial; and from my own experience this year, and from what I have heard of other people's experiments, I have every reason to believe that he will find in guano an efficient remedy for checking the ravages of the wire-worm, as well as a very excellent manure.

I have been more lengthened in this reply than may appear necessary, but trust you will go along with me when I say, that it is generally of importance that agricultural queries should be answered explicitly, and the result of any experiment fairly and fully given, that each may profit by his neighbour's experience, and that that reciprocity of sentiment should exist which is so useful and invaluable for the proper maintenance of society, as well as for the advancement of science, of which agriculture may now be said to be a prominent branch.

I remain, sir, your very faithful servant,

J. CRAWFORD.

Culhorn, 23rd Sept., 1843.

PROBUS FARMERS' CLUB.

(ABRIDGED REPORT.)

At the annual meeting of this club, which is the forerunner of all the other numerous clubs of the same kind in this county, the committee assembled at their regular meeting-room; and having transacted their business, at three o'clock upwards of forty gentlemen sat down to dinner. Mr. Tresawna occupied the chair, and Mr. Trethewey acted as vice-president.

After the usual loyal toasts were drunk,

Mr. WILLIAMS, the secretary of the club, at the request of the chairman, then read the report, which gave a brief but interesting statement of the proceedings of the club during the past year. It stated that the committee had to report an increase of members, and that the club continued prosperous. In the course of the year various subjects had been introduced by different members, and discussed. In January, Mr. W. F. Karkeek delivered a lecture on Agricultural Geology. In February, Mr. J. Davis read a paper on farm-yard manure. In March, Mr. R. Doble delivered a lecture on the sowing of rape as a preparation for wheat crops. At the April meeting, a report was read by Mr. J. Doble, founded on experiments made in 1841, at Barteliver, on the effect of manures on turnips. In May, a geological paper was read by Mr. Thomas Drew, the secretary of the St. Austell Farmers' Club. In June no lecture was delivered, the member paying forfeit, but several important subjects were brought forward by members and discussed. In July, a lecture was delivered by Mr. W. F. Karkeek on the brute creation. In August, being the harvest month, there was no meeting; and in September there was a discussion on practical matters. In October, Mr. John Hotten delivered a lecture on waste lands, in which he attributed the non-cultivation of waste lands to the want of more union between landlord and tenant. In November, a paper on the comparative merits of working oxen and horses was read by Mr. James; and in December the evening was devoted to making arrangements for the year ensuing, and £2 were voted towards the fund for the erection of a monument to the memory of the late Earl of Leicester (*loud cheers*). At the last general meeting of the club, in June, 1842, the balance in hand was £18 12s. 1d. The balance to-day waa £12 19s. 8d., the difference being accounted for by the deductions made last year in the subscriptions, and also through a large sum being expended in the purchase of books for the club. The prospects of the club were highly satisfactory, and the information obtained had tended to the general improvement of the members, both in the practice and science of agriculture (*cheers*).

The CHAIRMAN was very glad that the report just read had proved so very satisfactory. Although they had reduced their subscriptions from 10s. to 6s. annually, and had purchased a great many books, still they had a tolerable fund in hand, and were increasing in the number of their members. Several members had joined since their last annual meeting, and he hoped they should do better next year, and that the members themselves would make greater improvement in their farming than they did last year (*cheers*). There were members of other clubs present; he would therefore propose the prosperity of farmers' clubs generally, and in connection with that he begged to give the health of Mr. Drew, the secretary of the St. Austell's Farmers' Club (*cheers*)

Mr. DREW returned thanks. The farmers' club at St. Austell had followed in the wake of that at Probus, and had framed its rules, in a great measure, in conformity with those adopted by that society, so that they might fairly anticipate equal success. Many interesting discussions of a practical character had been the consequence of the formation of St. Austell Club, and great good had resulted from its establishment (*cheers*). He felt the importance of institutions of that kind, because he conceived they were most effectual means of drawing out the real wealth of the land, and bringing out its hidden riches; for it was only, he believed, by the application of art and science that they could obtain the greatest amount of production. He thought that the public must now see that agriculture was making great strides, and that it was daily progressing (*hear, hear*). At his club the members had not the advantage of having a chairman who was a practical agriculturist; but their chairman, Mr. Shilson, was equally zealous, and gave them as much of his time as possible. Their meetings had hitherto been on the Friday, which, being market day, was attended with many inconveniences, and was likely soon to be altered. He was happy in being a member of both clubs, and he came there not to impart, but to derive information. He was in the heart of a well-cultivated district—a district cultivated by men who were disposed to bring all improvements to the test of experience (*cheers*). The information he obtained there he should be happy to bring before his own institution, and by so doing he thought he should be best promoting the success of the St. Austell Farmers' Club (*cheers*).

The CHAIRMAN said they were very much indebted to a gentleman who had so kindly consented to give them a lecture to-day, and he would give the health of their very highly-esteemed friend, Mr. Peter (*cheers*).

Mr. PETER briefly returned thank, in the course of which he said he had been brought into the county to improve the course of agriculture among a certain class, and if he could render himself more widely useful, he should meet the wishes of his noble employer, and afford to himself the greatest gratification (*cheers*).

Mr. R. DOBLE said he rose to propose the health of a gentleman to whom they were most particularly indebted, he having from the commencement done his utmost for the club, and presided over it with great ability for the last four years (*loud cheering*). He had been unanimously elected their president for the ensuing year, and he (Mr. Doble) was satisfied that they had not a gentleman amongst them that could do his duty better than Mr. Tresawna, or keep the club in a state of greater prosperity; and he therefore begged to propose his good health (*drunk with great enthusiasm*).

Mr. TRESAWNA returned thanks. He said that their object in forming themselves into a club, and meeting once a month, was for the purpose of improving themselves in all the branches connected with agriculture; and he knew of no way in which they could gain the information so easily as by attending farmers' clubs, for here they had once a month some agricultural subject brought forward and fairly discussed, and the opinions of all the members were honestly given. Now he thought

that every unprejudiced mind must consider that this was an advantage that could not be gained out of a farmers' club; and he considered likewise that this was the least advantage that was to be gained from them, for in that club there was a library, in which they had the best publications on farming, breeding, and in fact on everything connected with the best management of a farm; so that they had not only the opinions of their own members on these subjects, but they had the opinions—and those by their firesides—of the best agriculturists in the kingdom *(cheers)*. He was glad to see present some gentlemen who, though they were not farmers, did not think it beneath them to be members of the club; and he thought that farmers' clubs generally deserved the support of all classes. And to whom, he would ask, ought they not naturally to look for encouragement and support?—("the landlords")—why to those who are the most interested; and who were so deeply interested in the prosperity of farmers' clubs as the great landowners? *(Loud cheers.)* He did not mean that the landowners should attend their monthly meetings, because their presence would prevent that free interchange of sentiment which was so absolutely necessary, and without which they might just as well stay at home. But what he meant by their encouragement and support was, that they might encourage them by becoming honorary members, and they might support them by contributing annually to their funds *(loud cheers)*.

Mr. W. F. KARKEEK then proposed "the health of Mr. Osler and the Press."

Mr. OSLER returned thanks in an interesting speech, in which he pointed out some of the benefits resulting from scientific knowledge in connection with agriculture, and dwelt upon the utility of the press in diffusing information with railway speed which would otherwise travel slowly.

Mr. KARKEEK then proposed the health of Mr. Trethewey *(great cheering)*, who was beloved not only by their club, but by the whole parish of Probus. He was looked upon by the young as a father, and he was honoured and respected by the old *(loud cheers)*.

Mr. TRETHEWEY said he must be stoical indeed, if he did not feel the full force and kindness of the observations that had been made with respect to himself, and he should be most happy to do all that he could to serve them. The inclement weather had rather disappointed him, for it was the intention of some of the members of the club to visit a little farm of his on the borders of that parish, to look at the effects of some of the artificial manures. He had prepared a tabular view to lay before them, the object being to show them the success of bone dust and other manures, as applied on that estate. He had shown in that tabular statement a number of enclosures that had been brought in and manured with lime, cropped with turnips, oats, sown down into grass, and remained in pasture for some years past. His object was to show not only the utility, but the lasting benefit of bone-dust, where it had been laid on for the last seven or eight years, and remained to the present time. He should have also shown some other manures laid on other parts of the estate, useful in their place, and beneficial for crops and permanent pasture. He should have been most happy to have seen them there, particularly as it might have led to some useful discussion.

MR. PETER'S LECTURE.

As the day was so bleak, the members determined that they would remain where they were, instead of adjourning to the school-room, where the lectures are usually delivered. The table was then cleared, after which Mr. Peter proceeded to the consideration of the subject of his lecture, which was "The difference between permanent pasture and meadow land, and the same land if cultivated on the rotation system." He said there were two interests most directly concerned in the produce of the soil, whether grass or tillage. These were, the landlords and the tenants—the first in respect of rent, the latter in respect of profit after paying that rent. But there was a third interest, and one, too, of the highest importance, and that he termed a national interest, because it was an interest that no particular individual could lay claim to. It might be matter of indifference to the two former whether the land was in grass or tillage, provided the one received his stipulated rent, ond the other the amount of profit he expected in proportion to the capital he had embarked. But to the third interest the manner of its occupation appeared to him to be of the most serious importance. In estimating the value of the products of the land, the amount of labour to be paid for has to be deducted, in order to see the profit to the individual. But when it is considered that what is paid for that labour goes to our own labourers to spend in our own country, thereby enriching the community at large, then they could estimate the national advantages of its employment. From considering the matter in this point of view, he had come to the conclusion that permanent pasture or meadow land was a national loss, compared with the alternate husbandry. If he excepted a few rare instances, the prevalence of permanent pasture in England led to the conclusion that there were many who held an opposite opinion. He granted that there was much less money paid for labour, for grazing than for arable farms; but that was his worst objection to the system, for conceding that the profit to the occupier were alike in both cases, if a portion of land could be made to pay for the outlay of 100*l.* in labour, was it not better, in a national point of view, than if only 20*l.* were expended in labour and repaid? Here would be 80*l.* more paid to the labourers, and where would they go with that? To the next shop, and it would come back to the country. If that principle were carried out, they had no need to go abroad, or any where else, to seek for industrial employment for their labourers, or for corn to feed them with. The permanent pasture or meadow land obtained much of its present reputation at the expense of the contiguous arable land, which was often deprived of the dressings which it ought to receive. He had observed this particularly in the neighbourhood of Milton Abbott, where the arable land is among the worst, and the pasture land among the best, in the country. On enquiry, he was told that they paid about 30s. an acre for this grass. He asked how much beef they could raise an acre, and they said about two hundredweight. He took that to be a poor return, after exhausting the country to maintain such a course. In that part of Scotland where he came from, the land had been broken up, and it was let for a four-course rotation, and he knew some of it that was let at 9*l.* an acre, and the people paid their rents. One gentleman, who took 44 acres at 6*l.* an acre, cleared 500*l.* in four

years. There might be some peculiar exceptions, such as in the case of land in the neighbourhood of a large town, where the town water could be carried over poor land. In the neighbourhood of Edinburgh this had been done, and that formerly miserable land had since let at from 20*l.* to 30*l.* per acre. Even when produce was lower, it had let at 15*l.* an acre; and he thought that the time was not far distant when they should see the dirty water from all large towns thus employed. He might be asked what would be the difference in pasture land and the rotation system. He would take medium good land of the value of 30s. an acre rent, and suppose a six years' course of rotation on the first breaking up; and he thought they would agree with him, if the management and crops were properly conducted, the results might be fairly anticipated. He had made his calculations; he had taken land supposed to be worth 30s. an acre, and he had put the yearly value of the grass to the farmer at 5*l.* per acre, which for six years would be 30*l.* Land of that sort should produce three times the amount that is paid for it. Now he had supposed that in two years, in order to get the amount of crop, the land would require two top-dressings in the six years, which would at 4*l.* 10s. an acre each time, be 9*l.* Then six years' rent, at 30s. an acre, would be 9*l.* more, and the gross produce of 30*l.* for the six years left 12*l.* surplus. Of course, rates and taxes were to come out of that. Now he would give them the calculations he had made of the same land, supposing it to be broken up and to undergo a six-course rotation—an ordinary tillage which had proved itself in practice to be rather good. The first year, then, he proposed a crop of oats after grass. He had estimated the expense of this at 4*l.*; the returns at 8*l.* 8s.; profit, 4*l.* 8s. (The lecturer entered, in these calculations, into the details of expenditure, but we have not the space to give them.) It must be understood that, in all these calculations, the profit still leaves all kinds of rates, taxes, and tithes to be paid. In the neighbourhood in which he was located (Illogan) it was looked upon as ridiculous to take a crop of oats after grass, because the land would be full of stroil; but if the land had not been full of stroil before, it would not be so then. The second year he had proposed a crop of potatoes; expenses, 13*l.*; returns, 16*l.*; profit, 3*l.* A great part of the expense of this crop to the farmer was payment to the labourer. He was of opinion that more importance was attached to the potato crop than was often warranted, though he maintained that there was no better crop for the country in which he resided than that was. The third year he proposed wheat; expenses, 9*l.* 10s.; returns, 12*l.* 10s.; profit, 3*l.* The fourth year he had supposed a crop of turnips, one-half to be eaten on the ground; expenses, 6*l.* 10s.; returns, 6*l.* 10s. The fifth year he had supposed barley; expenses, 4*l.*; returns, 7*l.* 10s.; profit, 3*l.* 10s. The sixth year, grass; expenses, 1*l.* 10s.; returns, 6*l.*; profit, 4*l.* 10s. This, on the six years, would make the total expenses of the alternate rotation 38*l.* 10s.; returns, 56*l.* 18s.; profit, 18*l.* 8s. And for the pasture or meadow land—expenses, 18*l.*; returns, 30*l.*; profit, 12*l.* Thus he found that the balance in favour of tillage was—expenses, 20*l.* 10s.; returns, 26*l.* 18s.; profit, 6*l.* 8s.;—which, divided by six, gives annually—expenses, 3*l.* 8s. 4d; returns, 4*l.* 9s. 8d.; profit, 1*l.* 1s. 4d. This gave a very large sum more to be expended in labour, to be spent by the labourers in every shop in the neighbourhood. That would extend itself to the remotest manufacturing district in the kingdom, and it would work its work in a much better way than anything else they could do with their manufacturing people. Keep the labourers standing idle, and what is there to set the agricultural labourer in motion? He would say, that they could not put the circulating medium into better hands than those of the labouring classes. The poor's-rates would very soon not be heard of, in his opinion, if the land of England were put to the use it ought to be put. He was satisfied that in a few years it would bring about a change that would make people wonder why they had been quarreling about bringing in foreign corn, when they had the means of acquiring bread in their own hands *(cheers)*. It was for that purpose he proposed the present question, that he might add his voice and give it as his opinion that there was an error in our country. The remedy for that would be the employment of our agricultural population to produce an amount of capital which there is no conception of, and that would go to encourage the manufactures of our own country *(hear, hear)*. What was the state of matters? Why go to the foreigner to buy articles that we ought to raise at home? He said they ought to do it. Why give to the foreign labourer when they left their own labourers at home unemployed, in idleness, beggary, and starvation? That was the real evil, and not as many parties, in many quarters, had been trying to make them believe. From the abstract given, it appeared to him that the advantage of tillage over grass, even to the occupier, showed a profit of more than 1*l.* an acre. If this were carried out through the kingdom, what an astonishing difference it would make. The lecturer, in pursuing his argument, drew deductions of the amount that would be realized to the country and spent in wages, by breaking up a third of the land not in tillage, and working it upon his system. It was no part of his present purpose to enter into calculations as to the general result—it was the principle for which he contended. In what he had hitherto said he had alluded to land of a better description, but there was another division—the poor land now lying in a state of pasturage, or rather waste. The improvement in the cultivation of this land, now artificial manures were so readily obtainable, was worthy of their consideration. There could be no greater mistake than in allowing their poor lands to go out of cultivation; they employed more hands than their rich lands did, and it threw out a great amount of labour. If by cultivation they could be made to pay for that labour they would add to the national wealth. It was well known that if much of that land was allowed to go out of cultivation, it would revert to its original sterility and produce nothing. There was a mode of managing such lands adopted in the eastern parts of this county which could not be too strongly condemned—it was that of taking two or three crops of corn from them without manure, and then allowing them to rest. Working a man hard all day, sending him to bed without his supper, and expecting him to rise a better man the next day would be just as reasonable. He was happy that he need not go far to prove that by the judicious application of labour to land the poorest land may be cultivated. He referred to that belonging to Mr. Trethewey, which would not have

been worth half-a-crown an acre to let, if there had been a clause in the lease binding the tenant to let it rest (*hear, hear*). In the course of two years it would pay all the expense of labour and manure, besides leaving the foundation for future improvement. This might be said to be the creation of national wealth. He might go out of his way a little to ask the question whether they might not be considered manufacturers. They were manufacturers for the rest of the country, and he claimed the title of manufacturers, and he would declare it to be class legislation if the manufacturers stood up and said that they (the farmers) did not belong to them. At no very distant day they should be able to raise a supply equal to our present as well as increasing population. He had possibly digressed in some instances from the line marked out, but he denied having any political intention. Mr. Peter then spoke of the advantages of house feeding, and read some statements recently made by Mr. Smith, of Deanston, at an agricultural meeting at Market-hill, in Ireland. In these Mr. Smith said he had a dairy of twenty cows in the summer of 1841, consisting of part Ayrshire breed, and part a cross from Ayrshire cows, and a short-horned bull; he had them separated into two lots of ten each, as nearly equal as possible, and one lot be sent out to grass, and the others were tied up in a wooden house. The result, Mr. Smith thus stated—"The cows thus treated were milked three times a day, as the others were; they gave their milk more uniformly, and more plentifully, and continued throughout in excellent health, and improved in condition from 30s. to 40s. per head over those at pasture. When removed to the dairy they still continued in excellent health and condition during the winter, and had their calves in spring, in proper time, and of large and healthy frame. The manure made was of value, considerably above the extra charge for management; and the cows were kept in summer on three quarters of a statute acre each. Those on pasture required fully one acre and a quarter of pasture, and nearly a quarter of an acre for cut grass and vetches, so that, upon the whole, about one half of the extent of ground necessary for the summer keep of cows, at pasture, was sufficient for those kept in the house. This mode of keeping cows will be found peculiarly beneficial on small farms." Mr. Peter briefly concluded by observing that he should be happy to answer any questions relative to the lecture.

Mr. TRETHEWEY said that in making a comparison between arable, pasture, and cropping, it was suggested to him that there would be a very great difficulty in supplying the market with beef and mutton. It was pretty well known for years past, that the grass land had paid better than arable.

Mr. PETER said it was his thorough conviction that by the proper management of the alternate system, as much beef would be raised per acre off the land as at present, and the whole amount of green crop independently. He thought it capable of demonstration, if they calculated the quantity of food that they raised on the arable land. The question was how much land did it require to bring forward that amount of stock—a question which would not be easily answered. They saw a great deal of pampered stock, the greater part of which must be kept at an expense that must be ruinous. The reason why grazing had paid better than the other things, was because they had no labour to pay for, and that was what he complained of. He thought that there would be as much beef raised by feeding on artificial food.

Mr. TRETHEWEY said there were certain seasons in which artificial food would not be so good. It was said just now that the land in the neighbourhood of Tavistock produced 200 weight of meat an acre—was that 200lbs. more than what was put in?

Mr. PETER—That was the gross amount of the produce. He could not see why artificial food could not be raised in summer as well as in winter, nor why the animals would not do so well upon it. The only circumstance he had heard was the expense of carrying the food out and in; but then the manure was never considered.

Mr. TRETHEWEY said there was one subject on which he would remark, and that was the course of cropping. It was not all soils that would bear a crop of wheat after potatoes. (Mr. Karkeek—Nor half in this neighbourhood). Where you have got a retentive soil it will not do. He agreed with the lecturer as to oats, but unfortunately in this county tenants were barred with their leases (*hear, hear,* "that is the great curse of the farmer")—but under the system named, the oats were the best crop that could be adopted.

Mr. PETER said he had observed that it was impossible for him to lay down a rotation likely to be suitable for all situations. If a crop of wheat would not do after potatoes, then put carrots, or turnips, or mangel wurtzel, or some other thing. In regard to the general principles, he believed he was correct. He imagined, too, if they had the potatoes, there would be no difficulty in getting rid of them. (Mr. Trethewey—I am doubtful how far potatoes can be grown with advantage for fattening stock.) There was a class of feeders in the neighbourhood of Dundee, where a great number of cattle were raised for the London markets, and 200 a week were shipped from there, and they will not use turnips without putting potatoes along with them.

Mr. TRETHEWEY had no doubt there was a great deal of nutriment in the potato, but he doubted the use of growing them for feeding stock. He had never seen the potatoe grown any where but what it left its mark behind, and he believed they were almost fatal to all ground, for a more scouring crop could never be put into the ground. In many places they were very profitable, but he would caution all his young friends not to go too deep into the matter.

Mr. GATLEY said, I am opposed altogether to the system recommended by the lecturer, and in my peregrinations among the farming community, whenever I have come amongst the graziers, I have found them fine fat fellows, with red faces (*laughter*)—good houses, wives with smart dresses, even their kitchens papered, and having a good round of beef and a bottle of wine on the table to welcome you (*laughter*). Mr. Trethewey, you have seen it too. But when I have come to the tillage farmers, there is nothing but a rick in the corner with a few turfs, and where the potatoes are the people have a few pots over the fire to boil them in for feeding the pigs. This is what I have seen; I leave others to say what they have seen. I am for a grazing farm, if I can get one (*great laughter*).

Mr. PETER—Allow me to say that I have seen great lots of people going about in rags and beggary, and numbers associated in the workhouse wanting employ, in a state of starvation and

misery. I ask you to contrast this with the grazing farmers, with their fine houses and papered rooms. I ask you whether you would rather have it so, or whether you would have it in something like the same state as the alternate tillage farmers generally are?

Mr. GATLEY.—I well know that the more potatoes the more misery, and a great deal more rags too. Old Cobbett said—and old Cobbett was no bad authority—that potatoes were the curse of Ireland. And I believe it. He said, get the potatoes out of Ireland, and you will want no poor law, and no political agitation. I believe the potatoes have been accompanied with more misery and more poverty than any other sort of food in the country (*cheeers and laughter*).

Mr. PETER.—I don't require to rise to answer the gentleman. It seems to me that it is not the potato that is at fault, because if there was a better food than that, people would not resort to it. The potatoes are the *dernier ressort*, and possibly people think it better to take them than to take nothing. I ask if there was plenty of beef on the table would potatoes injure then. I say there is no reason or argument in the matter. I make no political allusions.

Mr. GATLEY.—And I made no political allusions. Supposing a man with 300 acres on the six course system, he must have 50 acres in potatoes. Now this parish has 6,000, and under that system there must be 1,000 acres always in potatoes. I agree with you that they would give a great deal of labour, but there would be no market for them; and if you take the land and first till it with oats, a doctor might as well take a patient and bleed him (*laughter*). And the next year till it with potatoes, that would be to blister him.—Then we come to wheat, and that would be to bolus him (*laughter*). Then come turnips, that would do pretty well, and would be like a little warm broth for him; but you would finish him off with the barley, and after that you may send for the undertaker (*great laughter and cheers*).

Mr. DREW thought there was very little real difference between Mr. Peter and Mr. Gatley—only the latter looked to individual profit, whereas Mr. Peter looked to national benefit.

Mr. GILL said if his friend Mr. Gatley, had spent any portion of his time in a mining district, he would form a very different opinion of the value of the potato. If the poor were looked at, it was not those who grew their potatoes that were so badly off.

Mr. GATLEY believed with Mr. Gill that there was nothing better than a quarter of an acre of land, a piece of potatoes, and a pig, and the greatest loss a man could have with a pig, is his potato crop; but I am arguing that neither our land in Cornwall, nor any other land in England that is let at 30s. an acre, will bear to have six crops taken from it and go on again. You may go on again, but you may cut your stick after that and go to America (*laughter*).

The discussion was followed up briefly by Mr. Peter, who again expressed it as his object to be understood as to the principle, and not as to the details, which must in all cases be governed by a number of circumstances known to all practical men. The chairman then proposed the thanks of the meeting to Mr. Peter, which were most cordially and unanimously voted. Mr. Peter having returned thanks,

The CHAIRMAN proposed "Liberal landlords and deserving tenants" (*Cheers*). He was happy to say that some of the landlords in this neighbourhood were beginning to think that short leases would make not only against the interests of the farmers, but against their own; and they were now about to grant, and some of them had granted, leases for 21 years (*cheers.*)

Mr. GILL proposed the health of the secretary of the society (*cheers.*)

A number of other toasts was proposed, and speeches made, and the members, at their breaking up, were well pleased with their anniversary.

ON THE ACTION AND USES OF LIME IN AGRICULTURE, AND THE MOST EFFICIENT AND ECONOMICAL MODES OF APPLYING IT TO THE SOIL.

BY JAMES ANDERSON, ESQ., OF GORTHLECK, INVERNESS-SHIRE.

[Premium, Ten Sovereigns.]

(*From the Journal of the Highland Agricultural Society of Scotland.*)

The action of lime in agriculture depends much on the state in which it is applied to soils, whether pure as an oxide of calcium, or combined with an acid, and then, chemically speaking, a salt of lime, and likewise on the condition and composition of the soil in various respects at the time of its application.

The lime of agriculture is principally derived from large deposits of native carbonate, and, in this form, it is found in frequent and very considerable quantity among the various geological formations. The sulphate of lime is also found in very considerable quantity in Germany, including Austria, France, Switzerland, Spain, the American States, the Peninsula of Nova Scotia, and New Brunswick, in our own country, and elsewhere, abundantly. However, the sulphate is not in Britain yet applied directly to the soil so extensively as in America and other countries; it exists in vegetable ashes, and is sometimes so applied in this country, particularly to the leguminous crops, as the clovers, with very beneficial effects. In Holland, the utmost confidence is placed, and with apparent good reason, in the restorative and fertilizing powers of the ashes of bituminous peat.

Phosphate of lime, another salt or acid compound of this substance, is applied in bone manure, being the principal mineral integrant in their composition; and it is also supplied to the soil by the application and decomposition of the vegetable fibres and animal substances which find their way into the fructifying mass of the farm-yard manure heap. It occurs in nature in veins and beds in connection with tin and iron ores, and is found in masses in Britain—in Devonshire and Cornwall—and in, at least, one locality in Spain, besides in Saxony and Bohemia, and elsewhere. This substance would be well worth a fair trial in various soils, and we have every reason to think, from experiments on a small scale, it might prove a valuable manure.

The principal supply of lime, however, for agricultural purposes, is derived from the application of

strong heat to the native carbonate, which expels the carbonic acid, and in this state it is carried to the surface over which it is to be applied, where it is slaked with water, with which it readily combines, being at the same time reduced to a fine powder, the most convenient form for its application to the soil.

When pure, before uniting with water, carbonic or other acid, it is known under the familiar appellation of quicklime. Applied in this state to soils containing organic substances, it enters into union with these substances and forms compounds which are partially soluble in water. All organic substances contain abundantly carbonaceous matter and oxygen, and, by attracting these, the quicklime is gradually converted into a carbonate. But in practice the quicklime is generally slaked with water before it is applied to the soil, in order to reduce it to a powder; and it is thus more equally divided in the process of scattering it over the surface. When slaked, or in union with water, it is chemically styled a hydrate, and operates in the same way as quicklime in reducing or combining with organic substances. It retains no longer the same action; but, on the contrary, operates powerfully in preventing the too rapid decomposition of organic substances already in a state of solution, or approaching to it.

Having stated generally, in a few words, the action of quicklime and hydrate, and carbonate or mild lime, we shall reserve the details of the most efficient and economical modes of application to be specified and explained as they may naturally suggest themselves in our progress.

1. We have to consider the most suitable period in the rotation for the application of lime.

With a view to economy and efficiency both, this must be when the land is preparing for a fallow or fallow crops. It should always in this case be applied as a hydrate. At this time an opportunity is offered, when the land is in progress of tillage at any rate, of intermixing and thoroughly incorporating the lime with the soil, when it immediately acts, as before stated, upon any insoluble organic substances which it may contain; and, instead of remaining dormant, inactive, and useless, as these substances had been during the previous rotation, they gradually form combinations with the lime, which become partially soluble in water, and thus, when lime is judiciously applied to a fallow, it is one reason for a smaller quantity of manure sufficing. This, of course, will only happen when there has been an accumulation of fibrous and insoluble organic matter in the soil, which is always the case in newly improved land, and where the soil, though in cultivation, has never previously undergone liming, and more particularly if it contains in itself little native calcareous matter.

With regard to the crops to which lime is found most beneficial, we shall begin with the *Cerealia*, and of these we shall speak to wheat, barley, and oats. We know, in innumerable instances, that wheat is grown on soils previously incapable of yielding an abundant or remunerating crop. We do not doubt that this is partly owing to the previous operation of efficient draining, as the most ignorant agriculturist is now aware of the fact, that the application of manures, organic or inorganic, is comparatively fruitless without attention to draining, as a preparative, in the first instance.

From the previous application of lime to a fallow, we see a very moderate allowance of manure—consisting either of bones, themselves containing a large proportion of phosphate of lime—and various combinations of decaying organic substances, produce an admirable crop of turnips, and thus prepare the way for a rich and luxuriant crop of barley, and this, too, on soils that ranged formerly very low indeed in the scale of fertility, but have been quickened into life and productiveness by the presence of this new agent. We have seen also a very superior crop of barley frequently produced on barren moorland, by the simple application of lime, and with a very little addition indeed of in-nutritious and ill-prepared manure in our own island, at an elevation of 800 or 900 feet, and between latitude 57° and 58°, and this too on a soil, to say the most for it, of average barrenness.

As to the oat crop, in the rotation, we have not observed that it is by any means proportionally so much improved by the application of lime. But this may be accounted for by the great exhaustion of manure caused by the luxuriance of previous barley crops. In high and cold localities, where oats are cultivated as the principal grain crop for winter fodder, and the lime applied and harrowed in above the ploughed natural lea, the effect on the crop has been very beneficially apparent, particularly and chiefly where the land had been well drained before the application of the lime. The improvement in the succeeding pasture-grass was, if possible, still more remarkable and lasting. This is easily accounted for when we consider that the cold in this country, at considerable heights, and the consequent low natural temperature of the contained water in the soil, together tend to retard the decomposition of any portion of the fibre of the growing natural herbage that may be left unconsumed on the surface. But when lime is applied, it immediately dissolves this fibrous deposit, which has been, from the above causes, unceasingly accumulating, and converts it into wholesome and abundant nourishment for a higher and more useful class of plants. At great heights, then, and in cold localities generally, the effects of lime are particularly striking, and also very lasting, after draining.

Of the *leguminous* crops, we may say unhesitatingly, from what we have observed, that they cannot be cultivated with any success without the previous application of lime, unless where abundance of native calcareous matter exists in the soil. The bean, indeed, and, so far as we have observed, the potato crop, are exceptions to this rule; although we have seen lime, in compost with earth or old turf dykes, give a most productive and valuable crop of potatoes.

Whether spread on the surface of pasture-land alone, or in compost with earth, or applied with a crop and grass seeds, with a view to pasture, it never fails to call into existence the dormant seeds of the superior grasses in the soil, and to nourish and facilitate the growth of those that may have been confided to it by the agriculturist. This is a fact placed beyond all dispute. It is a never-failing fertilizer of grass land.

2. The effects of lime on peaty soils are the following:—

Peat is known to contain two substances inimical to vegetation, and eminently preventive of the changes and interchanges, the decompositions and recompositions, necessary to afford a supply of genial nourishment to a superior class of vegetables. These injurious substances are tannin and gallic acid. But let us consider for a moment the composition of these inimical compounds, and we shall find that we have it in our power, by a simple pro-

cess, to convert them into substances most friendly to the advancement of superior vegetation, and in this form contributing highly to the fertility of soils. We find on analysis that they are composed of the following constituent proportions :—

	Carbon.	Hydrogen.	Oxygen.
Tannin	52.59	3.825	43.583
Gallic acid ..	56.64	5.00	38 36

We have shown, in the first part of this essay, that quicklime and hydrate have a powerful affinity for carbonaceous matter and oxygen. This known, with the assistance of the above analysis it is at once clear how they operate beneficially on peaty soils. It is evident that, by appropriating a portion of the carbon and oxygen, the lime neutralizes the acid in both these substances, itself becoming a carbonate; and, by this change, substances that were formerly destructive to fertility, combining in part with the lime, are resolved into their simple elements, and, assuming a new character, gradually become capable of sustaining an improved vegetation. Of course, as we have already shown, the lime will act on the fibrous vegetable remains in the soil, combine with them, and convert them by degrees into soluble and fructifying nutriment for vegetables. If, after peaty lands have been once limed, it should be found advisable, for any cause, to break up a lea (and this should be as seldom as possible, such lands being better laid to grass), it would be an improvement to do so by paring and burning, as, by the application of heat, a portion of the lime, now converted into carbonate, from being so long buried and in close contact with the soil, would be freed from its acquired acid, and restored anew to its original state of purity when first applied—or, in other words, be reconverted into quicklime—and would thus be rendered capable of exerting a renewed action on the peaty substances present, and from its recovered causticity, again promote the various processes of decomposition and recomposition so favourable to the development of healthful and luxuriant vegetation.

3. The action of lime on clayey or aluminous soils is as follows :—

It operates both in the fertilization and comminution of clayey soils. From the minuteness of its particles, they easily insinuate themselves into the clay. On the particles of lime, too, encountering any enclosed organic matter in these aluminous masses, a strong action immediately takes place between the lime and such matter, which, by combining with, disorganizing, and reducing such organic matter, destroys the continuous solidity of the clay which contained it; and from this, with the evolution of the gases and other attendant action, the stubborn clay at length becomes cellular.

4. In sandy soils, lime operates beneficially as follows :—

It is well known that sand (silica) differs much from clay (alumina) and lime, in two important characteristics particularly. Both lime and alumina have a great affinity for organic matter and moisture, and retain both these substances by a powerful attraction; sand has no such affinity, and on this depends its barrenness. It is merely commingled with organic matter at any time, never chemically combining with it in any quantity, and retaining it by no degree of attraction whatever. In this way it offers no resistance to the rapid escape of such substances by combinations with the components of moisture deposited by the atmosphere and the constituents of the atmosphere itself; and the fructifying properties of the manures are thus quickly withdrawn from the soil, and escape from it, in the aerial form, into the atmosphere. Besides this, they are washed away, in part, by heavy rains and superabundant moisture, beyond the reach of the root fibres of the crop they were intended to nourish. To cure these defects, lime is applied. From its affinity for moisture, it attracts it from the atmosphere, and, when voluntarily discharged from this source, promotes its retention in the body of the soil. By combining with any organic manures that may be added to the soil, it prevents their wasteful and too rapid escape; and thus, by rendering the soil more retentive of moisture and organic substances, and improving its texture and consistence, eminently promotes and increases its fertility.

After the explanation we have just given, it is difficult to see how lime can be dispensed with in the improvement and perfecting of any soil, unless that soil should be naturally calcareous. Such a soil effervesces powerfully with acids, and is thus easily detected by the most untutored enquirer. The only case in which we found lime to produce no great sensible or perceptible beneficial effect, or very little, was when superabundant moisture existed. But, even where the soil had been previously exhausted by overcropping and bad cleaning, we have found quicklime, by destroying insects and their larvæ, and the seeds and roots of noxious and unprofitable plants, and by converting these, as already explained, into wholesome nutriment for succeeding crops, a most useful coadjutor, in connection with a well-conducted fallow, in restoring vigour and energy to the most exhausted subject. Where former injudicious applications of lime had been made, we can recommend no efficient restorative but a copious supply of organic manure and rest in grass.

One instance of abuse of lime we may particularly notice here. Thirty years ago and upwards, lime, at the rate of 200 bushels of hot shells an acre, was spread on between 100 and 200 acres of very light, siliceous, open, dry, gravelly soil, scarcely 200 feet above the level of the sea, and within a mile of the coast, between lat. 57° and 58°, in North Britain, and being treated rather sparingly on some occasions, in after cropping, as to manure, till within the last eight years, though correctly farmed by the rotation of turnip, barley, and hay seeds, and hay followed by pasture for one year, and sometimes two years, it has not and will not recover this overdose for a long time to come.

Although the soil was poor, the lime, being new to it, exhausted at first all its organic matter, and produced wonderful crops for some years; but at length it came to be, that, in 1839, rather an unfavourable season, and frequently previously in a field of upwards of twenty-five imperial acres, there were not produced twenty quarters of oats, and the quality not so good as the dressings of a very rich and productive crop. It will be a very expensive and unremunerating process to recover this soil by rest and manure. Some parts were, at the same rate and at the same time, manured with lime containing a trace of magnesia, and these portions of the surface are still quite distinguishable from the remainder by a vegetation of an aspect if possible more miserable, sickly, and attenuated than that which covers the general surface.

5. We now come to consider the effects of lime on a deleterious subsoil. On this subject we can

also venture to say a little, from some experience and attentive observation in the improvement of waste land, and from extensive draining of arable and waste in the progress of improvement.

Subsoils frequently hold in their composition deleterious substances, which consist principally of the salts of iron or manganese, and some acid, resembling the gallic and acetic, derived from the decay of vegetable substances. We have witnessed the benefit in these instances of the application of quicklime. In the first place, the lime attracts and combines with the acids, by which means the salts of iron and manganese are neutralized, and the acid adhering to the lime is not merely rendered innocuous, but converted into a positively fertilizing substance. Where any sourness, or vegetable acid in any form, exists in the soil or subsoil, which very frequently happens on examining the composition of waste lands with a view to improvement, and which has been caused by the long existence and periodical decay while in its unreclaimed state, of a worthless vegetation, if lime be applied, it immediately combines with and neutralizes the effects of such deleterious components, destroying the acid by withdrawing its carbonaceous matter and oxygen, and thus, becoming a carbonate of lime, materially adds to its own value as a fertilizing ingredient. This we have tested frequently, so as to satisfy ourselves of the efficiency of an application of lime in all such cases, and of the perfect propriety of recommending it to an improver whose chemical knowledge may not be sufficient to conduct the simple process of analysis, if he should have any good ground for suspicion from the dark colour of the subsoil, or any other familiar and often locally understood symptom, that such latent causes as we have been describing are operating against his interest.

The salts of the protoxide of iron amount to thirty-eight, with nine double salts, making together forty-seven salts of the protoxide of iron; and these are generally soluble in water. The known salts of the peroxide of iron amount to forty-three, with twelve double salts, making fifty-five salts of the peroxide of iron, and they are *all* soluble in the same menstruum. Most of the salts of manganese are soluble in water, and on their precise degree of solubility depends their destructive and injurious effects. The salts of iron, where water abounds in the soil, gradually form, by combining with the earths, as we have often seen, a most impervious and injurious subsoil; but on being freed by draining of excess of moisture, and broken up, and, more effectually still, if trench-ploughed after draining, and thus partially exposed to the fructifying and pulverizing action of the atmosphere, such a subsoil will be speedily rendered innocuous; and, if lime be thereafter applied, the cure is complete;—and, after resting a little, a soil thus prepared may be converted to the purposes of profitable culture.

6. We have already, under head 2, shewn the effects of the application of lime in improving the texture, constitution, and general fertility of the soil. We may now add here, that when calcareous matter is deficient in soils, it will be highly beneficial to supply it even in the state of native carbonate, and without calcination, if a supply can thus be more cheaply and conveniently obtained from the sweepings of the highways, which often contain a considerable admixture of carbonate, or from any other native calcareous deposit, such as shell or clay marl, or calcareous sand, &c. Clay marl is best adapted to sandy or siliceous soils, and shell marl and calcareous sand to clayey or aluminous soils or stiff loams. However, when too easily obtained, such advantages are sometimes abused; several instances of this kind have come under our observation, and we may here mention one as an example. On an estate in North Britain, where a very valuable and extensive marl deposit exists, permission was given to the tenantry to apply this substance to their farms free of all charge: their holdings chiefly consisted of light siliceous and very shallow peaty soils, and the proportions were left to their own discretion. This deposit was very rich in calcareous matter. It was used with something like suspicion and distrust at first in any great quantity, but some favourable results so raised the expectations of the tenanty, that they heaped on their land an unlimited bulk, and the consequence was, that a few years of fruitfulness and of injudicious, and too often incessant, cropping were succeeded by yearly increasing sterility and loud and fruitless lamentations. The soil, of course, will require the same treatment to recover it as if it had received an over-dose of unmixed lime.

7. The quantity of lime which might be applied to the soil in different cases is a most important subject; also whether it seems most beneficial to apply lime in large quantity and at long intervals, or in smaller quantity and at shorter intervals; and we shall endeavour to be as explicit and intelligible on the subject as we possibly can.

In a deep peaty soil there is little danger that the proper quantity of quicklime will be exceeded, and carbonate may be applied in almost any probable quantity. We need only instance as grass ground the famous Orcheston meadows. In a sandy soil there is scarcely more danger that this will be the case with carbonate, neither will it be so with caustic lime, provided it be well mixed beforehand with clay or common soil containing a proportion of organic matter—such as old turf dykes or pond scourings, or such like substances. When a soil contains a fourth part of alumina (a stiff wheat soil), and lime is to be applied for the first time, it should never be in less quantity, at the very least, than 150 bushels of shells, heaped measure to the acre. A third part of this quantity should be repeated on occasion of every *third* fallow thereafter, to keep up a desirable activity in the soil, a great proportion of the first applied quantity having by this time disappeared and been washed away by natural agencies; and on each occasion of a fallow, when no lime is applied, from one cwt. to two cwt. of nitrate of soda or potash to the acre should be carefully sown over the young wheat or turnip crop, as it may happen, a moist morning being selected for the purpose; and this will not only nourish and stimulate the young plants, and effectually destroy the numerous tribe of insects and their larvæ, so peculiarly destructive to the turnip crop in its first stages, but what is not appropriated of it by the plants descends with the moisture into the soil, and immediately acts upon the lime, now chiefly become a carbonate, by depriving it of its acid, and restoring it to its original state of purity, when its caustic properties are restored, and it again operates with the same activity as when first applied to the soil. It is necessary to apply the 150 bushels in the first instance to insure the effectual solution of the natural and necessary accumulation of the insoluble organic matter which must occur in a soil which has been covered with vegetation of any description; but a small application every third fallow, with the alka-

line application to each of the two intermediate fallows, will thereafter prevent any such useless accumulation of insoluble organic matter, which needs must otherwise increase in the soil from the annual decay of the root fibres and other accidental and necessary remains of the different natural herbage, plants, and crops of the previous rotation.

When a soil is composed of four parts in five of silica, the remainder being principally alumina and organic matter associated with a portion of impalpable siliceous powder, it may be made a superior turnip soil, and incalculably improved by the application of carbonate of lime in large quantity; but about 100 heaped bushels of shells to the acre will be a sufficient dressing of caustic lime on a first application to the soil, care being taken that a fair allowance of manure is always supplied at each recurrence of a fallow, and it may be repeated in the same proportion and at the same periods (a third to every third fallow thereafter) as we have just recommended in clayey soils. The quantity of nitrate of potash or soda, be it observed, to be the same in both cases, that is, the same both in aluminous and siliceous soils, but the proportion of lime to vary as 100 to 150, both in the first and successive applications. We have every reason to think, from all our patient investigation, experiment, and experience, that this will eventually be found a very economical and effectual, if not the most economical and effectual, method of applying lime to soils.

When easily and cheaply obtained, about fifteen bushels of wood or peat ashes, applied in the same manner, form a good substitute for the nitrate of soda or potash; and bituminous peat for this purpose is always to be preferred.

8. We have already stated that we have universally found that, unless thoroughly underdrained, it is in vain to expect any remunerative return from the application of lime, and we may add, any description of manure, whether organic or inorganic. Where superfluous moisture exists, the interstices of the soil are completely choked up with the fluid, the beneficial action of the atmospheric air excluded, a sourness contracted prejudicial to healthy vegetation, and the fructifying portions of the manure rendered inactive or washed away beyond the reach of a crop, while the temperature of the soil is also materially reduced by the presence of superfluous moisture.

9. The effect of applying lime along with other manures, that is, at the same season, and to the same crops with other substances, depends entirely on the period of the operation of fallowing at which it is applied.

If it be applied to the fallow before the dung, and harrowed sufficiently into the soil, intermixed and incorporated thoroughly with it, the lime will combine with and immediately operate in reducing all the root fibre and insoluble organic remains of the natural herbage or previous crops as it may happen to meet with, and thus convert into nutriment, for the succeeding crop, what was before of no service whatever; and if any acid or noxious rejected matter should be left by the plants of the previous rotation, as is believed by many scientific persons to be the case, the acid and noxious principles are neutralized by the lime, and the soil purified and enriched at the same time. If not laid on, however, till after the dung is applied, of course it must and does abstract carbonaceous matter and oxygen from the manure, in the first place, combining with the more soluble portions, and this combination rendering them temporarily in great part less soluble, and thus not so well calculated to afford immediate nutriment to the succeeding crop. This may not be of much importance in wheat culture, which crop is best treated as a biennial, and thus remains a long time on the ground. But it does not appear to be so well calculated for a turnip crop, requiring as it does an immediate and concentrated supply of stimulating and soluble nourishment. With farm-yard dung it does and must operate in this way.

We have used street manure to turnips, which suits this crop better than most others. Street manure frequently contains a considerable portion of carbonate of lime, and sometimes native sulphate; but an application of caustic-lime, after adding this manure to the soil, operates precisely as in the former case we have been describing, in forming compounds partially insoluble in water, and in withdrawing carbonaceous matter and oxygen, and thus being ultimately converted into a carbonate.

Rape-cake we have used very little, although, thrown into the soil along with the seed of turnip, in moist seasons, it makes a capital dressing, as we have often witnessed. It is well suited to clay soils in some cases; but is scarcely adapted to a fallow, unless combined with more substantial and lasting manures.

We have used bones extensively in different soils, but always as limed land, and have never paid particular attention to the effects of applying both at the same season. We know, however, from very careful analysis, that the following is their composition:—

Cartilage—a compound of carbon, oxygen, hydrogen, and nitrogen	33.3
Soda	1.2
Carbonate of lime	11.3
Phosphate of lime	51.4
Fluate of calcium	2
Phosphate of magnesia	1.16

Of course the application of caustic-lime would operate powerfully in reducing the bone, by acting on the cartilaginous portions, and withdrawing the carbon and oxygen; but we have always found the most efficient and economical method of applying this manure to be over a portion of spit dung previously deposited in the turnip drills, which is preferable even to mixing the bones with the manure to cause fermentation before applying the mass. The evolution of gases and volatile alkali, with the increase of temperature during the fermentation caused by the subterposition in the drill of the spit dung, affords the most forcing and stimulating nourishment to the tender germ, and has the further recommendation of economy and efficiency. We have grown a very excellent crop of turnip on a very dry light siliceous gravelly soil, with eight bushels of bones, over ten single horse-cart loads of farm-yard dung, an acre.

With regard to *soot*, we have witnessed its admirable effects sown over grass lands, spring corn, tares, and young turnip, but have never seen it applied at the same time with lime. It is most effectual in destroying the numerous insects which prey on vegetables in their early stages. However, we should think it injudicious in the extreme to apply it with quicklime, which would immediately and wastefully decompose its substance by disengaging a great portion of the volatile alkali, although there would not be the same objection to sulphate of lime, which would rather operate in

preventing the too rapid disengagement and dissipation of its volatile parts.

We may conclude this head by remarking that where the object is permanent pasture, the application of the manure and the lime *at the same time* has been found beneficial, the effects being more lasting; but quicklime or hydrate should never be applied to rich fertile old loams in cultivation, containing much soluble organic matter, unless as a compound with vegetable mould, or in some shape intimately combined with organic substances.

10. It seems superfluous here to describe the familiar operation of fallowing. All that one need say is, that after this cleaning operation has been carefully executed on the best principles, the lime should be well harrowed in and thoroughly incorporated with the soil. From being reduced to a hydrate it becomes so perfectly divided, and its particles rendered so minute, that the chemical action on any organic remains of former crops it meets with in the soil is immediate, and thus, rapidly becoming mild from this action, it is in a manner prevented from combining with the more soluble portions of the subsequently applied organic manures. Care must always be taken not to exhaust the soil by overcropping after the application of lime in any shape, and the most approved and least exhausting course or rotation adopted on similar soils should never be departed from; and a farmer should never yield to the lure of a deceitful fertility consequent on a first application of lime; for the stimulus which produced this fertility will speedily exhaust the vigour of the soil, unless its energy is supported by judicious management.

11. It is very advantageous in some cases to apply the lime in the form of a compost, with clay, earth, or sand. A sort of artificial marl is thus formed, which is advantageously spread on grass lands, affording them additional nourishment, at the same time that the quicklime or hydrate is partially deprived of its caustic property, which recommends the practice much — caustic-lime in powder being, in quantity, destructive to living vegetables. When the object is to improve the texture of a soil of sand, or clay, or peat, a compost has much to recommend it. Lime combined with sand being best adapted to an aluminous or peaty, and with clay for a siliceous subject. A compost in such cases has been found to be eminently beneficial, and preferable to the application of unmixed lime.

ON THE GOOD AND BAD POINTS OF CATTLE, AND ON THE FORMATION OF FAT AND MUSCLE.

BY MR. ROBERT READ, V.S., CREDITON.

(From the Veterinarian.)

The skin or external envelope in the *ruminantia herbivora* is an important feature in developing the disposition of cattle to fatten, and is of much import to the farmer and grazier.

A good skin is known by the familiar name of *touch*—that is, the animal should possess a mellow skin, with resiliency, moderately thick, yet loose and yielding to the fingers when gently elevated, and resuming its station with an elastic spring, as if there was underneath a tissue of wool impregnated with oil. The resilience of good skin in an animal depends on the organization beneath it, and the presence or absence of cellular or adipose tissue. The existence of this membrane constitutes the good handler—its deficiency the reverse.

The pilary or hairy covering should be thick, not coarse; glossy and soft, with an inclination to yellow, and in proportion as this exists as a quality or constituent, so is the propensity to make fat: on the other hand, a thinness of hair and coarseness in fibre denotes an unthrifty animal, more especially if conjoined with a dense firm hide or skin, and with short hair. This implies a bad handler, and is a sure indication of being a slow feeder, with a tardy disposition to increase in volume, either of fat or muscle. It is by the feel of the cutaneous tissue that a judgment is formed as to the state of maturity now, and that an opinion be formed of the condition and worth hereafter. The beautiful mossy skin that seems like soft velvet; its peculiar feeling, as if it were stretched over a bed of down when the fingers are applied; and its easy resilience when traction is made use of; these are the best and surest prognostics as to the future worth of the animal.

Physiologically speaking, a mellow skin arises from a free circulation of the vascular system through the meshwork of the cellular or adipose tissue, or those cells that are destined for the reception of fat. These tissues are considered by some alike synonymous anatomically. They are always in a moist state, from the internal cavity of the cell performing the office of exhalation. Want or supply of interstitial deposit makes a bad or good skin.

The adipose and reticular tissues are extremely vascular, more especially that portion in immediate connection lying under it. A good and kindly handler has a full development of this material well spread over the superficies of the external frame under the skin. The membraneous tissue is a bed for the origin of the absorbents, and the adipose tissue is the depository in which the fat is deposited by the exhalents peculiar to it. These membranes participate in the character of the hide. They are more dense and inelastic, and less expansive. They do not admit of being so readily dilated by the interstitial deposit, and consequently are longer in acquiring a mature state in the progress of making fat.

A thick and unyielding hide, not succumbing to the internal deposit in the adipose tissue under the skin, is thus continually re-acting by pressure on the absorbents, and in this manner makes the animal slow in accumulating fat on the external parts of the frame. The difference in the feel between the glossy and coarse-haired animal is dependent on the secretion from the cutis. In the thick skin it is more inspissated, and exfoliates in branny scales. In the mellow and glossy skin it is more oleaginous, which may also be accounted for. Its having a greater freedom for the assimilation of nitrogen—one of the compounds of ammonia—a chemical agent that is abundantly given off from the skin, and uniting with the unctuous exudation of the cutis, gives to the skin that peculiar saponaceous feel, so necessary as the index of that organ performing its healthy functions, and may be ranked as a sure symbol of early maturity.

The ears should be of a fair proportion, no

over large, thin in texture, and capable of free and quick motion. A good ear denotes good quality; a coarse ear, thick and large, is generally associated with much coarseness in the animal. A good ear is nearly always found in a combination with a prominent and beaming eye, with thin palpebræ or eyelids.

This development of eye is most times in unison with a good and clean horn, tending to a very slight red at the radicals or roots. This indicates also a kindly disposition to early maturity. The happy and beaming eye of the healthy animal shows contentment, a very desirable omen as to the quick growth of the animal; while, on the contrary, a heavy eye, with a want of vivacity, with thick eyelids, and a too visible conjunctiva or white of the eye, is indicative of an unhappy and restless temper, incompatible with a good and profitable feeder. The eye of contentment, of quietude, and of calm expression of countenance, is alone compatible with that temperament so conducive to accumulation of flesh and fat. These qualities, if derived hereditarily, will be maintained throughout the whole evolution of growth: they are also well-known signs of early disposition to maturity. The hereditary principle should always be borne in mind. The old adage of "like will beget like," whether applied to the symmetrical law of external form, of quality, of temper (either good or bad), of constitution, of a disposition to make either fat or muscle, or to any other cause inherently acquired. Therefore the only method to ensure those qualities which are so essential to the welfare of the farmer, is to commence primogenitively with the best and most approved principles that have hitherto been found to ensure a healthy and profitable stock.

I shall now speak of bone, as being the framework on which all the materials of the body are built. It should, when examined in the living animal, have the appearance of being fine and small in structure. It then augurs a good quality and being readily disposed to fatten, although it sometimes betrays too great a delicacy of constitution. A bone may be small from a consolidation of its structural parts, yet be capable of sustaining more weight, superincumbently, than bone of a larger size, and whose size depends only on the cellular expansion, and not on a cylindrical consolidation. A large bone maintains a coarse-bred animal, a dull feeder, with a torpid vascular action, that only tardily irrigates the frame with the living stream. Such animals have a greater disposition to lay on more muscular than fatty substance.

Having concluded my observations on the external structure, relative to the propensity animals have of making fat, I shall now offer a few opinions on the arrangement of the internal organs for that purpose.

The lungs should be large, but not occupying the chest too much posteriorly; the chest capacious and deep anteriorly; these being the organs for preparing the arterial blood that nourishes every part.

I have also remarked, from inspection after death of hundreds of animals, that the roots of the lungs do not diminish in size so much as that portion which is in contact with the midriff in the fattening animal: lungs over-large are not more productive of fat than those which are of a moderate size. My solution of this fact is, that if the lungs occupy too much of the chest in the posterior part, there is a limitation to the expansion of the rumen or first stomach, and the animal does not enjoy so much lengthened quietude in rumination, a circumstance very essential to the fattening beast. This substantiates what I have before stated. The chest cannot be too deep nor yet too broad in its anterior external conformation; therefore, instead of attributing the full, spreading, wide-ribbed chest, posteriorly, as instrumental to the lungs, the space for the expansion of the stomach must not be overlooked, a large digestive apparatus being required for all large herbivorous animals. The heart is an important organ in the animal frame. It is rarely found over large in the fat animal. It is the forcing pump by which the whole of the body is irrigated through the arterial tubes. If symmetrical organization pervades throughout the animal, the chances are that the vascular action will harmonize over every part, and the deposit of fat will equalize over the whole of the body. On the contrary, an animal with disproportionate parts will have a greater disposition to lay on muscle or fat on those parts respectively that have the greatest share of vascular action.

I am now proud to state some indisputable facts. I have many times examined animals by mediate auscultation, with capacious chests anteriorly, and the lungs duly inflating them. Previous to their being stall-fed, they have, when slaughtered, lungs small posteriorly. It is also certain that if an animal dies well, the lungs will be found disproportionate to what they must have been in the living animal.

I do not agree with the generally received opinion, nor with Dr. Lyon Playfair, that the lungs must be of necessity small when an animal first begins to fatten; but, as the fattening process goes on, the internal cavity of the chest becomes smaller, the action of the heart weaker, and the lungs diminish in size in a regular gradation, from various causes; first, from limited expansion; secondly, from absorption, and by pressure of the surrounding parts; and, lastly, from quietude never allowing their due inflation, which the act of depasturation affords.

The liver is also found small. This I consider to be from absorption and internal pressure of the surrounding organs. The liver has also a diminished supply of intestinal and mesenteric blood, from the appetite not being so vigorous, and less food being eaten, as the animal grows to maturity.

I have known many animals die from accident, that, on inspection after death, have had large lungs and livers. They were in lean condition, but had every good quality for fattening; and I have no doubt would have made prime fat beasts, and whose lungs and livers probably would have been smaller when slaughtered.

I do think that Dr. Lyon Playfair is wrong in the opinion, that small lungs and livers are the best organs for the assimilation of food and fat. I think that the reason why animals become speedily fat in proportion as they approach maturity, is from the arterial action being slow, and the venous circulation impeded from the pressure of the accumulating fat. The arterial exhalents deposit more than the venous circulation can return, or their absorbents take up. Thus the harmony is broken. It is a fact well known, that very little blood of the venous kind can be taken from the fat animal. From what I have stated, taken collectively and in conjunction with the pri-

meval external conformation of the animal, may be deducted those determinations which tend to either the formation of fat or muscle.

The tendency of certain articles of food to fatten stock, and the suitability of others to keep up the general growth, afford a fruitful field for inquiry. I shall begin with those that favour evolution of growth. A series of substances that are charged with albumen, or a vegetable gelatine, are nitrogenized in the maximum: barley, oats, peas, and beans, form examples. These substances, having much nutritive matter, make the best food for the purpose of general growth, with the various herbivorous food for the young animal; but the more such food approximates lignin, the more insoluble and innutritious it is.

Herbivorous food for the young animal is naturally required, from its abounding with several elementary principles, as ammonia, &c., in unity with earthy matter, which, taken in with the food in depasturing and uniting with the inherent formation of phosphoric and muriatic acid (and the phosphoric acid in the farinaceous food), form the phosphate and muriate of lime. Wheat, with the gelatine of the farina, constitutes the formation of bone; hence the necessity, or rather advantage of supplying the growing animal with such a material.

The next series of substances are those which contain the saccharine principle, and are nitrogenized in the minimum. They are disposed to the formation of fat. They consist of the different sorts of bulbous or esculent roots, as turnips, mangel, beet, &c. These substances, when mixed with the nutritive matter of the farinacea, constitute the essential compound necessary for the production of fat and muscle in the animal body.

The table subjoined is one of equivalents by the celebrated chemist, Brande, showing the relative quantity of albumen and other matter in leguminous and bulbous food:—

100 Parts.	Soluble Nutritive Matter.	Starch.	Vegetable Fibrine or Albumen.	Saccharine Matter.
Barley	92	75	10	7
Oats	75	60	13	2
Beans.....	80	52	25	3
Acorns, two months dried	69	40	27	2
Swede turnip....	6½	½	1½	4½
Common globe..	4¼	¼	½	3½

This table is practically one of my own, as to the quantity of nutritive matter in the acorn. On reference to it, any one will quickly perceive those bodies which dispose to make fat or flesh: thus experience has shown the decided advantage of giving to animals bulbous roots, with those substances rich in albumen, when they are preparing for the butcher, and when growth is requisite to be freely allowed to the young depasturing beast. Gelatine, a substance naturally abundant in the vegetable creation, is also a chief ingredient in the animal tissue.

The scientific agriculturist will discover the best method on reference to the table. As far as philosophy teaches, those substances that have the property of forming either fat or muscle are the azotised and non-azotised food in their relative proportions. The disposition of certain breeds to make fat internally, and of others externally, is a physiological fact, which can only be explained on the principle of those breeds acquiring such a disposition hereditarily, or it may be from the animal possessing such an aptitude from the method of feeding in conformity with the selection of food. Now the breed of the South Devons are coarse, bony, large animals, and not disposed to make fat on the superficies of the body, but more internally; the North Devon is a small-boned and kindly animal, and disposed to fatten either externally or internally. A North Devon is a bad handler, with other points good: physiologically speaking, we should infer that fat would be deposited internally, from the skin being thick and inelastic, showing the absence of those tissues that are for the reception of fat externally. Suppose we have a South-hammer, a good handler, with a mellow and plastic skin, and every other denotation of being disposed to fatten, the probability is that the fat would be deposited externally. In my humble opinion, it is so with every other breed. We must attend more to the external form and quality, in conjunction with locality, climate, and soil. Guernseys or Alderneys make fat but very indifferently externally. I well know, practically, that an animal of either breed, with a good skin, and good bone, &c., is inclined to fatten on the outside; but when such is the case, there is an absence of it internally. The circulatory system, with the local form of an animal, may also be reckoned amongst those causes which tend to balance the fat indiscriminately, either inside or out. Say that an animal kindly disposed to fatten has a few points that preponderate; for instance, he is large over the surloin—the bloodvessels, nerves, and muscles of such a part take on a corresponding size. When he begins to have more food given to him, the circulatory system becomes more full of blood, and, as a natural consequence, the larger parts have a greater influx of blood; thus the growth of these parts either in fat or muscle, and they become of larger proportions, and deposit more fat than those which are not commensurate in vascular action.

Before concluding these remarks, I beg to offer an opinion respecting small lungs, as stated by Dr. Lyon Playfair (at a meeting of the Council of the Royal Agricultural Society), that they are more favourable to the formation of fat. Dr. P. says, horses have large lungs. I well know, and not speculatively, that horses, if fed on meal and potatoes, or turnips, quickly and rapidly make fat. In fact, this is the compost that horse-dealers use to puff up the farmers' cattle, so as to give them a glossy and plump look previous to sale, and the being put to work in this state oftentimes causes their death. On opening them, I have seen them loaded with fat.

Now this is not in accordance with Dr. Playfair's views. My firm conviction is, that animals with small lungs in their growing state will in proportion suffer in their external form. From observations I have made on animals of divers breeds, I come to this conclusion, that they make fat internally or externally, regularly or irregularly, in accordance with the organization in structural arrangement, linked with those grand principles that modify the external conformation of every animal—locality, clime, and soil; and lastly, the manner in which beans and acorns harden the flesh of animals. That they do so is an undisputed fact. The hardness of flesh or muscle depends on the richness of its lymph or

fibrine. Beans and acorns contain large quantities of vegetable albumen, compared with any other food given to horses or cattle. It is on this account that food which contains a large share of albuminous constituents, when given to horses, cattle, or pigs, makes them develop so great a degree of muscular firmness; but when substances rich in starch, mucilage, gum, or the saccharine principle, are added to beans or acorns, the hardness of the flesh becomes lessened, and the fat more emollient. I have practically proved this with horses. I have given beans and acorns to horses with hay-chaff on the farm. The muscular power has been augmented; the flesh feels hard; they work well without fatigue, do not perspire, and, in fact, they are in full vigour. I have altered their diet, and given, instead of chaff, turnips, either the Swede or common globe, and the effect is soon visible. The flesh becomes soft and puffy, little work excites perspiration—in fact, the animal is soon reduced from a state of good firm condition to one bordering on debility. From the taking away those substances, beans or acorns, which possess in a maximum degree the richest albumen, and the supplying those that contain it in the lowest degree, or minimum, the albuminous principle exists in several forms; and by it the living materiality of the animal body is by a law of animal chemistry built, under the guidance of immateriality.

THE CLOVER DODDER.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—Considerable alarm and excitement have lately prevailed in different parts of the country, in consequence of the destruction of the growing crops of clover by a parasitical weed called *cuscuta* or dodder. It seems to have been almost unnoticed previous to the present season, the peculiarity of which appears to have been highly favourable to it.

My acquaintance with this plant was formed about four years ago, when I noticed several patches of it in one of our fields of red clover then being cut the second time for hay. In this instance, its ravages were upon a small scale, but sufficient to attract the notice of the mowers, who, although ignorant of the cause, made their remarks upon the strange appearance presented by the clover. I have seen nothing of it in this neighbourhood since that time, and there is no doubt as to its having been introduced with the clover-seed. The species to which it is most nearly allied, and of which Mr. Babington* considers it a variety—viz., *cuscuta epithymum*—does not occur in this neighbourhood.

I would advise all persons, when selecting their clover-seed, to examine it carefully and minutely, in order to ascertain if it be entirely free from dodder. I should think this might be effected without much difficulty, and appears to me to be the only means of guarding against this pernicious pest.

Thomas Bentall.

Halstead, Essex, Oct. 10, 1843.

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* See Babington's "Man. Brit. Bot.," p. 203; and the 'Phylologist," No. 21, p. 467.

THE CLOVER DODDER.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—Having read a paper in your journal for this month, on the Clover Dodder, I was induced to examine some yellow spots in a field of seeds, or young clover, which I had previously noticed, though not with any particular interest, and to my sorrow I found that they were caused by that insiduous plant to which you have directed the attention of your readers. The field to which I have alluded contains eleven acres, and we have not discovered more than five or six spots, of from two to three yards in diameter; but I am sorry to say, that some are in a less advanced stage than others, so that it is to be feared that fresh ones will from time to time make their appearance.

This unfortunate discovery caused me to examine a field on another farm about two miles off, and there I found the parasite had taken a more formidable hold of my luxuriant crop of seeds, no less than thirty large patches being found in a field of eight acres. Here I was sorry to see the plant in a more matured state, the seeds being ripe—in consequence, I suppose, of the situation being warmer, and the land of superior quality. In a field of four acres, between the above two, and in a very elevated situation adjoining the Dover road, we have discovered as yet only one patch of this injurious parasite, which, wherever it has taken up a position, as it appears to me, spreads with a fearful rapidity. I have endeavoured by digging round the parts affected, to stop the progress of the enemy, but I fear with little prospect of success. It is my intention, contrary to what is considered, under ordinary circumstances, the more judicious practice, to feed closely my seeds with sheep; and if, in the ensuing spring and summer, I perceive any traces of the clover dodder, the crop shall be subjected to the same mode of treatment; though here it would involve a considerable pecuniary loss, as compared with mowing it for hay. And should not this be thought a sufficient precaution against the probable permanent lodgment of the enemy in my fields, I will adopt your suggestion—sacrifice the crop entirely, and broadshare the land throughout the summer, so as to destroy every vestige of so deadly a foe. The clover seed which I used was of the best quality and obtained from a most respectable seedsman in an adjoining town. That the mischief was conveyed to my fields through the medium of the clover seed, I think there can be no doubt, though I am sure that the individual of whom I purchased it would not, for tenfold its value, have knowingly supplied me with such an article. As this parasitical plant appears to be unknown in these parts, I should have remained in ignorance of the danger lying, in a great measure, concealed in my fields, had it not been for the information conveyed in your valuable periodical, and for which I beg to tender my sincere thanks. I would wish to apologize for so far trenching upon your valuable time; still I am not without the hope that I may be the humble means of leading you to give some further information and advice on a subject which appears to me to be of some importance.

I am, sir, yours very respectfully,

Kent, Oct. 7th. A Subscriber.

GUANO.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—I have just read with much pleasure the very able letter of your correspondent, who styles himself, "An eye witness to the effects of Guano," contained in the September number of your truly excellent magazine. I had intended replying to the cynical remarks of a "Middlesex Farmer" before now, but I am glad to find that his letter has fallen into far abler hands than mine. I will therefore merely observe, *en passant*, that I have tried the guano manure in various ways, and with invariable success, and have moreover seen the surprising results of its application in numberless instances. Many of my neighbours have also used the guano, and all speak loudly in its praise.

If, as Mr. "Middlesex Farmer" is pleased very sapiently to observe, the treatises or pamphlets he has lately perused and which he so unmercifully criticises, be "obviously intended" to force a profitable sale," rather than to "establish truth," surely there can be no such "obvious intention" on the part of many highly respectable and intelligent farmers who have used guano, and who are daily giving their willing testimony to its merits as a fertiliser.

Many farmers in making experiments with this, or any other newly introduced article, are too apt, in case they are unsuccessful, at once to condemn as worthless the tillage, &c., with which they have been experimentalizing; whereas, if the truth were known, the fault is their own, in their improper or injudicious mode of application. Perchance your "Middlesex Farmer" is one of these. Truly, one may infer such to be the case, from the querulous tone of his letter. I will not, however, trespass any longer upon your time and space, but in conclusion, will merely observe, that I know the gentleman near Buxton, to whom your correspondent alludes in his excellent letter. I have seen the crops in question, and they were truly wonderful. So much for a "Middlesex Farmer's" criticism on guano.

"Indignor quidquam reprehendi, non quia crasse
Compositum, illepideve putetur, sed quia nuper."
Hor.

I am, sir, yours, very respectfully,
A DERBYSHIRE FARMER.

October 10th, 1843.

PROFESSOR JOHNSTON ON MANURING SOILS.

Professor Johnston, of Durham, having attended at Dumfries, by request of the Committee of our new Agricultural Association, delivered a lecture on this important subject, in the Assembly Rooms, on Monday afternoon. The audience amounted to about a hundred, comprising most of the neighbouring proprietors and extensive farmers of the district, along with a good many of our townsmen.

When the Professor appeared, he was received with cheers. He commenced by stating that he would, in the course of his lecture, go over many points which could not but be well known to some of the audience; but this was necessary in order that all might be able to follow him in a clear manner. He would direct their attention to the manuring of soils and to the principles which regulate this subject. It was a well-known fact that some soils might be cropped and continue fertile one hundred years without being manured; there were even soils in Europe which had been treated in this way for several centuries; but, nevertheless, there were no soils which, placed under such a system, would not reach a period when remunerating crops could not be grown, and when a necessity for manuring would not arise. The first thing to be considered was, what does the soil consist of? The main ingredients of all soils were clay and lime, in greater or less proportions, from which some were called sandy, some clay, and some calcareous soils; while, at the same time, no soil could be capable of great fertility which had not a due proportion of each. But in order to ensure good crops, the soil required to contain several other substances. Mr. J. then referred to a number of tables which he had hung up in the lecture-room, giving particulars of various chemical proportions. To show the influence of lime, he pointed out, from one of the tables, that lime existed in all the different grasses usually cultivated for hay. In 1,000lbs. of ryegrass, there are 7.3lbs. of lime; 27.8 in red clover; 25.5 in white clover; and 48.3 in lucerne. This shows what an important part was played by lime, and, in fact, without the supply of this substance, these plants could not perform their functions, nor grow in a proper manner. This was not the only function of lime; it acted in several other ways, into which he would not then enter. It would be observed that in the table before them, showing the component parts of ryegrass, &c., no mention was made of clay or sand, because they were not simple substances like lime, but composed of alumina and silica. The quantity of alumina contained in plants was generally very small, but the proportion of silica often large. Thus there was a good deal of silica in ryegrass which had a strong stalk, and but little in clover, whose stalk was soft and tender. Sand was almost entirely composed of silica, which could be obtained nearly pure by breaking down a flint or piece of white quartz (called in this district chucky-stone). But lime, sand, and clay were not the only substances required to form a good soil; there must be present, though in smaller quantities, potash, soda, magnesia, oxide of iron, sulphuric acid, phosphorous acid, and chlorine. All these substances entered into the composition of grasses, and most other cultivated plants, and unless a soil possessed them all, these plants would not grow upon it in a healthy manner.

It is well known that the usual grass crops cultivated contain two distinct classes of matter—organic and inorganic. The former composed the starch, gum, gluten, and sugar of the plant; the latter consisted of saline, earthy, or inorganic substances. If a piece of wood or any other vegetable production were burnt, the whole of it would be dissipated, save a small portion of ash, which was its saline or inorganic matter: its organic all disappeared. Thus the grain of wheat contained about 2 per cent. of saline matter, while in its straw 6 per cent. was found: the proportions of barley were nearly the same. In the grain of oats there was about 3½ per cent., this larger proportion arising from its being usually consumed with its husk on; and in oat-straw there was 6

per cent. of earthy matter. In peas and beans the proportion amounted to 3 per cent., and in their straw to 5. Potatoes and turnips contained a great quantity of water—75 per cent.; that is, in 4 tons of potatoes there were 3 of water; but still the proportion of ash was 1 per cent. In meadow hay, the proportion, as they had seen, varied from 5 to 10 per cent.; while in clover it was upwards of 9. The growing of a plant was, in fact, just like building a house; though they had wood, stones, nails, slates, and all other materials, without lime the house could either not be built, or would be a very poor one. And in the same way, wanting one of those substances required by the plant, to enable it to shoot up and perfect its seeds, it would either not grow properly or not at all. It would be observed that the greatest portions of plants consisted of those substances which burnt away, and which generally it did not derive from the soil—its organic matter; for the main use of the soil was to furnish it with potash, soda, and other inorganic substances. In the virgin soils of Africa, on the banks of the Mississipi, and of the Canadian lakes, there were soils which would grow the same crops for a hundred years without being manured; but, however rich they were, in course of time their fertility would fail. It would not follow from this that their stock of these substances was entirely exhausted; for the plants could not cover the whole soil at once, and their roots could only reach to a certain depth. The soil might, therefore, though apparently exhausted, contain more of each of these substances than were actually required for a single crop, but, practically, might not be fit for growing the plants, because a sufficient quantity was not available to enable them to grow rapidly. Again, if the crop was barley, which ripened in three months, there was not nearly so much time given to extract the necessary substances as where the plant was longer-lived, and took perhaps nine months to come to maturity. A soil was not, therefore, in a proper state when there was merely as much of these substances as a single crop required; but an extra supply of nourishing substances was necessary to enable the roots of the plant to draw up what was required during its natural period of life. He had said that the time would arrive when any soil would become exhausted by constant cropping; but some particular substances might be entirely consumed while others remained, and, again, it was seldom indeed that the whole crop was annually taken away, and no part returned to the land. In some land—in the Carse of Gowrie, now in the course of being reclaimed from the Tay, crops were taken for ten, twelve, and fifteen years in succession, without manuring, which, indeed, would have spoiled the crops by rankness. In ordinary husbandry a certain portion of the crop was generally returned. Suppose, for example, that 1000lbs. of hay were raised from a piece of land, and then restored to the ground. With the exception of some slight chemical changes, the land would be no worse; for all the substances would be returned. It was in this that the efficacy of green manuring consisted. In many parts of the country, it was common to take a green crop, and plough it in. What was the effect? The inorganic matter drawn up from the soil by the plant was returned to it by the plough, while its organic matter, which had been absorbed from the air, was also ploughed in and enriched the soil. Nor was this the only effect of green manuring; for the roots of the plants brought up matter from below, which, when turned in by the plough, benefitted the surface. Taking again the case where only a part of the crop was returned—suppose 1000lbs. of hay were cut, containing 53lbs. of inorganic matter, only 40lbs. of which were returned to the field. The process of exhaustion would be much slower than when all the crop was carried away; but still, in course of time, that state would be produced. Perhaps only one substance might be exhausted, such as potash, but still for want of it there would no longer be a crop of hay. Was there any common or prevailing practice by which such a state of things as this was ever brought about, so that Nature could not produce the plants sown, and was forced to choose some other one which did not require the substance awanting. Why, suppose a farmer fed full-grown cattle fat, and manured his land from their excrements; and that proper attention was not paid to liquid manure, but it was allowed to run waste, and find its way to the rivers, and thence to the sea. Well, this liquid contained quantities of potash, of soda, and of magnesia, because all these substances were soluble in water; and, though every attention might be paid to the solid manure, and the farmer thought he was returning as much as possible to the soil, in reality he is annually robbing it of large and most important portions of matter. From this let them draw the practical inference, how important it was to save the liquid manure. Suppose, then, that by carelessness or ignorance, the land had become exhausted of any particular substance, the remedy was to add some saline manure. A great deal had been said of saline manures of late years, some saying they acted in one way, and some in another; but the true principle of this beneficial action was, that they supplied what the land was deficient in, and thereby restored the land to fertility. Suppose there was a deficiency of soda, then nitrate of soda should be added; of potash, add nitrate of potash, the action of which would supply soda and potash; of sulphuric acid, then add gypsum; and the result would be that the land would again bear the crops which it had become unable to grow. Add a larger quantity of these than were required at first; and, provided the soil was such that the rain did not wash them rapidly away, they would nourish the plants in after years, supplying what was as much food for the plant as any other substance. In this way, therefore, when the land was found to be deficient in one substance, that could be restored without incurring the expense of adding all other substances. Suppose, for example, that the land was in want of 100lbs. of potash per acre; this might be restored by adding as much hay as contained that quantity of potash. But there was no necessity for this. It would be much more economical to add a saline manure, containing the potash only, than even to add farm-yard dung in such a case, which would be better applied to a poorer soil. It was therefore clear that land could not be continued fertile unless those salts were returned in some shape or other, which were taken away, unless there were some circumstances which caused this effect, such as the influence of bountiful Nature, which actually did so in various ways. Referring to a table of the analysis of water contained in the North Sea, which Mr. Johnston stated to be nearly the same as that of our own

shores, he showed that it contained a larger proportion of common salt, and small quantities of chlorides of potassium and magnesium, and of phosphate of lime. Now these were taken up in the air, and deposited on the land in the form of dew or rain; as on Sunday last, when a heavy mist, charged in this way, had come up from the Solway, spreading its contents over the soil. In this way many of the salts carried away by the waste of liquid manure or otherwise, were restored to the land. Let them look at the practical application of this fact. It was evident that the low lands along the coast, and the high sloping lands adjoining, would receive in this country large quantities of these substances, both from the east and west, from being fully exposed to the sea breezes; while, in the midland districts, there would be much less deposited, because they were sheltered from the sea. Now some farmers had obtained the greatest benefits from applying common and other salts to their fields, while others had manured in this way for years without any return. He had shown them the principle which explained this difference; and from that they would see how nature worked, and, as practical men, what lands would be benefitted by such applications, and what not—where they would be justified in laying out their money, and where it would be thrown away. These salts lost to the soil were also often restored in another way. The spring water which percolated through the different strata of the earth's crust and returned to the surface through cracks and fissures, was never pure, but always impregnated with common salt, lime, and other saline substances. The practical application of this was to irrigate land. No such water should be allowed to run to waste; for, in passing over the soil, something was always left which benefited the plants. This practice had been too much neglected in this part of the country, though there was a gentleman in the room who had done a great deal in this way—Mr. J. S. Menteath, of Closeburn. There were, certainly, no extensive beds of lime in this district, like the chain of limestone mountains which ran through the centre of England, from which springs gushed forth charged with valuable salts, allowed to flow unheeded to the sea, though capable of becoming a source of individual wealth. For, were the lands irrigated by these springs, the liming of these lands would be in a great measure unnecessary; and other valuable substances would be supplied at the same time.

Let them take the case of old pasture land, on which cattle were fed. It was commonly supposed that good pasture land continued to improve the longer it was in grass. This was a mistake, however; it might continue to improve for a hundred years, and after that begin to fall off. On such lands cattle were grown and sold off, which was not so exhausting a process as cutting and taking away hay. Still, there was a loss to the land; for the body of an animal was partly composed of vegetable tissues, containing animal substances, and partly of bones, of which 33 per cent. was cartilage (glue when boiled), and the remainder earthy matters. Now, all these earthy matters came from the grass, and the grass in its turn obtained them from the soil. The animals, in this way, carried off substances which impoverished the soil. They took no silica, for that was not found in animals; they took, however, a little oxide of iron, which existed in the blood; but their chief demands were made upon lime and phosphoric acid. In this way, though pasture land got nearly all returned which was taken away, the time would come when the finest soil, impoverished of phosphoric acid, could only afford the plants a stunted growth. This would infallibly be the case, unless nature, by scattering sea-spray, by spring water, or by some other process, restored the salts which had been removed. Where this was not the case, dressing the land with bones would have the same effect; bones contained a large proportion of organic matter, but at present he would confine himself to the effect of the inorganic substance—the phosphate of lime, which they supplied to the land in place of what had been taken away by the animal. The new manure, guano, contained a considerable quantity of phosphate of lime, and to this fact some of its good effects as a manure were to be ascribed. He would not advert to a beautiful law of nature, regarding the difference between fattening and rearing animals. Suppose, for instance, that an ox had reached its full growth, and had a sufficient supply of muscle, lean, or beef upon it; and that all that was wanted was to lay on fat. By giving it oats, containing $3\frac{1}{2}$ per cent. of saline matters, which were not needed in the formation of fat, and therefore all returned in the excrement of the animal to the soil, the fat was produced entirely from the organic matter; and this the plant had mainly derived from the air. The same effect ensued when cattle were fed with hay, out of 100lbs. of which they obtained 5lbs. of fat, and returned its saline contents to the soil. When, however, young cattle were reared and fed on the land, a very different condition ensued: the young animal required saline substances to enable it to grow, particularly phosphate of lime, to form its bones, and therefore drew off from the soil altogether these salts, in addition to organic matter. In the one way the land was no worse, and in the other it became gradually impoverished, since these cattle were annually sold and carried off the farm; and this explains the fact, that some pastures were good for fattening, and not for rearing stock, and *vice versa*. Mr. Johnston then referred to the composition of hair or wool, which contained 5 per cent. of sulphur. This sulphur could only be obtained from the grass, and unless there was a sufficient quantity in the soil, the wool would not grow in a proper manner. Some lands once celebrated for the fine wool produced upon them, might become exhausted of sulphur, and produce good wool no longer. The remedy in such a case was to restore the sulphur, by dressing the land with gypsum or sulphate of lime, unless nature supplied it in the manner he had just pointed out. In the ordinary rotation of cropping, the grain was carried away and the straw returned to the land, by means of which there was not nearly so much loss as if both were withdrawn, though still sufficient to cause deterioration, and requiring something to keep the land in its original state. But it did not follow from this that farm-yard manure should be applied; they should endeavour to discover the particular substances which had been removed, and restore these alone; and by this application of chemistry, a great economical saving would be effected.

The general conclusion to be drawn from these observations was, that to maintain the soil in a fertile state, all its component parts must be re-

tained, by restoring to it as much matter as was taken off. And the proper method of so doing was, first, to allow nothing to go to waste, and to restore, in some form or other, those substances which it was found unavoidable to carry away. In improving land it was not necessary to add all the different substances alluded to, but only those in which the soil was deficient; and by ascertaining these substances great economy would be effected. It might also be required to improve land, so as to render it capable of bearing some particular crop; and for this it was merely necessary to look at the composition of the plant, and apply to the deficient soil those substances of which the plant required a large supply. There were other means than the direct addition of substances by which unfruitful soils might be improved—mechanical means, such as draining. For instance, between the soil and subsoil there might exist a portion of ferruginous matter, injurious to plants, and causing their roots to stop whenever they reached this point; by draining, this unwholesome liquid would be carried off, and the water which percolated through the subsoil would wash it of any soluble substances which were injurious to plants. Moreover, the roots would then be able to penetrate through the subsoil, and bring up saline substances which were wanted at the surface. Subsoiling, by which the earth was stirred up, and the air allowed to enter, simply served to facilitate this latter effect; and, in this way, a double advantage accrued from draining, for it supplied substances formerly beyond the reach of the plant, and saved the expense which would be increased if they were to be supplied by art. Land was also improved by resting for some time; and it was well known that land laid down for some time in grass, would grow grain crops which it had formerly refused to bear, although none of the additional substances it required had been added by the hand of man. The cause of this seemed to be, first, that the land was allowed to receive the full benefit of those influences exerted by nature, in sprinkling the sea-spray over the soil, and depositing salts during the percolation of spring water; and second, that the grasses were enabled to penetrate deeply into the soil and bring up salts which were beyond the reach of grain crops. It was also well known that land occasionally ceased to grow clover, becoming what was called clover-sick; and that this was often cured by prolonging the rotation, growing clover once in eight years in place of four. Perhaps the land would grow rye-grass well enough, though it refused to grow clover, and this might be owing to the deficiency of potash, of which clover required a large quantity. By adding manure once in four years a certain quantity of potash was given to the soil, but this might not be sufficient, while, in eight years, a double quantity would be received, and thus the proper portion restored to the soil. On this principle was the fact to be explained; but the same object would have been gained by adding at once a quantity of potash by itself. While on this subject, he might mention that various very curious facts had come out of late as to the action of specific manures, from experiments made in Ayrshire, Renfrewshire, and other places. It was found that in a field planted with potatoes, one part manured with nitrate of soda, yielded no better crop than a part to which none was applied; the same result ensued where sulphate of soda was used; but on a part where a mixture of these was applied, the return of potatoes was enormous—8 or 10 tons more per acre—the crop being not less than 30 tons per Scotch acre, with stems 7 feet in height, and forming the wonder and admiration of the country. They were not to infer from this that the addition of one of these substances did no benefit to the land; it only showed in this instance that both the nitrate and sulphate were required to enable the plant to grow with sufficient vigour. Mr. Alexander, of Sonthbar, Ayrshire, had brought out a similar result with beans: applying common salt and gypsum separately produced no effect; but a sickly crop dressed with a mixture of the two had started into new life, and had produced a magnificent return. It was thus evident that all the substances required must be present in the soil to ensure the healthy growth of a plant. In conclusion, he trusted that, in the observations made, the general principle laid down had been illustrated by practical observations, which would be applied by them in clearing up embarrassments which might lie in their way, and enable them to conduct their labours in a clearer and more enlightened manner than they had hitherto done.

The following are the tables (with one exception) with which the Professor illustrated his lecture:—

INORGANIC MATTER IN ONE THOUSAND POUNDS OF HAY.

		Clover.		
	Rye-grass.	Red.	White.	Lucerne.
Potash	8.8	19.9	31.0	13.4
Soda	3.9	5.3	5.8	6.2
Lime	7.3	27.8	23.5	48.3
Magnesia	0.9	3.3	3.0	3.5
Alumina.....	0.3	2.0	1.9	0.3
Oxide of iron ..	0.0	0.0	0.6	0.3
Silica	27.7	3.6	14.7	3.3
Sulphuric acid ..	3.5	4.5	3.5	4.0
Phosphoric do...	0.3	6.6	5.0	13.1
Chlorine	0.1	3.6	2.1	3.2

PROPORTIONS OF INORGANIC MATTER IN GRAIN.

	Potash Salts.	Lime Salts.	Silica.
Oats, straw and grains	34	4	62
Barley, do., do...	19	26	55
Rye-straw	19	16	64
Pea do.	28	64	8
Potatoes	86	14	0
Ditto, tops	4	60	36
Turnips	88	12	0

COMPOSITION OF OX-BONES.

Cartilage	33.3
Phosphate of lime	57.4
Phosphate of magnesia	2.0
Carbonate of lime	3.9
Soda, with a little common salt	6.4
	100

COMPOSITION OF HAIR.

Carbon	50.65	Oxygen	20.85
Hydrogen	6.36	Sulphur	5,00
Nitrogen	17.14		

SEA-WATER—ONE THOUSAND PARTS CONTAIN

Common salt	24.84
Chloride of potash	1.35
Chloride of magnesia.....	2.42
Sulphate of magnesia.....	2.06
Sulphate of lime	1.20

Phosphate of lime and iodine—a trace.

AGRICULTURAL CHEMISTRY.

(From the Berwick Warder.)

We quote the following from a letter which is written by a farmer in Aberdeenshire, a member of the Turriff, Agricultural Society :—

"We have this season commenced a very extensive series of experiments on extraneous manures, and the analysis of the soils in this district; and have employed Mr. Sheir, Aberdeen, as our chemist for that purpose. Still I would say "*Agricultura Floreat;*" and every exertion should be made to promote her cause. I have long been impressed with the idea that seminaries for agricultural training of young gentlemen (both in the theory and practice of agriculture) would be of the utmost importance in embuing the minds of the young rising generation, who are to take our places, with correct principles —and if they were instituted in different localities throughout the country, so much the better—as the pupils could be placed by those who could afford it —say for two years at a time at each of two or three seminaries—by which means a correct knowledge of the modes of treating the various soils of different districts would thereby be acquired. From the enclosed copy of prospectus, you will see that a beginning has already been made in this walk; and I shall feel obliged if in any way you can promote the cause. I have a good many experiments with guano, nitrate of soda, sulphate of ammonia, neutralised urine from a close tank, &c., going on here this season, and the results are offering to be extremely good. I think, however, we are only just emerging from the childhood of agriculture, and that future investigations upon the correct principles of science will revolutionise the farmer's ideas and practice. It is my humble opinion, that so important a thing is it to possess correct analyses of the different vegetables reared as agricultural crops, and of the different substances used as manures, that the most eminent chemists in the world should be employed for the purpose—first to analyse in their separate laboratories, and then to meet in order to compare and adjust the results at which they had separately arrived. Parallel lists of such analyses once obtained—an easy key to the accurate application of manures would be in every farmer's hands; requiring however judgment in the use of them, founded on a pretty correct knowledge of the general character of the soil on which the plants were cultivated. In getting up these lists, however, it would not do to rest satisfied with *one* set of experiments. The *half-stunted* vegetable, and the vegetable of the same kind placed in the most favourable circumstances for its vigorous and healthy development, might, under chemical manipulation, exhibit different results as to their relative component parts, and the chances for a supply of carbon to all vegetables being, according to Liebig's theory, the same, it would be a most important point for the practical farmer to ascertain what modifications each different vegetable was capable of receiving from a full supply of different inorganic substances necessary to its healthy constitution; and what are the relative proportions best suited for maturing each vegetable in the most profitable and healthy shape. It would, I should suppose, require very great care and expense to conduct such minute and accurate experiments, and it is a matter which the Government of the country ought to take up. In this grand object for ameliorating the condition of agriculture, they should combine with Professor Johnston, the services of Liebig, Dumas, Baussingault, and Faraday."

We willingly comply with this correspondent's wish, to make publicly known the seminary for agricultural education to which he alludes. It is superintended by Mr. R. O. Young, A.M., of Darra, by Turriff, Aberdeenshire. We quote the following passages from the prospectus, as showing the precise objects which Mr. Young has in view :—

"The young gentlemen who may be entrusted to Mr. Young's charge for the purpose of being instructed in the principles and practice of Scottish agriculture, will have daily opportunities of witnessing the regular routine of farming operations going on at the farm, and of taking an active part in these operations.

"They will be required to keep, in a farm book, a daily record of what has been done on the farm. Explanations will be given of the principles upon which the different operations are conducted, and upon which they will be examined at stated times. Regular minutes will be kept by the pupils of all such explanations, as well as of any facts that may come to their knowledge through their occasional intercourse with the farmers of the country.

"There will be stated times set apart for reading, as text-books, the most approved agricultural works of the day; and on the subjects of their reading, Mr. Y. will minutely examine the young gentlemen, and will also require them to write exercises upon given agricultural topics—particularly those that bear on practice.

"While it will be Mr. Y.'s care to direct the attention of the pupils to chemistry and geology in their application to practical agriculture, a branch of study until lately very little attended to, he will make arrangements for procuring the services of the professor of agriculture in the University of Aberdeen, for a few weeks every summer, to give lectures and conduct experiments on the analysis of soils, manures, &c.—thus securing to the pupils more than a mere theoretical knowledge of this important branch of agricultural education.

"As nothing is so much calculated to impress any subject upon the youthful mind, as to invest it with a *personal interest*, Mr. Y. proposes to devote to the exclusive use of his pupils, a small farm, of about 50 acres in extent, adjoining to his other farm. This small farm contains a variety of soils, upon which experiments of different kinds may be conducted, on a small scale. It will be possessed and managed by the pupils, under Mr. Y.'s direction, and upon certain equitable rules as to each pupil's share of the concern. Each pupil will be required to keep regular books, exhibiting all disbursements and receipts, and the results of all experiments tried, with every particular connected with such experiments. Each pupil will be required to take his share of management, &c., and the profits of the concern, after paying a certain moderate rent, will, at each term, be divided among the young gentlemen, in proportion to their respective interests. It is conceived that such a plan will have a strong tendency to promote exactness, regularity, and business habits; but, without the consent of their parents or guardians, pupils will not be asked to join in this scheme."

We have, in another part of our paper, given an account of an Agricultural Seminary proposed to be established on a great scale in the south of England, and for the endowment of which we are glad to see liberal subscriptions already proffered by English

nobility and gentry. But here, also, as in other things, the Scotch agriculturists have taken the lead; for it would appear that a similar Agricultural Seminary, though on a more humble scale, but equally efficient for the object in view, has been already established in Aberdeenshire, and by the practical farmers themselves.

SAFFRON WALDEN AGRICULTURAL SOCIETY.

This society held its eleventh anniversary meeting, for the show of stock, ploughing, and distribution of prizes to the deserving poor on Friday, October 13th, and the proceedings of the day throughout afforded strong proofs that the association still continues its useful career with its wonted success and spirit. The show of stock took place on the Castle-hill, and the quality, particularly of the neat stock, was most excellent. Of horses and swine there was a good show, Lord Braybrooke and Mr. W. F. Hobbs exhibiting in the latter class; and amongst the sheep were some animals which were greatly admired, particularly six Sussex Down ewes belonging to Mr. John Webb, Mr. Jonas Webb having withdrawn from shewing in this class, to allow a better chance of success to other competitors. The roots were fine; and there was a good exhibition of agricultural implements by the different makers of the district upon the ground. The day was exceedingly fine, and there were a great number of the nobility and agriculturists, many from distant parts of the county, upon the ground. The following are the

PRIZES FOR STOCK.

JUDGES.—*Sheep and Roots*—C. Barnett, Esq., Mr. J. Teverson, and Mr. H. Smith. *Neat Stock and Swine*—Messrs. W. Parriss, H. Smith, C. Hicks, T. Leonard, and S. Spicer. *Horses*—Messrs. R. Emson, W. Phillips, and P. Portway.

SHEEP.

Silver cup, value 3*l.* 3s. (increased to 5*l.* 5s. by Mr. Webb)—six Sussex shearling ewes; Mr. John Webb.

Ditto, value 3*l.* 3s.—six stock ditto; Lord Braybrooke.

Ditto, ditto—ditto Hampshire ditto; Mr. Isaac Hodges.

Ditto, ditto—six shearling ewes of any other short-wool breed; none of sufficient merit.

Ditto, ditto—stock ditto; none shown.

Ditto, ditto—six shearling ewes of the white-faced or long-wool breed; none shown.

Ditto, ditto—six fat shearling wethers of any breed—Lord Braybrooke.

2*l.* 2s.—ditto; ditto.

Silver medal or 1*l.* 10s.—ditto; none shown.

NEAT STOCK.

A silver cup, value 5*l.* 5s.—best bull of any breed; Mr. J. Clover.

A silver medal, value 3*l.* 3s.—ditto, the property of a practical farmer; Mr. M. Winder.

Ditto, or 1*l.* 10s.—ditto, under two years; none shown.

Ditto, or 1*l.* 10s.—polled cow in milk; J. D. Magens, Esq.

Ditto, ditto—Alderney ditto; Lord Braybrooke.

Silver cup, or 3*l.* 3s.—ditto, improved short-horn; Mr. J. Clarke.

Ditto, value 5*l.* 5s. (by H. J. Adeane, Esq.)—pair of two-year-old short-horned steers—none shown.

Silver medal, or 1*l.* 10s.—best two-year-old improved short-horn heifer; Mr. J. Clover.

Ditto, ditto—ditto, of any other breed; ditto.

Ditto, ditto—best yearling heifer; ditto.

A silver cup, value 5*l.* 5s.—best fat ox or heifer; Mr. W. Clayden.

Ditto, ditto—ditto, the property of a practical farmer; Mr. J. Teverson.

1*l.* 10s. (extra)—short-horn cow; Lord Braybrooke.

HORSES.

Silver cup, value 20*l.* (by J. A. Houblon, Esq.)—best entire cart-horse; Mr. R. Johnson.

Ditto, 5*l.* 5s. (by Mr. O. H. Edwards)—nag ditto; none shown.

Ditto, 3*l.* 3s.—nag mare having produced a foal; Rev. J. T. Bennett.

Ditto, 5*l.* 5s.—entire cart horse, not obtaining 1st prize; Mr. T. Catlin.

Ditto, 3*l.* 3s.—cart mare having produced a foal; Mr. M. Winder.

Ditto, 3*l.* 3s.—ditto, the property of a practical farmer; none of sufficient merit.

Silver medal, or 1*l.* 10s.—cart colt or filly, from two to three years old; Lord Braybrooke.

Ditto—yearling cart colt or filly; Mr. Wm. Perry.

Ditto—nag colt or filly, from two to three years old; Mr. E. Emson, jun.

Ditto—yearling ditto; Mr. J. Teverson.

Silver cup, value 3*l.* 3s.—pair of plough mares, the property of a practical farmer; Mr. G. Haylock.

SWINE.

Silver medal, or 1*l.* 10s.—best boar; Mr. W. F. Hobbs.

Ditto—breeding sow; Lord Braybrooke.

15s.—best fatted pig, the property of a labourer; Thos. Ives.

10s.—ditto; D. Parmenter.

1*l.* 10s. (extra)—three fat pigs; Mr. J. Teverson.

POULTRY.

1*l.*—three best young fowls; Lord Braybrooke.

10s.—ditto; E. G. Barnard, Esq.

CORN.

A sweepstakes of 5s. each for the best sample of the following descriptions of grain was not competed for:—white wheat, red ditto, barley, and oats.

ROOTS GROWN IN A FIELD.

10s.—best six roots of long red mangel; none of sufficient merit.

10s.—ditto yellow globe ditto; Mr. W. F. Hobbs.

10s.—ditto Swedish turnips; Mr. M. Nockolds.

10s.—ditto white ditto; Mr. W. Clayden.

10s.—best peck of potatoes for agricultural purposes; Mr. John Clarke.

10*l.* 10s. (by Lord Braybrooke)—to the practical farmer, for the best piece of Swedish turnips, not less than 7 acres, if under 200 acres, and 15 acres above that; 10s. entrance; if not seven competitors, entrance money to be returned. Only 5 competitors on the 12th of July (the time named); consequently no prize was awarded.

PRIZES TO LABOURERS, &c.

About three o'clock the noble President, Lord Braybrooke, proceeded with the company to the

common, where waggons had been provided for the purpose, to distribute the prizes and rewards to the industrious poor. His lordship was accompanied by the Hon. Mr. Everett, the American minister; Lord A. Harvey; Lord and Lady Rayleigh; the Marchioness and Ladies Cornwallis; Lady Braybrooke; the Hon. A. Herbert; the family of Viscount Maynard; Professor Henslow; Alderman Copeland; Captain Percy; R. Birch Wolfe; J. Bullock; J. D. Magens; — Andrews, and J. Taylor, Esqs.; Revds. J. Graham, Griffenhoofe, Holdsworth, Platton, &c. Two of the waggons were filled with ladies.

THE DINNER.

At half-past four nearly 150 gentlemen sat down to dinner in the Agricultural Hall, which, as usual, was very tastefully decorated with flags, banners, and flowers for the occasion. The noble President took the chair, supported by the Hon. Mr. Everett, the American minister; Lord A. Harvey; Lord Rayleigh; the Hon. A. Herbert; C. G. Round, Esq., M.P.; R. Palmer, Esq., M.P.; Professor Henslow; C. Barnet, C. Smith, R. Birch Wolfe, J. Bullock, — Adeane, Wm. Shaw, London, W. F. Hobbs, Esqs.; Revs. J. Graham, D. Gwilt; &c., &c. Mr. Alderman Copeland acted as Vice-president.

After the usual loyal customary toasts were drank and responded to,

Mr. BARNETT, in returning thanks for the judges, said they had done their duty without favour or affection, and he might add without reward or the hope thereof. They had felt it their duty to withhold some of the prizes, because the animals were not of sufficient merit, and he hoped this would induce the gentlemen who had exhibited them to go home and change their breed. He then proposed "the health of Mr. Jonas, and the committee and stewards." (*Drunk with cheers.*)

Mr. JONAS returned thanks, and said—The committee are ever willing to carry out the intentions of the society, because they know they are to benefit our country and the poor. By our prizes for domestic animals we have been able to improve them to a great extent, and thus are able to fatten them with a less quantity of food; we are by our improved cultivation enabled to increase the annual production of the land for the increasing population (*cheers*); above all, in offering rewards to honest and industrious labourers, we feel we are improving the moral condition of the people amongst whom we reside. (*Cheers.*) That is an important point. There is another point. I may call attention to another body of men who send their emissaries and lecturers into the districts, there to sow the seeds of disaffection, and promote principles which would destroy that class of agricultural labourers with whom we are connected. (*Cheers.*) At our annual meeting of the Royal Agricultural Society, I heard an observation fall from the hon. gentleman, Mr. Everett, which led me to consider the agricultural interest as more important than I ever had considered it. He stated that, great as was the value of the exports between these two countries, they were exceeded by the value of the green crop produced here, and our exports to all the world were exceeded by the value of the grass crops of England. (*Cheers*) Therefore when I consider the way in which agriculturists are spending their money in improvements —when I consider the vast importance and the vast wealth embarked in the cultivation of the soil, though I may be considered to be one of the desponding, I am led to hope and trust that an interest so important will never be sacrificed, by those to whom the destinies of this mighty empire are entrusted, to agitation. (*Cheers.*) Deeply as I feel the importance of such societies as this—deeply as I feel that they are extending and improving the cultivation of the soil, still, in conjunction with these societies, I am led to consider that nothing will more tend to increase the annual production than giving security to the occupying tenant by the tenure of a lease. (*Cheers.*) When I travel to London I find houses built on other men's land, on building leases, and the parties are enabled to calculate the exact strength of the timber to last the exact time of the lease; but it is not so with the tenant farmer, for many of his improvements must necessarily be of a more lasting and permanent character; and therefore, if these men require security for their capital, I am sure the tenant farmer requires security for his by a tenure of years granted to him. (*Cheers.*) You are all aware that I am largely engaged in the cultivation of the soil; my description of soil is poor—very poor indeed, and it is only by permanent improvements that a profit can be made from it; and it is only by granting leases to the tenants that you can enable the farmer thus to embark his capital in the soil. For instance, will the farmer employ ships to bring guano here unless he has the security of a tenure in the land? (*Cheers.*) I have endeavoured to discharge the duty to the best of my ability, and in the name and on behalf of my colleagues I drink health and happiness to you all. (*Cheers.*)

The PRESIDENT then gave "To our next merry meeting," and the company broke up about ten o'clock.

MANAGEMENT OF IRISH ESTATES.

TO THE EDITOR OF THE TIMES.

SIR,—I have carefully read your observations and the numerous letters published in *The Times* on the management of Irish estates and the question of landlord and tenant in that country.

I now give you a plain statement of facts regarding my estate, and I have no objection to your communicating my name to any *bonâ fide* gentleman who may apply to know it.

There are hundreds of persons situated, in a greater or less degree, exactly as I am; and this statement will, I am convinced, prove to many of your English readers the difficulties which encompass an Irish landlord of the present day, and show the manner in which landlords are treated in that country, where long leases have been granted, and where, in point of fact, the system of fixity of tenure has been carried out, and how it has worked.

I possess, in the province of Munster, above 25,000 Irish acres of land, which, computed in English acres, may be set down at 35,000 acres, so, when people talk of high rents in Ireland, they should remember the difference of the size of the acre in the two countries.

There are on this property about 6,000 acres of

mountain, on which the tenantry have the privilege of grazing and cutting fuel.

Almost the whole of this estate was let on leases for 61 years, between the years 1780 and 1788. The land generally is excellent for wheat; it was let in farms varying from 900 to 100 acres each to one person. There were clauses in the leases binding down the tenant not to sub-let, to build a slate house on his farm, &c. The rents averaged about 11s. an acre.

These lands were, at the commencement of the leases, entirely in grass, with of course but very few inhabitants located on them. Several of these leases have now expired, and the condition of the property is simply this:—The original lessees are totally ruined, and scarcely one of them is residing on any portion of his late farm. The lands are cut up and subdivided into innumerable lots, with paupers generally squatted on them; the ground worked out to the rock. In several places there are more souls than acres; not a slate-house built on any of them; in fact, nothing that could be called a house exists, It would be very difficult to find five tenants now living on the ground of 2,000 acres, capable of farming 40 acres properly.

The facts are these:—During the war, from 1792 till 1814, the high price of produce induced those great graziers, who were the original lessees, to sub-let their farms *ad infinitum*. They received for many years 40s., 50s., and 3*l*. per acre for these sub-divisions, besides taking fines. These lessees became middlemen and landlords, lived nobly, kept hounds, &c.; but the peace of course ruined them, by the fall of prices, &c. They are gone; but the hordes of paupers remain, and the land is ruined for years to come. I could give names and localities, if required.

On one farm of 200 acres,—Lease for the life of a person, and 61 years in reversion (he died in 1798, consequently the lease is still in existence). Rent 10s. per acre. This land is sub-let at from 3*l*. to 4*l*. 10s. per acre by the present owners, being near a town; there are 67 thatched cabins on it in one row, inhabited by the very lowest poor people. The lessee was bound by his lease to build a slate-house on it. I requested him to do so; the answer was, "It had been done," and it turned out that it was the district Fever Hospital, built by subscription, which was alluded to!

So much for long leases or fixity of tenure in Ireland. Neither I nor my predecessor gave these leases. We found things so. We had no power over the lessees whatever. My predecessor endeavoured by law to have a sort of fair play, but no jury could ever be found to give a verdict for the plaintiff, for they were generally middlemen, in the same predicament with the defendants.

On a farm of over 400 acres, which has been held for 57 years at a very low rent, the land being worth three times the rent paid, and the lease being about to expire, I was told, if I did not renew it, that part of it, not sub-let, should be covered with squatters, and some of the land has just had four crops taken off it, without one cart-load of manure even having been put on it.

I could multiply cases of this description. I make no comment on these facts; I leave them to the consideration of the English reader.

I am, sir, your obedient servant,

Dublin, Oct. A MUNSTER LANDLORD.

NOTES BY THE WAY.

(FROM THE AYR ADVERTISER.)

Dalmellington is 15¼ miles from Ayr, along a very hilly road—the worst posting stage in the county—the line nearing the Doon at Patna, and running along its course to Dalmellington. The scenery is not attractive; but the antiquary has here *materiel* for eight days' lingering, in tracing the remains of the great Roman road, which after traversing Dumfries-shire and the Stewartry of Kirkcudbright, is still seen in detached pieces betwixt Dalmellington and Ayr—forming what was called the bridle-road to Littlemill, passing through the farms of Penasson, Smithston, and Cube, and by Cockhill to Ayr. The country around, as, indeed, does the whole of Ayrshire, abounds with ruined castles, cairns, wells, &c., of more modern date, belonging to the Scoto-Saxon period, ending in 1306, while the strength of the country lay neither in the crown, nor in the people, but in the feudal lords. But we must not lose our way on the Roman road, with so excellent a Macadamized one before us, and to counterbalance this digression to times past, will make another into Mr. Boyle's Bank Tyle-work, near Castlehill, where the visitor interested in the prosperity of the country, will find much more attractive matter in evidence there afforded of the improvement of the soil. Mr. Boyle is but a young man, and we recollect him, not a great many years ago, with only the Pottery on the Drongan estate, on the road to Cumnock, which work he has very much improved of late. Rising by his own exertions from such humble beginning, he has now the Bank Tyle-work alluded to, Bellston Tyle-work on the Ochiltree road, Drumbain Tyle-work, three miles from Girvan, Craigdoo Tyle-work, two miles from Kirkoswald, Craigton Tyle-work midway between Paisley and Glasgow, Cairnbroe near Airdrie, and the charge of the Earl of Derby's Knowsley Tyle-work, near Liverpool, the largest in the three kingdoms—of itself capable of turning out two millions of tiles yearly. Mr. B. has on his own account about 150 men and boys, and pays wages to the amount of 10*l*. daily. The firemen have from 18s. to 20s., and the best hands in the tyle-works and potteries earn 25s. weekly; the apprentices in the pottery under 7 years' indentures, getting 4s. at first, with a shilling rise yearly. Mr. Boyle was the first to introduce the Marquis of Tweeddales' patent, which he has improved in various respects, the most important alteration being his dispensing entirely with the very costly and inefficient mode of conveying the tiles from the mouth of the machine, down the sheds by means of stools, pulleys, endless webs, and leathern belts, instead of which Mr. B. travels the machine down the sheds by a railway; on which, by a very simple and efficient process, the power is conveyed to any given point throughout the whole range of shedding, and communicated to the tile-making machine, which traversing from point to point as the shelves require to be filled, greatly expedites the work. It is no mean distinction, and we are proud to claim it for our townsman, that he can undertake to supply more tiles in a given time, than any man in the empire or indeed in Europe, his works averaging 6 millions of tiles yearly—a quantity sufficient to drain nearly 2000 acres of land thoroughly, or to make a drain 1140 miles in length. We believe he is at present engaged in making different specimens of tiles, which Mr. Smith of Deanston has recommended for the Phœnix Park, Dublin; and it may be interesting to our agricultural friends to note that the tile to be supplied differs from those used in Scotland, being narrower in the cavity (3 inches deep by 2 wide), by which it is thought the *run* will be more rapid, and will entirely prevent any *debris* from collecting; and an alteration in the mode of draining is that these tiles are to be laid inverted, with the soles used over them as covers. The draining of the Phœnix Park will be an extensive undertaking, the circumference being 4 miles, requiring six millions of tiles. Besides attending to his own wide range of business, Mr. Boyle has been employed by a good many

gentlemen in Scotland in selecting suitable clay fields, and furnishing the most approved plans for the erections and machinery. In one of these cases, on the Marquis of Bute's property, near New Cumnock, the clay was found of so hard and brittle a nature as to be incapable of being manufactured by the usual mode; but by a plan of machinery furnished by Mr. Boyle—and we believe never before used in Scotland—by the application of a series of heavy rollers, the difficulty has been overcome, and the work is now in full operation, producing tiles of excellent quality.

EVESHAM AGRICULTURAL SOCIETY.

The anniversary of this flourishing Association was celebrated on Wednesday, October 9th. The ploughing matches came off in a field on the Alcester road, belonging to Mr. C. Randell, the Secretary of the Society, and 25 started out of 27 entries. The time allowed was 2½ hours to plough a quarter of an acre, so that the men were not pushed, but could put out all the skill they possessed upon the work, which is not so easy in ploughing against time.

There were two premiums of 2*l.* each, which were won by the ploughmen to Mr. E. Edwin and Mr. R. Dunn; and two premiums of 2*l.* each for boys not above 17, won by servants of Mr. J. Haywood and Mr. T. Hicks.

The Rev. Elias Webb exhibited what he called his "composite," an extraordinary production, calculated, according to its inventor's statement, to perform almost every necessary operation on the land. There was nothing particularly new in this department, though the show, upon the whole, was satisfactory. The cattle shows were very good, particularly in sheep, and the judge was Mr. Bloxside, bailiff to the Earl of Warwick. The following is his award of the prizes:—

Cattle.—10*l.* for the best bull, cow, and offspring, to Mr. T. Shailer, of Donnington.—5*l.* for the best bull above two years, to Mr. John Herbert, of Powick. Mr. W. Woodward's commended.—5*l.* for the best bull under two years, to Mr. Joseph Bayzand of Kingley.—5*l.* for the best dairy cow in milk, to Mr. W. Corbett, of Honeybourne. Mr. J. and Mr. W. Woodward also commended.—5*l.* for the best fat cow, to Mr. C. Nind, of Hailes. Mr. C. Ward's highly commended.—5*l.* for the two best two-year-old heifers, in calf, to Mr. J. Richards, Dumbleton.—5*l.* for the two best yearling heifers, to Mr. F. Woodward, Little Comberton.—5*l.* given by the Rev. Elias Webb, for the best fat cow that has never obtained a premium as such at any exhibition, without restriction as to feeding, to Mr. W. Woodward, Bredon's Norton.

Sheep.—5*l.* for the five best long-wool ewes, above two years, having suckled their lambs up to the 1st July, 1843, to Mr. H. Bomford, Donnington. Mr. J. Bayzand's and Mr. J. Hall's Bretforton, commended.—5*l.* for the best long-wool theaves, to Mr. H. Bomford.—5*l.* for the five best cross-bred or short-wool ewes, as above, to Mr. C. Randell.—5*l.* for the five best cross-bred or short-wool theaves, to Mr. C. Randell.—5*l.* for the five best shear-hogs of any breed or cross, to Mr. J. Hall.—3*l.* for the five best long-wool wether lambs, to Mr. J. Ashmore, of Norton and Lenchwick. Mr. H. Bomford's also commended.—3*l.* for the five best long-wool ewe lambs, to Mr. H. Bomford.—3*l.* for the five best cross-bred or short-wool wether lambs, to Mr. J. Marshall, Harvington.—3*l.* for the five best cross-bred or short-wool ewe lambs, to ditto.—5*l.*, the gift of E. T. Perrott, Esq., for the five best breeding ewes, bred by the exhibitor, being the occupier of less than 200 acres of land, that has never obtained a premium for stock at any exhibition, to Mr. J. Bullock, Harvington.—5*l.* for the five best wethers, under 33 months, to Mr. H. Bomford. Mr. R. Beman, of Donnington, and Mr. S. Holtham, of Cleeve Prior, commended.—5*l.* given by the Rev. Elias Webb, for the five best shearhogs, as above, to Mr. H. Bomford. Mr. R. Beman's also commended.

Horses.—5*l.* for the best stallion for farming purposes, to Mr. W. Clemens, of Birlingham.—5*l.* for the best mare and colt for ditto, to Mr. C. Hudson of Wick. Mr. R. Beman's and Mr. Corbett's also commended.—5*l.* for the best two-year-old gelding or filly for ditto, to Mr. J. Mansell, of Little Hampton. Mr. C. Nind's commended.—5*l.* given by James A. Taylor, Esq., M.P., for the best three-year-old colt or filly, bred by a member of this Society, likely to become a hunter, to Mr. W. Corbett.

Pigs.—3*l.* for the best boar, to Mr. C. Randell. Mr. J. Edwin's also commended.—3*l.* for the best breeding sow in pig or with pigs, to Mr. C. Randell.—3*l.* for the best fat pig above twelve months old, to Mr. C. Randell. Mr. R. Ashwin's of Aldington, and Mr. W. Wheeler's of Broadway, also commended.—3*l.* for the best fat pig under twelve months old, to Mr. R. Ashwin.—3*l.* for the three best breeding sows of the same litter, above four and under nine months old, to Mr. C. Randell. Mr. R. Gough's also commended.

Extra Stock.—2*l.* to Mr. J. Richard's, of Dumbleton, for his grass-fed cow.—2*l.* to Mr. H. Bomford, for his fat ewe.—2*l.* to Mr. J. Marshall, for his two fat ewes.—2*l.* to Mr. C. Randell, for his fat pig.—2*l.* to ditto, for his little boar.

Implements.—To the exhibitor of the best new or much improved agricultural implements—First prize of 4*l.* to Mr. E. Hemming, of Salford, for his turnip drill.—Second prize of 3*l.* to Mr. A. Dean, of Birmingham, for his two-horse thrashing-work.—Third prize of 2*l.* to Mr. W. Woodward, for his improved harvest trolley.—Fourth prize of 1*l.* to Mr. E. Hemming, for a three-furrow drill.

Best Cultivated Farm.—A piece of plate, value 10*l.*, the gift of Francis Woodward, Esq., for the best cultivated farm (within seven miles of Evesham) above 200 acres, two-thirds at least of which shall be in tillage, in the occupation of a rack-renting farmer; size of farm and quality of land to be taken into consideration. This prize (consisting of a splendid silver sugar basin, lined with gold), was presented to Mr. C. Randell. Mr. J. Edwin, of Sheriff's Lench, was the judge in this prize.

Shepherds.—To the shepherd who shall have reared the greatest number of lambs belonging to the same master or mistress, with the least loss of ewes, in proportion to the number of ewes put to tup; the flock not to be less than 50. The number of theaves to be considered. Long-wool—First prize of 2*l.* to Joseph Byrch, recommended by Mr. W. Gough; from 228 ewes, 100 of which were theaves, reared 288 lambs, and lost but one ewe.—Second prize of 1*l.* to Wm. Harris, recommended by Mr. Jos. Bayzand; from 158 ewes, 55 being theaves, reared 188 lambs, and lost but two ewes.—Ditto, cross-bred or short-wool—First prize of 2*l.* to John Clark, recommended by Mr. C. Randell; from 212

ewes, 90 being theaves, reared 305 lambs, and lost four ewes.—Second prize of 1*l.* to G. Hancock, recommended by Mr. J. Hopkins; from 79 ewes, 26 of them theaves, reared 106 lambs, and lost but one ewe.

A number of prizes were also awarded to cottagers, labourers, and domestic servants.

The Dinner took place at the Crown inn, E. Holland Esq., President, Mr. Cooper, Vice-President. The principal speakers were the Chairman, Vice-President, Mr. Barneby, M.P., Mr. Handford, Mr. Woodward, Mr. Randell, Rev. E. Webb, and Mr. Onslow. Mr. Barneby and Mr. Hanford dwelt on the importance of rewarding and looking to the condition of labourers.

The Chairman, speaking of the Evesham Society, said, "During the two years of the society's formation, and more especially the last year, there had been much distress experienced by the agricultural class; but in spite of that, nobody who looked over the country affected by the society's operations could fail to see that such an improvement had been made as could not have arisen but for the society's existence. (*Hear, hear*). Draining—and of a better kind than before—was on the increase. There was also an extension of green crops, and the growth of turnips was much better attended to." Mr. Randell having exhibited a very pretty ornamental engraven card, having a blank left for the society's certificate of a labourer's prize, which, hung up in his cottage, would be an ornament and humble heir loom, said, "Perhaps the most important of all in the results of such societies' efforts was the effects of their certificates of merit, awarded to the agricultural labourers. These documents, hung up in their cottages, had their own beneficial results, and did not finish where they had begun; their neighbours, seeing them, were led to an honourable and commendable spirit of emulation to exertions for similar honours."

On Leases.—Mr. Randell contended that they were absolutely necessary to promote improvement, and if landlords visited the meeting of such societies they would see why. "It was impossible for the landlord, in observing the cultivation of their farms, and in attending the meetings of the farmers, not to become practically acquainted with the expences incurred in farming, and they were thereby enabled to judge of the necessity or justice of their granting leases to their tenantry. For himself he would say that he never would take a farm except under a lease; and here he paid a high encomium to Mr. Holland, as the landlord of the farm which he occupied, and said he hoped he would live long to see his children's children flourish in the land. But they were too well aware of the uncertainty of human life, and should unhappily Mr. Holland be taken from them, perhaps his property might come into the hands of trustees, and the tenant from year to year would very possibly not be able to continue in occupation. Hence the insecurity to the tenant of even the best landlord, without a lease; it might be compared to the holding of land without a title."

Mr. Hanford expressed great admiration of Sir R. Peel's speech at the Lichfield dinner, and was against granting leases. He said—

"The necessity or inutility of leases must be regulated entirely by circumstances—the nature of the farm and its condition of cultivation; there must be equity for the landlord as well as the tenant. On the one hand, if a farm was in a bad state of cultivation, it was equitable and fair that the tenant on entering with a view of improving its condition, should have a fair assurance of continuance; while on the other, when the landlord had laid out money in bringing a farm to a good state of cultivation, it was but fair that he should have the power of keeping it up in that condition. Therefore he would say that the principle of leasing was not to be accepted as a dogma, but to be regulated by circumstances. For his own part, he had never in his life granted a lease, yet he thought he could see around him men who would bear him out in saying that he had never turned out a tenant, but that those leaving his land had turned themselves out." (*Hear, hear*).

Mr. Holland (the chairman) was in favour of leases, and challenged Mr. Hanford to meet him at a farmer's club, and discuss the subject. Mr. Hanford accepted the challenge, and remarked that—

"The landlords were in fact in the hands of the tenants. The landlord must either let his farm for what is offered him, or he must occupy it himself. But whenever he himself had a bit of land to let, and found some twenty or thirty persons running after him anxious to take it out of his hands, he thought he should be an ass not to take the best rent he could get for it.

New Prizes for Competition.—Mr. Holland announced his intention of offering 10*l.* for the best essay on the state of agriculture in the district, and it is probable that to this sum 5*l.* given two successive years by Mr. Hanford for other objects, but never claimed, will be added. The prize for the best cultivated farm for next year will be 25*l.*, but there must not be less than three competitors. The Rev. E. Webb announced the continuance of his premiums for another year; and Mr. W. Woodward gave his prize of 5*l.* gained at this meeting to increase the fund for next year.

Best Cultivated Farm.—Mr. F. Woodward, in anuouncing his intention of giving another piece of plate as a prize for next year, for the best cultivated farm, said, he was happy to find that the premium which he offered last year had been given to one so deserving as Mr. Randell. (*Hear, hear*). He assured them that Mr. Randell's farm was a pattern to them all. If they all farmed as Mr. Randell did, the labourers in this county would be placed in a better position, and the workhouses would not be filled with them. He should like them to read Lord Hatherton's speech at the Lichfield Agricultural Meeting the other day. His lordship recommended them to travel to see the different systems of farming pursued in different counties. He acted on that recommendation, and had travelled to see Mr. Randell's farm, and he had learned a good deal by so doing.

GRANTHAM AGRICULTURAL SOCIETY.

At this meeting Lord Brownlow, the chairman, said he had seen an account of one of the many meetings lately held in different parts of the country, at which the first minister of this kingdom had delivered an address which, however talented it might be, contained some portions in which he (Lord Brownlow) could not concur. It was in the opinion which Sir Robert Peel had expressed in advising the giving of long leases to tenants. (*Hear.*) In this part of the country such a practice could not be advisable, where the mutual confidence and harmony that existed between the

landlords and tenants more than compensated for any benefit derived in other districts from giving long leases. *(Applause.)* It was remarked by the authority to which his lordship alluded, that it was important to give the tenant an opportunity of conducting improvements on his own authority: he (Lord Brownlow) thought differently, and for these reasons. A short time ago he had visited his estates in Lindsey, where he had witnessed the great improvements effected by draining, that first and most essential principle of agriculture; but it was perfectly evident that draining could only be effected in an uniform and permanent manner, and on one general principle, by the landlord, and never could be carried out by the separate tenants under a number of leases. *(Applause.)* The outlay of the capital required for such extensive and necessary operations ought to be the immediate province of the landlord *(cheers)*; and with such feelings his lordship thought that the system they pursued, and the mutual confidence and good understanding existing between the landlords and tenants of this district would be but badly exchanged for the dry and unbending system of leasing pursued in Scotland. *(Loud and continued approbation.)* He (Lord Brownlow) was highly gratified to see the great improvements which were taking place in the science of agriculture: in his opinion there were two great objects to carry out—the first was a general and efficient draining of the land—the second, the application of chemistry to the theory of manures. *(Applause.)* He was satisfied that there remained yet much to be done, which could only be effected by a close investigation of facts and causes; and where they did see improvements, they must bear it in mind, that the hand which executes the work would progress but badly without the hand which directs it. *(Cheers.)*

Sir J. Trollope, Bart., M.P., said he felt that was not the proper time or place for the discussion of matters of politics; but as the noble lord had alluded to a speech lately delivered by the Prime Minister of England, he (Sir J. T.) would venture to add a few words on the subject. That speech he considered as one possessing considerable interest, and containing much that must attract the attention of agriculturists, as proceeding from the most eminent man in the state; but he thought Sir R. Peel was hardly calculated to give an opinion upon a change in the tenure of land. *(Hear.)* The noble lord, their president, had stated that the landlords would scarcely perform their duty unless they provided proper residences and farm buildings, and conducted the draining of the land. That was precisely his (Sir J. Trollope's) principle; his tenants—he was sorry to say they were by no means so numerous as the noble lord's—had always an unlimited command over materials, and he (the hon. baronet) paid for them. *(Applause.)* He now saw around him many of the tenantry of an estate in this neighbourhood with which he was formerly connected; and they would bear testimony that during that period they had constantly access to the tile-yard, and in no instance were they ever denied any quantity, at a moderate per centage. The tiles should be found by the landlord, and the work by the tenant. *(Hear.)* In Ireland, where he (the hon. baronet) had spent some portion of his life, the system of leases had produced most evil results; and why was it so? Because the tenant was even expected to find farm-houses; hence the mud huts with which they put up: they would not in many instances go to the expense of erecting barns, for they had no security of tenure after the termination of the lease. *(Hear, hear.)* It was not so in this country; and in the neighbourhood of Grantham in particular, where landlords and tenants lived close together, enjoying constant communication, and with the existence of perfect faith and confidence, he should like to know whether they desired leases? *(Applause, and cries of "No, no.")* He could not help thinking, however, that Sir R. Peel, in making his declaration on that head, meant something which was not quite expressed; the hon. bart. was too cautious to moot so important a question as a change in the nature of tenure, without having some ulterior motive. He probably contemplated some notice for enquiry into the nature and tenure of lands in this country and the sister kingdom; but he (Sir J. T.) was quite confident that in England at least any change was neither desirable nor desired. *(Cheers.)* In Ireland, as he had before observed, the case was different.

Mr. Sills alluded to the remarks which had been made by Lord Brownlow and Sir John Trollope respecting the tenure of land by lease: he (Mr. S.) was a tenant farmer, and he would assure the landlords most emphatically that he would infinitely prefer continuing a tenant-at-will to having a lease of his land. *(Cheers.)* He had the greatest confidence in his landlord, who had never forfeited his word, and who, he believed, never would; and he hoped his landlord would have the same confidence in him. *(Applause.)*

KIRKALDY AGRICULTURAL SOCIETY.

MEETING HELD OCTOBER 6TH.

Mr. Sang called the recollection of the members to the fact of the meeting last year having directed a trial to be made of the various kinds of manure, and then read the following report:—

Statement of Comparative Experiments in the application of Artificial, Liquid, and Farm-yard Manures, made by James Kininmonth, for the Kirkaldy Agricultural Society, on the farm of Invertiel:—

Cutting grass, in portions of 50 Poles.

Liquid Manure—750 gallons, value 1*l.* 5s., applied on April 10, 10.2 poles of which produced—1st cutting, on June 5, 50 st. 18lbs.; 2nd cutting, on August 14, 60 st. 12lbs.; 3rd cutting, on October 3, 16st. Total, 127 st. 8lbs.

Guano.—2¼ cwt., 1*l.* 11s. 3d., applied on April 17, 10.2 poles of which produced—1st cutting, on June 5, 57 stones 11lb.; second cutting on August 14, 57 stones; 3rd cutting, on October 3, 15 stones. Total, 129 st. 11lb.

Nitrate of Soda.—1 cwt., price 1*l.* 3s. applied on April 17, 10.2 poles of which produced—1st cutting, on June 5, 62 st. 20lbs.; 2nd cutting, on Aug. 14, 45 st. 14lbs.; 3rd cutting, on Oct. 3, 14 st. Total, 122 st. 12lbs.

Potatoes planted on 20th April.

Five tons of farm-yard manure, at 5s. per ton, or 1*l.* 5s., upon 1 rood 12 poles, produced—1 ton 7 cwt. 56lb.

Five cwt. rape-dust, at 5s. 5d. per cwt., or 1*l.* 7s. 6d., upon 1 rood 11.7 poles, produced 1 ton 4 cwt.

Two cwt. 23lbs. guano, 1*l.* 7s. 6d., upon 1 rood 11. 2 poles, produced—1 ton 7 cwt. 28lbs.

The above experiment is not so satisfactory as could have been wished, in consequence of the seed being unsound. Those manured with guano took and maintained the lead till the 10th August, when they failed rapidly. Those with rape-dust were next in vigour, and began to fade about ten days afterwards. Those with farm-yard dung did not shew the same vigour during the first part of the season, but continued green till the third week in September.

Turnips sown on the 20th. June.

One rood 5.6 poles, manured with 6 tons farm-yard dung.

One rood 4.3 poles, manured with 2 cwt. guano.

One rood 5 poles, manured with 5 cwt. rape-dust.

The ground being too dry when the turnip seed was sown, it did not braird until the rains fell in the second week of July, and in consequence the crop is not yet sufficiently matured to afford a fair trial of the different manures.

The result, however, when the proper time arrives, will be carefully ascertained and laid before the Society's Committee. It may merely be remarked at present that the plants on the farm-yard dung took the lead for two weeks after being singled out, when they were overtaken by those on the guano, which have now the most growthy appearance, and that those on the rape-dust are next in vigour.

Additional Notes.

Guano at the rate of 2 cwt. per acre, was applied in April to 5 acres of Hunter's wheat, which was very thin on the ground, and looked unpromising. In about ten days afterwards the wheat assumed a strong growthy appearance, and ultimately became equal to the potato wheat growing by the side of it.

A field of barley was manured with compost at the rate of 20 loads per acre, reserving a corner of about an acre, to which 2 cwt. guano was applied. This piece did not come away so quickly as the rest of the field, but, about a month after, it became quite superior in appearance, and at harvesting was a considerable heavier crop.

ON WINTER FALLOW.

Sir,—I send you enclosed the account of an experiment I made last winter on a system of winter fallow, and which I found to succeed so well, that I trust some of my brother agriculturists may be induced to try it. I am adopting the same system on a larger scale this autumn, and several of my neighbours are induced from my last year's success, to follow my example. I may mention that two horses only were used in each plough, and as there may be an apprehension in the minds of some farmers that too much of the subsoil may be turned up by the subsoil plough, I can assure them that on trial they will find that not to be the case, as the ground being fast on each side prevents it, and the subsoil only opens it up enough to admit the influence of the atmosphere, and to allow the winter rain to descend more freely, and thereby prevents the scouring of the ground during all winter, which the common method of winter ploughing rather encourages in clay and tilly ground. It is proper to mention that the ground on which the experiment was made, has been thorough-drained thirty inches deep for above twenty years, and therefore as far as that system could benefit it, it had been already tried; but the change on the soil in the case of the spring working was equal to what the original draining produced. I understand a similar experiment has been made in England, and with equal success; and I do not despair of seeing it as generally adopted as the draining system, and with the same beneficial results.

I remain, sir, your obedient servant,

Polmaise, by Stirling, Wm. Murray.
Oct. 17, 1843.

EXPERIMENT ON WINTER FALLOW AND SUBSOIL PLOUGHING, MADE AT POLMAISE LAST WINTER.

This experiment was tried upon four fields, in all about forty acres, consisting of drilled bean stubble and oat stubble. The method adopted was the following:—Immediately after harvest, the fields were ploughed across, in drills, by furrows from nine to ten inches, laid deep together, and the subsoil plough passed once between the drills seven or eight inches deep, the horses in the subsoil plough being yoked one before the other, to avoid treading on the ground subsoiled. During the dry winter weather, the drills were reversed, and the subsoil ploughing between the drills was repeated as far as the season would allow it to be overtaken. By this plan of working, the ground was kept comparatively much drier, and a much larger surface exposed to the action of the atmosphere, than is attained by the common method of winter ploughing, and the beneficial effects were evident even during the winter, from the ridges appearing drier and white, long before ground ploughed in the common way. Besides, the constant souring by the winter rains, so detrimental to clay and tilly ground, was in a great measure avoided, and the spring work rendered comparatively light and easy. At seed time, the ridges were ploughed up and down in the usual way with a light furrow, which was also the seed furrow, of course across the drills, but the drills were never harrowed down nor interfered with, the action of the plough carrying forward enough of earth to fill up the hollows in the drills, and no more was ploughed in a day than could be sown and harrowed. In this way the rest of the field was left in the drills, and therefore less likely to be injured by the heavy rains of last spring. Part of the ground was sown broadcast, and part drilled by a single horse plough, with a drill barrow placed between the stilts of the plough, the single horse plough crossing the drills as in the broadcast, without being harrowed down. By this method the ground was rendered so fine, from not being so deeply ploughed, that the grass seeds required only to be bush harrowed, and in this way the spring labour was rendered very light indeed. Notwithstanding the heavy rains of last spring, the barley sowing was made very easy by this method of winter fallowing, and the same advantages were obtained in the turnip ground which had been similarly treated. The crop of barley produced on the ground prepared as above, was a third more in bulk than that after turnip ground treated in the usual way—the one being thirty-five threaves, and the other forty-eight threaves, per acre. The drilled barley and the broadcast were nearly the same—if anything the drilled being more productive.

In the turnip field the following mode was adopted:—The winter drills were once ploughed across, and after being harrowed and rolled, the ground was immediately drilled up for receiving the dung—the rest of the field remaining in the winter drills, and thereby not suffering from the severe rains of last spring. A specimen of the turnip may be seen in Messrs. Drummonds Museum.

It may be useful to mention, that by taking the mould-board off a common plough, it can be used as a subsoil plough.

REPORT OF COMPARATIVE TRIALS WITH GUANO AS A MANURE FOR TURNIPS.

BY MR. JOHN DUDGEON, SPYLAW, KELSO.

(From the Journal of the Highland Agricultural Society of Scotland.)

The grand desideratum in agriculture has long been to obtain, in a concentrated form, a stimulant to the growth of plants. The first advance to this desired end—and it was a most important and rapid one—was in the application of ground bones to the soil; by which, besides the saving in the price of the material compared with other manures, an immense advantage was obtained in the facility, and, above all, economy in carriage and distribution. A farther movement has now, it would appear, been effected in this direction, to a still greater extent, by the use of guano; which in the amount or weight required is, it may be safely said, as to bones, as one to four; and thus has been nearly realized something equivalent to that boast of science, which has been often quoted by practical men only to be spurned, "that the day would come, when a person should carry in his pocket manure sufficient for an acre of land;" for certainly there is a near approach to a fulfilment of this proud achievement when we find an ordinary cart-load of manure is discovered to be amply sufficient for a field of ten acres! At least the result of the following experiments with guano will be found to warrant such a conclusion; and it is confidently believed that the more general application of this manure, in the present season, will exhibit such effects as cannot fail to impart greater confidence as to the expected results of the labours of the laboratory; and hence will be removed one of the chief obstacles to the successful and more immediate efforts of chemistry in the cause of agriculture.

The powerful effects of guano, as compared with its price, as well as the economy of time and labour in its application—from the small quantity necessary—promise, in the present depressed state of agricultural produce, to come in good stead to the farmer; and I shall be glad—in the confident hope that they will experience similar results to what, in a small scale, I have obtained—if this report be in any way instrumental in leading my brother farmers to a fair and somewhat free trial of this new manure. Though the experiments to be stated were limited in their extent, it is considered they were in every case quite sufficient to afford a complete test of the relative merits of the manures used; and I may mention, that so satisfied have I had every reason to be with their nature, as affording a just estimate of the power of guano, that I have made arrangements to have this season (1843,) upwards of sixty acres of turnips prepared with this manure alone.

These experiments, or comparative trials, were made upon three several fields, intended to be manured in different ways. The quality of the land, too, was well adapted for such a trial, as being in each, and indeed partly in the same field, somewhat various, though incumbent generally upon a bed of similar geological formation. But I shall best be able to state clearly the distinctive characteristics of the different fields as I proceed to notice the nature and result of each experiment separately.

Experiment No. 1.—This field, lying upon a slope with a southern exposure, is, for the greater part, a good loam, rather perhaps sandy, and resting upon a retentive subsoil of firmly condensed sand mixed with reddish clay; but the upper part of the field, for about a fourth of its length, gradually becomes shallower in soil, and as it approaches the top of the rising ground, is a muir, or thin peaty soil, incumbent upon a hard muirband pan, more indurated as the soil becomes thinner. The quality and depth of the loam again improves, as the part of the field described terminates at the open ditch or burn by which it is intersected. To give a farther idea of the difference of the soil, the value of the land may, in the lower part of the field, as compared with the upper, be estimated as three to one. The field has been partly, but hitherto very imperfectly drained; the operation of furrow-draining, generally, upon the farm having only been commenced this season.

The whole of the field, properly prepared by previous ploughing, &c., after a wheat stubble, was made up, in the ordinary manner, into twenty-seven-inch drills; and, excepting those drills reserved for the guano, were dunged in the usual way, immediately before sowing, with well-prepared farm-yard manure, at the rate of about eighteen square yards to the acre; the upper and poorer part of the soil being rather favoured in the application. Two drills, formed in the usual way and of the ordinary depth, were selected at random, to which guano was applied, distributed by the hand, and without any mixture, at the rate of three pecks per acre. The ordinary dung followed in the next three drills, applied in precisely the same quantity and manner as on the rest of the field. The next two drills, from the top to bottom of the field as before, in as exact proportions as the operation could be performed, were again done with guano, in quantity equivalent to four cwt. per acre. Then again came three drills with the farm yard-dung, and two succeeded with guano, at the rate of fully more than five cwt. per acre.

The whole was sown on the 31st May, immediately following the application of the manure, as the drills were closed in with the plough. The species of turnip was *Dales Hybrid*. The crop came equally away over the whole field, and met with no check, nor did there appear much marked difference in the drills done with the guano previous to singling, or thinning out the plants with the hoe. Very soon, however, after the turnips began to stand up after this operation, the guanoed drills came to manifest a superiority; and by the time the plants were ready for being horse-hoed, they were very decidedly and visibly superior in vigour of growth, particularly on those drills to which the greatest quantity—namely, five cwt., was given. This superiority in appearance continued to increase as the growth of the turnips advanced; and the tops stood up conspicuously higher in all the six drills done with the guano, but certainly in proportion to the quantity applied, and shewing to rather greatest advantage upon the inferior part of the land. So matters continued during the summer, and many to whom I had an opportunity of shewing the progress of the growth of the plants, required not to have pointed out to them the particular limits of the experiment. But when, from the prevalence of the long drought of last season, turnips generally came to suffer in the leaf, and it was feared that mildew had seriously affected the plant, it required a closer inspection to discover the continued

and—on the drills manured with the smallest quantity of guano—apparently more doubtful, excellence of that part of the crop to which the guano had been applied. This, however, was satisfactorily tested, when, in the middle of October (the 14th), the whole six drills were carted off, topped, and rooted, and weighed; each two, as differing in the quanty of guano applied, compared with two drills immediately adjoining, on which the farmyard manure had been used. The result was as follows:—

	Cwt.	St.
Two drills with *guano*, 5 cwt.....	25	5
.. dung, 18 yds.....	18	7
.. *guano*, 4 cwt.....	22	6
.. dung, 18 yds.....	19	7
.. *guano*, 3 cwt.....	20	6
.. dung, 18 yds.....	19	2

The general character of the crop was a fair average, and having been consumed in greater part on the ground by sheep, was estimated to have produced 6*l.* 10s. an acre, assuming the keep of a Leicester Dinmont to be worth 6d. per week.

Experiment No. 2—The part of the field upon which this experiment was made, is of a much drier texture, and, from this circumstance, may be held as more purely a turnip soil than that occupied by No. 1, though, from the peculiarity of last season, it may be here noticed that neither was at any time wet while under crop. Where the guano was here used, the soil is in some places very near the rock, forming a sort of whinstone gravel, somewhat peaty in its consistency. The trial was in this instance made against bone-dust and coal-ashes. The ashes were sifted and intimately mixed with the bones, some days before being applied, in the proportion of half to the bones by measure; and, it might be, these ashes were made up in part of other substances, as they were obtained from the neighbouring town. The quantity altogether used was twenty-four bushels per acre; thus, sixteen of bones and eight of ashes. The quantity of guano applied was at the rate of three cwt. per acre upon four drills —two and two together, at an interval of eight drills manured with bones and ashes, as above stated. Then, at a similar interval, followed two drills, operated upon at the like rate with guano, namely, three cwt., together with sulphate of soda (glauber salts), at the rate of four cwt. per acre; being the only instance, in the course of these experiments, in which any additional foreign substance was used with the guano. The field was prepared in the usual way as the other, after an oat stubble, and the whole manure was applied, and turnips sown, consisting of Dales Hybrid and Skirving's purple-topped yellow, in alternate drills, on the 8th of June. The drills manured with guano exhibited their situation from the greater freshness of the leaf of the plant, from its first appearance above ground, and they were earlier ready for the hoe. As the season advanced, these drills continued to maintain their superiority, as in the other field, until the whole was somewhat checked by the prevailing drought, though this crop, being later sown, was less affected generally from this cause. No difference, however, was at any time noticed on those drills to which the sulphate of soda was applied in addition, compared with the other guanoed drills. The turnips were drawn about the latter end of November, and on a comparison of the weight of the crop on two of the four drills done with guano alone (the quantity on the other two having been prevented from being ascertained by a mistake in the taking up), with the produce of the average of four drills, nearly immediately adjacent, manured with bone-dust and ashes, the results stood thus, the plants having been topped and rooted:—

	Cwt.	St.
Guano.....	23	2
Bone-dust, &c.....	19	2

The weight of the crop to which guano and sulphate of soda together were applied, was 23 cwt., being less than that produced by the use of guano *alone*, though certainly in so slight a degree as to forbid the conclusion that the sulphate of soda had done any injury.

The crop, generally, on this field was rather of a superior description, and may be estimated in the manner of the former, as likely to have yielded at least 7*l.* per acre.

Experiment No. 3.—The guano was here tried against bone-dust alone, applied at the rate usual in this district of sixteen bushels per acre, the guano being at the rate of two cwt. only. The soil of this field is a good loam with fully more clay in its composition than the better parts of No. 1. The subsoil also is rather more tenacious, and though, no doubt, capable of being worked in ordinary seasons into a fine tilth for turnips, and in such circumstances growing this root well, it may be described as, in its present inadequately drained state, decidedly too wet to admit of the crop being very accessible or profitably available, excepting in early autumn or late in spring. The past season has thus been peculiarly favourable for such land, and the crop upon the whole field consequently fine, and hence also it is that the turnips are yet being eat off, and the test of this experiment newly made. Two drills were by chance, as in the other fields, set apart for the guano about the middle of the field, the whole being prepared in the ordinary manner as above described. The guano was applied by the hand in the drill, before being finally made up, as were the bones, which is the usual way here, machines for this purpose being little in use in this district, as being thought neither so efficient nor economical. The seed immediately followed, and the whole was sown on the 23rd of June, with the white stone globe variety of turnip. Here the drills manured with guano showed very early a superiority, and the plants, though not separately operated upon, were fitted for the hoe fully eight days earlier than the remainder of the field. This advantage of more vigorous growth they continued to maintain throughout the whole season; and this field having at no period exhibited any bad effects from the prevailing drought in autumn, the whole continued vigorous in leaf—yet this general luxuriance did not prevent a decided superiority from being recognised in the rows where the guano had been used, until indeed influenced by frost. The crop was weighed, roots and tops being in this instance taken, on the 22nd March, when the result was found to stand thus:—

	Cwt.	St.
Two drills guano.....	31	4
Two drills bone-dust	24	7

The difference here being greater than seemed warranted by the appearance of the crop, it is conjectured that the turnips on the *guanoed* drills may have suffered less from the effects of frost; from which all seemed, at this late season, to have been partially injured, though no visible difference in quality could be said to have been observed.

It has been considered quite unnecessary, in noticing these comparative trials, to give any estimate of the aereable value of the crop relatively to the expense of the manure applied, as it is conceived every practical farmer will be best able, from the data above furnished—under the particular circumstances in which he is placed, both as affecting the value of the crop and the other manures used—to make this calculation for himself. The relative value from a given extent is at once seen; and it is sufficient to mention that, excepting when applied (as in one instance in No. 1) in an unusually large quantity, the value of the guano was considerably under the expense of the other manures. Guano can be bought at present, of the best quality, it is understood, from 10s. 6d. to 12s. per cwt.—a price which, in the quantity it has been here established as sufficient, and considering above all, the great facility of application, comes far under the value of any manure hitherto applied successfully to the soil.

P.S. Since the above paper was read at the Museum Meeting of the Highland and Agricultural Society, the subject to which it relates may be said to have lost much of its novelty and primary interest, many having this season obtained for themselves ocular demonstration of the transcendent effects of guano in the growth of turnips. A number of these trials—and perhaps beyond the limits of his own district—the reporter has reason to believe were undertaken in consequence of the abstract of the report given in the newspapers at the time of the Museum Meeting, at which it was read, took place; and he may now mention that, acting upon that thorough confidence in the result of his experiments which he felt warranted him in so strongly recommending guano to the attention of his fellow agriculturists, he has this season grown upwards of 70 acres of turnips with this manure—applied in the drill by the hand, at the rate generally of 3 cwt. per acre, without any other mixture—and he presumes he may safely challenge Scotland to exhibit a better crop, of the same extent, upon similar land, produced by any other means.

Spylaw, 5th September, 1843.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

Sir,—It seems Mr. Thompson is highly offended at my "rich" process of "pulling his arguments to pieces," and exposing his inconsistencies. I had no intention to offend him. He made the first attack upon me, and he might expect I should defend myself. His bad temper is no proof of the soundness of his arguments; my bad grammar, and a few vulgar words, are no proof of the unsoundness of mine: his finding fault with these, and his bad temper, is a presumptive proof of the weakness of his. I make no pretensions to what the world calls learning. I feel highly satisfied that I, a Lancashire farmer, should be able to write two long letters with so few grammatical errors as Mr. Thompson has pointed out. I neither pretend to any refinements in literature; I merely pretend to write on subjects I am acquainted with, and when I write on them I merely aspire to the art of writing common sense. If Mr. Thompson will apply the same test to his refined literary productions, he will not, I think, find them without errors.

A man may have very high literary attainments, and yet be very ignorant of the world and its ways. In my time I have seen many learned fools (I have no intention of applying this to Mr. T.); I have known many wise men, and men of extensive knowledge and experience, who could not write correct English, according to the strict rules of grammar, but they could write so as to be clearly understood.

Just look at Mr. Thompson's presumption and inconsistency. In his third paper he says "he fears the consequences of my letter more than all the factious efforts of the notorious League." *He* could see its errors, but he was afraid no one else could; and yet one would suppose, by what he writes, that "he who runs may read" them.

With respect to what he calls my inconsistencies, I shall leave them in the hands of your readers, if any should take the trouble to go into the subject. But I distinctly charge Mr. Thompson with unsaying what he had before said. All his quibbles on figures and words are below my notice. He complains of, or rather is shocked, at my want of chasteness in my style of writing; yet look at his Billingsgate—"political quacks," "blockheads," "stupid fools." Oh, but I see! he says *he* is an unlicensed state physician and a political quack. Are you? Well a quack is an ignorant pretender. So Mr. Thompson is an ignorant pretender in politics. Well, most likely he is as near the truth as he ever will be—particularly when we look at his new inconsistencies and fallacies.

I never said that youth was a crime. I never said Mr. Thompson was thick-headed—I did not even think so. I did not condemn his want of originality; I said this, in his first letter, was the cause of not reading his second sooner. In these cases he "supposes that which never existed." On the other hand, I said a few things respecting him which I had no authority for supposing did exist. Of course here we may shake hands.

Mr. Thompson may say what he chooses about the "unprecedented prosperity" of the farming classes for the last thirty years; there are few of that class who will believe him, not even of the Lothian farmers. How much have the poor-rates increased amongst this class! The landowners, he says, got little interest from their estates. How much has the national debt increased since that time, although we have been at peace most of the time! Are these indications of great prosperity with one-half of the people? I will let the manufacturing classes speak for themselves; and Mr. Thompson says they have had more distress amongst them than in any other class. With respect to the corn laws, they merely require the following facts looking at. For the last twenty-seven years wheat has averaged 12s. per quarter less than it was intended it should do by the framers of those laws; therefore the farmers have got 12s. per quarter less than they expected. The sliding scale was to keep prices steady: under it wheat ranged from 36s. to above 80s. Since 1815 the farmers have lost a great amount of wealth; they are now poor; their capital is nearly, if not all, gone. Mr. T. says all who complain are "blockheads." Are corn laws to be made, and the farmers told that those laws will ensure them on an average a certain price for wheat, and when those laws fail to do this by 12s. per quarter for

twenty-seven years, are they not to complain, after their capital is gone, without being called blockheads? For shame, Mr. Thompson! If a law fails to do that it was intended to do, and by that failure brings thousands to ruin, is not that law worse than useless?

If contracting parties never have had an eye to the corn-laws, what have they had an eye to in fixing rents? The farmers will tell you what they have looked at, and what they have had told them by those with whom they have contracted.

Mr. Thompson wishes to know whether I am a farmer or not? I have been one nearly thirty years. I have whistled at the plough some hundreds of days; I have been amongst them all my life. When a young man, I worked upon three farms in the neighbourhood of Kidderminster. I have been wondering what Mr. Thompson was, but I see he has been a land-surveyor's clerk. He wishes the word humbug defined. I now take the earliest opportunity of doing so. A humbug is a puff in the shape of papers written in the defence of the corn-laws by a surveyor's clerk, going to set up himself as land-valuer and lecturer to the farmers on the "march of science." Do not mistake me, it is no crime having been a clerk in any profession.

I have some thoughts, Mr. Editor, of publishing a new grammar. In the adjectives I shall have four degrees of comparison, thus — less, lesser, far lesser, least. It is only pedagogues who stick to old rules in grammar, and blockheads in farming. Why cannot improvements "march" into our schools, as well as science into our fields? It has already, I see, "marched" into Kidderminster.

A commission *de lunatico inquirendo* is now sitting, and I understand have great doubts on the state of the mind of a certain "unlicensed state physician." His case is considered far worse than that of the regular licensed one, as he never prescribes in any case he does not understand; at least, he has not done so since the sliding bolus failed to work a cure. Brother farmers, cease your complaining, or you will be put under this commission. But should you get into confinement, you will have the advantage of having a cracked land-surveyor along with you, who will, in his lucid moments, lecture you into your right senses. He will tell you that if you manage as well as the manufacturers you will have no cause of complaint. He will tell you that, by the march of science, in twenty-five years you will be able to march out of your straight-jackets, and be able to pay higher rents, with lower prices, than at present.

This bright star of Kidderminster says, that if there were no tithe to pay to the church, the landowners would be richer. Well, this was a bright gleam to be sure; this was written in one of his lucid moments. But, would not the farmers be richer too if they had no rents to pay; and have not the latter as good a right to the land as the former to the tithes?

Now for a few words on "misquotations." I thought I should be able to bring self-condemnation upon Mr. Thompson. I did misquote. Who set the example? Why honest Mr. T. But there is this difference: I retained the sense of what he had written, but not the exact words. He did neither; he wilfully misquoted both words and meaning.

Before we part, I will thank this philosopher if he will tell me how much $65\frac{11}{11}$s. and $58\frac{76}{7}$s. amount to in whole numbers each.

This sapient Mr. Thompson considers himself to have "sufficient sense" for a "public writer." However let us hope that we shall both improve—he in his temper, and I in my learning. Good bye, Mr. Thompson.

I am, Mr. Editor, yours respectfully,

W. Rothwell.

Winwick, October 24, 1843.

BONES FOR CULTURE.

We observe by a report of the last meeting of the Grantham Agricultural Club, as given in the *Nottingham Journal*, that the following letter from Lord Henry Cholmondeley was read:—

"The use of bones on pasture land is now becoming very general in Cheshire; the benefits to our dairy land, are very great indeed. Strong lands are by far the most favourable for the application, indeed I have seldom known this manure used excepting on clays. On lands which have been exhausted by a long course of improper cropping (a common case in Cheshire), and when such lands have afterwards been converted into pasture without care in the selection of grass seeds, the effects are often almost beyond belief. I know many acres of land, which, four or five years ago, would have been dear at five or six shillings, and would now readily let at twenty-five shillings, or more. It is most desirable that the lands should be sound and free from wet at the same time; although no doubt the effects would be in all cases improved by draining, yet I have often seen bones applied with excellent effect to undrained clay land, although in such cases, of course, the driest and soundest fields were selected. Spring and autumn are supposed to be the best seasons for the manure, I prefer the latter, whilst there is grass to cover the bones. The expenses are considerable; farmers seldom apply less than sixty or sixty-five bushels of dry bones per acre, the price varying from two shillings and threepence to two shillings and ninepence. In Cheshire, boiled bones from the manufactories are much used,—they are cheaper, not costing above 4*l.* 5s. per ton; a ton and a half ample for an acre. Farmers are much divided as to the merits of dry and boiled bones, I prefer the latter. It is quite certain the effects are more speedy, and I have never been able to make out (as affirmed by some) that the benefits are less lasting, although it is only within eight or ten years that the use of bones has become general; yet I know of instances where this manure has been applied for upwards of twenty years, and the pasture is still excellent. It is almost the universal practice only to use bone manure on pasture of at least three or four years' duration. I have, however, seen a successful application in opposition to this general rule. About four years ago, I boned for a tenant a field of strong clay, which was utterly worn out from improper cultivation; crops of corn had been grown for many years without any green crop, or even a load of manure. The land was boned in the autumn at the rate of one ton and a half per acre, on the seeds after a crop of oats. In one year the herbage was remarkably great, and I now know of no other boned land in the neighbourhood where the pasture is so fine. A small portion was purposely left unmanured—it is now only a bed of weeds and quite worthless. I am now repeating this experiment in

other places; have in one instance heard of a successful application of bone manure for a hay crop; a field was pointed out to me as having had a good crop of hay for ten or twelve years without any further manure. I have lately made this experiment, but, as my tenant has only taken three crops of hay, I cannot at present speak as to the permanent advantage. Our Cheshire farmers are much too poor to make these expensive improvements, but landlords are now generally finding the capital, and charging 7*l.* 10s. per cent. for the outlay. The bones should be well broken, but I do not like them too fine; some farmers recommend that the bones should be almost reduced to dust;—this was done once by a tenant of mine, and certainly the effect was much less than on any other boned land with which I am acquainted; at the same time it is impossible, from one instance, to feel sure that the smallness of the bones was the cause of the failure.

"HENRY CHOLMONDELEY."

AGRICULTURAL QUERIES.

LIQUID MANURE.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—As a constant reader of your valuable magazine, I have seen many articles in it upon the subject of liquid manure, some recommending it to be used with a water-cart, others that a refuse or waste pit should be formed, and the rubbish accumulated therein to be soaked with it, and another class advocating the watering of the farm-yard manure with it, after being thrown into heaps.

Now, sir, my object in writing this is to enquire, through your pages, whether any of your readers have ever tried *all the methods*; and if so, to request them to favour us with the results, and to state what the liquid manure from any certain buildings and yards has done, applied in each way.

My own opinion is rather in favour of the water-cart, which system only I have adopted as an experiment on a small scale with great satisfaction. But previously to incurring more expense, I should be glad to obtain further information on this, in my estimation, very important branch of farm management.

I remain, Sir, your obedient servant,

Oct. 18. A WORCESTERSHIRE FARMER.

SIR,—In the "Farmer's Magazine" for October, 1843, there is an excellent article on making cyder, signed "J. R.," and I shall feel extremely obliged to the writer if he will have the kindness to inform me what becomes of the muddy liquor, the first that drops from the filtering bags. I trust that "J. R." will prosecute his experiments, and succeed in discovering how to make sweet cyder without wanting so much room as the process recommended requires, for unfortunately it is not available to Devonshire farmers on that account, as there is no county in England where they are so badly off for farm-buildings; and there are numbers who have not space to cask in the produce of their orchards even with a moderate bearing, so that in abundant years there is so much obliged to be sold direct from the pound, and the price reduced so low in consequence, as scarcely to cover the expense of gathering and crushing.

If we cannot exactly imitate "J. R.'s" plan, all may profit by many useful suggestions it contains; and I return him my sincere thanks for his very valuable communication.

For your zeal and indefatigable exertions in the cause of agriculture,

I remain, Mr. Editor, yours gratefully,

Oct. 21. A DEVONSHIRE FARMER.

TULL'S SYSTEM.

SIR,—I should be glad to hear from some of our more scientific moderns the opinions they entertain in reference to the theory and practice of the late Jethro Tull, Esq.

By whom is his system followed; and where? Why is a part of the system imitated whilst the other part is not practised? Is the fault in men or the system?

I hope some of your more intelligent correspondents will be pleased to defend, or expose the system, or at least to favour me and the public with the benefit of their information and remarks.

Perhaps also some of my more experienced neighbours will have the kindness to inform me whether swine will eat broad and other clovers, and if so, in what condition it alone would maintain them in? I should also be glad to know what would be the probable success of say broad clover, sowed at one earth upon an early barley stubble? A reply would greatly oblige one who would subscribe differently.

UNINFORMED.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In a piece of barley last year, instead of planting the whole with clover and rye-grass, as I had previously intended, I was disposed to try lucerne on a part, having frequently read of it as being very productive, though I never saw any growing.

It was sown early in the month of May, and came up vigorous and well; in August it became very sickly and weak, and has continued so since; so much so, that I fear the weeds, &c. will completely overcome it. If any of your numerous readers—through the medium of your journal—would inform me whether it is likely to recover and become at all equal to clover, or if it had better be ploughed up, or could anything be applied to it, should feel much obliged. The soil is a moderately deep stone brash.

A YOUNG FARMER.

SIR,—One of the great benefits of the "Mark-lane Express" is, that questions relative to farming, and the answers thereto can be readily made and obtained, without waiting a month or two, when perhaps the subject will be entirely forgotten.

I request your more experienced readers to be so good as to give me their opinion on the subject—whether on fair turnip-land a four or a five course system of cropping is the more profitable.

The four course is to be turnips, barley, clover, and wheat. The five course is to be turnips, barley, two-years clover—the 1st year to be mowed once, and the second year to be fed and folded—and wheat.

The expenses of both courses to be the same, except the addition of one year's more rent, tithe, and taxes, to the five course.

Now the question is, whether I may not fairly calculate upon obtaining more turnips, barley, clover,

and wheat, on account of all these crops not coming round so often, than will make up for the additional rent, tithes, and taxes, of one year on the five-course system.

Many farmers are too desirous of obtaining a quick succession of corn crops. But it is well known that the best crops of all sorts are those which are grown at the widest intervals of time, the best both in quantity and quality.

It must be remembered also that more sheep can be kept on the five-course, and that fewer horses will be required, which are very expensive animals.

Yours truly,

Sandon. G. F.

P.S.—Will any of your more experienced readers also inform me what proportion of the cost of fattening a beast with cake and corn is returned in the manure? I should be glad to know from those who answer this question, on what calculation it is founded, and also what quantity of land that manure —considered by itself, without the straw—would manure for turnips on the four-course system.

The answer to this question might, at least, assist us to determine whether it is more profitable—taking into account also the carrying out, &c.—to fatten beasts with cake, or to put the same value of cake at once on the land.

ANSWERS TO AGRICULTURAL QUERY.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—The land so situated as described by "Filo" lies in as awkward a situation for draining as any land can be supposed to lie in; nevertheless, such is not beyond the reach of being benefited by a judicious parallel drainage.

Let every ditch upon the farm—and to as great a distance over other lands that lie at a lower level as possible, be thoroughly cleaned and sunk a few inches deeper than what the intended drains are to be put in at; then—say at six inches, at least, above the bottom of your ditch—begin and run your main drain up the inside furrow of the headland, from which main drain, at right angles, run your parallel drains. In such lands that are liable to be flooded, soles must be used along with the tile. Let the number of drain mouths running into your ditches be as few as possible, in which may be laid square wooden pipes, about four or five feet long, and five or six inches square within, or they may be six inches deep, and four inches wide, with a valve on the outer end, which will shut by the pressure of water in the ditches, when that happens to rise quickly in consequence of rapid floods. When your ditches are full, your land may not be much the better for the drains; but the moment the water recedes from these ditches, your land will also throw off its surplus waters by means of so many tile veins, thereby drying your land much sooner than if it were undrained, and be less injured than if longer immersed in stagnant water. I have drained land embanked in from the sea, and lying fifteen feet below the tide at high water, very successfully by the foregoing plan.

In the above case I would not recommend subsoiling. The deeper you loosen your land it holds the more water, and the longer it will be in drying after the waters have disappeared; and in time of wet your land would be almost bottomless.

Upon any land, manure receiving repeated washings is the worst, but not so much injured as when buried under water in an undrained soil.

I have never yet seen land of any description but what was the better for draining, if done properly.

I cannot say whether salt tends to diminish the quantity of milk in cows, having always considered it conducive to the health of all animals; therefore have ever salted my hay and all steamed food in winter, and always keep troughs with salt-rock through all my fields for all my stock through all the summer, and never had any complaint from the dairy.

I should be glad to give any information on draining that is in my power to any enquirer.

A CHESHIRE AGRICULTURIST.

In your paper a few weeks since, one of your correspondents inquires respecting the method of making a seton in the dewlap of young stock, as a preventive of the quarter evil. It has been the practice for many years in Somersetshire to adopt this precaution, and I never remember an instance of an attack when it has been attended to. It is done with a piece of iron made sharp, and pointed to about two inches, where it may be about the size of a quill; a hole is pierced in the iron, in which is inserted a piece of tape about four or five inches long. The point of the iron, when heated, is forced through the skin of the dewlap, just beyond the tape hole, far enough to take hold of the tape; it is then drawn back, leaving the tape in the orifice made; both ends are then tied together, and some tar put on the tape, which is then moved in so as to draw the tar into the wound. This may be repeated once or twice during the winter, and nothing further is required. The writer has purchased yearlings in the spring with the tape in the dewlap, of which no notice was required. J. C.

Street, Oct. 6th.

CARSON'S PATENT SALTING INSTRUMENT.—So numerous are the discoveries of the present age that it would be a work of some difficulty to detail their peculiarities, although the object were to excite surprise as well as to convey information. It does, however, occasionally happen that amongst the various "new-fangled notions" to which public attention is directed, there are many ingenious contrivances which, from their simplicity and utility, are deserving of notice. One of the most curious, and at the same time, most valuable discoveries which has been made of late years, is an instrument for salting and curing meat. The nature of this machine, and the objects to which it is to be applied, may be described in a few words. The instrument resembles a common syringe of more than ordinary dimensions, and, although not quite so simple in its construction, it is intended to be used in the same way as the syringe, provided the point or tube be not exposed to the air. The advantages to be derived from the use of the instrument are explained by the the fact that a joint of meat may, in the simplest manner, be properly salted in less than ten minutes. The brine is made of the usual ingredients, and after the salt and other substances are completely dissolved, the liquid is poured into the machine, and the nipple or tube (the circumference of which is perforated with three small holes) is inserted into the most solid part of a joint of meat, and the contents are, by a very strong pressure, forced through the fibres until the brine is seen to escape on the surface. For this purpose a smaller quantity of pickle is used than is em-

ployed in the ordinary method of curing meat, and the bone (if there be any) in the centre becomes thoroughly impregnated with the fluid. By the present mode of salting meat, it is a matter of some difficulty to inject the brine into the innermost part of a large joint, whereas by the process which is adopted in the use of Mr. Carson's instrument the size or substance of the meat presents no additional trouble to the operator. It would morever appear that if the machine is used according to the directions of the inventor (whose agents in London are Messrs. Hockin, of Bishopsgate-street-within) the nutritious properties of the meat are more fully preserved than by any other means which may be adopted. To enlarge upon the benefits derivable from this invention would be to render its peculiarities less intelligible to the reader, and therefore it will be sufficient to say in the phraseology which is generally applied to objects of utility, that the "patent salting instrument" ought to find its way into every larder, or culinary department.

CALENDAR OF HORTICULTURE FOR NOVEMBER.

As this is usually a month of gloom and moist weather—one wherein the operations of the garden depend upon more or less favourable contingencies; and as also the season of forcing approaches, it appears opportune to attempt a description of that simple and economical hot-water apparatus which has more than once been alluded to, not only in the columns of this magazine, but in those of the *Mark Lane Express*. For large and opulent establishments it would be needless to speak of economy, but to the homestead, the market gardener, the amateur of limited income, every cheap appliance is valuable as a saving. Boilers of approved construction, iron pipes, and other appendages of modern invention, are excellent; and we would not advance one word in their disparagement: but this is nothing to the present purpose, for what we aim at is to recommend an apparatus which any one may command who will not grudge the expenditure of from 50s. to 70s.

During the last two years we have had opportunities to inspect ranges of cucumber and melon pits, which have produced a supply of fruit from January to July, at an expence of fuel too light to be complained of; and in the course of the late summer, have witnessed the erection of an apparatus in a stove, 24 feet long by 9 feet wide, which, labour included, did not cost 3*l*. Any common copper that will hold five or six gallons of water will suffice, provided it be furnished with a pair of copper pipes three or four inches in the bore, placed one above the other—the lower one a few inches above the bottom of the boiler, the upper one four or five inches above the first. The copper is so fixed that the flame of the fire shall play upon and round the greater part of the surface, and between the two brazed pipes, before it enter the chimney, which generally consists of a single upright shaft. Upon the rim there are built two or three courses of 4-inch brick-work, which being accurately covered with Parker's cement, give depth to the boiler; thus insuring an ample supply of water, and protecting the copper from depredators. A wooden, or other lid is finally adapted to retain heat and steam, without however rendering the vessel air-tight.

From the upper tube passes a range of those common earthen pipes which are now coming into general use; and this continues its course along the ends, front, and back of the erection, falling by a gradual descent till it terminates in the lower brazed pipe. The corners are turned by means of earthen elbows. The tubes are usually 18 inches long, and cost from 6d. to 7d. or 8d. each; and as the ware of which they consist can be cut by a saw or sharp-edged file, they may be adapted to any house or pit with very little labour. Each pipe is fitted to the one beyond it by a sort of putty, made of four parts (by weight) of white-lead ground in oil, and one part of fine red lead, thoroughly blended; the joints, after the putty has become firm, being finally secured by a coating-belt of Parker's cement.

It will be evident that if a fall of 4 to 6 inches be distributed throughout the course of the pipes, the water, were it unpropelled by any force from behind, would naturally flow from the upper brazed pipe to the one below it. But if we add to this, the force of rarefaction and expansion caused by the operation of the fire upon the bottom of the copper, and upon the lower part of the exit pipe, in its passage between the two, it cannot reasonably be doubted that a current will set in from that pipe and continue till it terminate in the lower part of the copper; and such indeed is the fact.

The chief expense will consist in the purchase of a copper, if there be none at hand, and then in brazing the two copper tubes. However, we can neither reject the evidence of what we have seen, nor question the fact, that a fire lighted at four o'clock, p.m., and maintained briskly for one hour, or one hour and a half, has produced in a very short time, and kept up for more than twenty hours, a heat of 65° to 70°.

But fuel and labour can still further be economised by the use of Moira coal, a combustible which never clinkers, consumes entirely to a grey ash, and moulders to the last particle. It is a coal that in furnaces or parlours may always be relied on to yield a permanent heat, provided it be left undisturbed; but, if subjected to that poking and rousing which the soldering, sea-coal fire demands, it will burn away to waste. We have proved it now for three winters.

By another modification of structure a double set of pits may be heated by one fire: thus, a neighbour has a deep pit warmed by a common brick flue, the furnace of which stood at one end of it, almost close to the angle of the front wall. Wishing to make that wall serve as a back to a second pit (it being high enough), he lately erected one in front of the first for the express purpose of growing cucumbers or melons; and which, therefore, required either dung linings or hot-water. A cast-iron pipe, furnished on one side with two exit pipes of nearly the same bore, was passed into the furnace through and beyond the neck of the flue, and sloping upwards in conformity. The upper exit orifice was thus raised a few inches above the lower one, and passed through the wall into the front pit, where it was joined by an elbow, to which was adapted a series of earthen tubes, ranging round the pit, and returning at a gentle descent, till another elbow passed into the lower of the two iron exits. To fill these pipes with water a funnel was fitted to a small orifice in one of the earthen tubes nearest to the cast-iron pipe, and as the ends of the latter are solid, all the water passed through and filled the apparatus. We have seen this singular machinery in full action, and have found the back pit

warmed sufficiently by the flue for all the purposes of forcing, and the front pit at 75 or 80° by the action of the hot-water, which flowed regularly through the upper side exit, round the house, and back again to the iron tube, through its lower orifice, or inlet pipe. The cost of the cast-iron tube, which thus becomes an active and most effectual boiler, was about 24s. As circumstances occur, we hope to offer suitable remarks upon the efficiency of these simple and cheap methods of forcing.

Vegetable Department.

Potatoes—dig up the remaining store in the driest mild weather which the season will afford, and house them with speed, because an hour's keen frost will destroy the cuticle; potatoes cannot be kept too cool, provided the frost do not touch them.

Try a sowing of two-eyed sets, six inches deep. We know they succeed, though as yet there wants proof that time or quantity will be economised.

Peas—the early Warwick; a row or two sown thickly, near a south wall, about the latter end of the month, may go through the winter, and bear early; but as the one ensuing promises to prove severely frosty, security is consulted by sowing much later in boxes, preserved under glass.

Mazagan beans are good for an early crop, and a row or two can be put in.

Broccoli, and all the cabbage tribe, may be protected by drawing earth, in a ridge, close up to the leaves.

Artichokes are well protected by placing ashes in the form of a cone, close around each plant, after detaching all the old decayed leaves.

Asparagus beds must be dressed, after the dry haulm is taken away; a good coating of half decayed leaves, three inches thick, is the best material. Sea-kail and Rhubarb may be treated in a similar manner, if not desired to be forced. For forcing, blanching-pots, boxes, or troughs, should be so placed as securely to cover the crowns, and then a mass of fresh tree leaves may be heaped round and above them.

Fruit Department.

Plant trees early in the month. Either trench the ground, or open wide holes, making the bottoms hard and firm, eighteen inches below the surface; upon those put screened, or turfy earth; when this is settled, expand the roots of the tree, scattering fine loam among them; water and stake, then mulch at the top of the soil with leaves or strawey litter. Fruits pay so little, that "orcharding" is sheared of its remunerative honours; still, if the work be done at all, it should be well done, and every tree ought to have the ground so completely loosened, that the finest fibres may trace, laterally, with freedom. We do not require much depth, provided the quality of the subsoil be found dry and healthy.

Prune the vine: in the long-rod system, cut out all the bearers of this year, and nail-in the new succession rods a yard asunder. The genuine white sweetwater, is unquestionably the best tree for the open wall; black grapes rarely succeed. Another year has added further proof of the fallibility of the vine. On the 12th and 13th ultimo sharp frosts arrested the progress of maturation; and thus, since 1835, we have had scarcely three seasons wherein any saccharine fruit could be obtained.

Gather apples and pears, use them tenderly, and deposit in rooms, or dark closets, where frost never enters.

Currant and gooseberry bushes—each trained with one single main-stem, will succeed well, if planted not later than the second week. The Crystal (Knight's) red, and the true Dutch white, are the best currants; the Warrington, rough red, the golden lion, yellow, the old rough green, and the true Pitmaston green-gage, are unrivalled gooseberries.

Apricot—the only worthy tree is the genuine Moore-park—the Brussels and Breda are doubtful fruiters. Of Peaches—the Royal George, Noblesse, Violet native, and Bellegarde, are to be preferred for the wall; and for forcing, the Noblesse (also called Mellish's favourite) is the best.

Flower Garden.

Plant bulbs, filling the holes with sand. Cover the soil of American beds, and indeed that of all the choice parterres, with decayed leaves. Sweep and clean lawns and walks, but permit fallen leaves to cover the surface of shrubbery ground.

Stove and greenhouse plants must be kept pretty dry, the former at 50° by night, as a minimum. Every pot should be clean, well drained, and free from worms. Greenhouse plants, and those in pits, like plenty of air; but a dry house and dry atmosphere are more essential to the welfare of all their tenants, than artificial heat. Camellias can support two or three degrees of frost, heaths still more; yet it is not prudent to subject them to a temperature so reduced, and geraniums ought to have at least 35°.

The vineries should all be at rest, the trees pruned (if the spur system prevail) to one or two eyes, and then exposed to the weather for a few weeks.

Pine-apples are now nearly quiescent; the fruiting plants are still kept cool and dry, but the successions in close pits, lined outside to the framing, and maintained at 65°. "Onward"—no remission of growth, or rather, no check and torpor, are the precepts of modern judicious culture.

October 18.

DRAINING AND SUB-SOIL PLOUGHING.—I would also say, that the effects of the draining and subsoil ploughing are dependent on each other; the one is comparatively worthless without the other: the ploughing would be thrown away without the previous draining, and the draining is a poor improvement compared to the *combined* effect with the subsoil-ploughing. The various views of the advantages might be multiplied to any extent, but a concise statement of them seems to be, that the most obdurate and intractable soils assume a friable and mellow character, and at the same time are rendered permanently most productive. A system which is applicable to 10 acres is equally so in its principle to 10,000 or 100,000 acres, and consequently the system becomes a most important national consideration. My decided impression is, that capital judiciously applied in the execution of this system may yield a return varying from 10 to 40 or 50 per cent., according to the various circumstances attending the infinite variety of cases in which the system may be carried into effect. Every thing depends on the mode and perfection of execution; if any one thinks of limiting the expense of complete execution, he may rest assured that the recompense will be still more restricted, and that it is more judicious to improve one acre well than to deceive himself by a superficial operation on a more extended surface.—*Evidence of T. F. Kennedy, Esq., formerly M.P. for the Ayr Burghs, before the Committee on Agriculture in* 1836.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

Notwithstanding the numerous changes which have occurred in this month's temperature, the weather must be considered, as a whole, seasonably fine. In its early part, ploughing and sowing were pretty generally commenced, and have since been rapidly proceeded with in our forward districts, with the land in fine working order; while in the northern counties, the few remaining patches of oats and beans, including barley, were secured in tolerably fair condition. So far, therefore, as the state of the weather and out-door farm operations are concerned, there is nothing whatever calling for other than a favourable remark.

As might have been anticipated, the yield of the present year's crops, and the probable future range of prices, are now occupying the serious attention of the agricultural body. As respects wheat, we feel assured that a comparative deficiency exists in the quantity produced this season; but that deficiency is not such a one as need cause any alarm or outcry, either amongst growers or consumers.

The barley crops, taking into account the breadth of land cultivated with that grain this season, have turned out good; should the same circumstances influence the use of malt as those to which we have above referred, there is every prospect of the price of barley—which is now extremely low—ruling higher than at present, especially when it is known that no very large quantities of home-grown barley can be brought to our various markets.

The oat crop is everywhere well spoken of; though prices, in the absence of extensive receipts from Ireland, may improve for a time, there is little or no prospect of their reaching a remunerative value.

Beans and peas call for little comment, beyond the fact of their yield being a full average one.

At Mark Lane, as well as in most of the large country markets, fair time-of-year supplies of English wheat have been on offer in the course of the month, while the demand has ruled steady at an advance of from 1s. to 3s. per qr. Some large quantities of free foreign wheat have been disposed of, but no material improvement can be noticed in its value. Malting barley has sold freely, other kinds slowly, at previous currencies. Malt has met a very heavy demand, and suffered a slight depression in value. Oats have improved quite 1s. per qr., while the value of beans, peas, and flour, has been well sustained.

The accounts respecting the turnip crop are somewhat contradictory. In some parts considerable failures are reported to have taken place; yet we think, on the whole, the quantity will be a good one. The late fine rains have certainly improved the plants.

The low prices at which fat stock has been selling in this country have produced considerable caution on the part of those who were about to import foreign cattle—only about 40 beasts having been received from Hamburg, and 30 do. from Spain. This stock has come to hand in very middling condition, and sold at miserably low figures.

Our letters from Scotland state that the whole of the crops have been secured in that country in good order, and their general produce is represented as quite an average. The different markets have been well supplied. Fine qualities of grain have gone off steadily at full currencies, but the middling and inferior kinds have hung heavily on hand, and been purchased on rather easier terms. Potato-raising has been commenced, and the produce is generally considered good.

In Ireland, most of the farmers' time has been occupied in the fields. The result of thrashing shews that this year's crop of most kinds of corn is rather above that of last season. The potato crop is considered large.

The following is our usual statement of the supplies and prices of fat stock exhibited and sold in Smithfield Cattle Market. The former have consisted of 13,250 beasts, 159,290 sheep, 1,500 calves, and 1,893 pigs; while the latter have ruled as follows:—Beef, from 2s. 6d. to 3s. 10d.; mutton, 2s. 8d. to 4s. 4d.; veal, 3s. 4d. to 4s. 4d.; and pork, 2s. 10s. to 3s. 10d. per 8lb. to sink the offals.

On each market day the supplies have been abundant, and more than adequate to meet the wants of the buyers; hence the demand has ruled very dull for all kinds of stock, at drooping prices. Very few serious cases of epidemic have been noticed this month. The only foreign stock on offer has been about 15 German beasts.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in Smithfield Cattle Market, on Monday, October 24, 1842, and Monday, October 23, 1843.

At per 8lbs. to sink the offals.

	Oct. 24, 1842.		Oct. 23, 1843.	
	s. d.	s. d.	s. d.	s. d.
Coarse & inferior Beasts	3 0 to 3	2 ..	2 8	2 10
Second quality do.	3 4	3 6 ..	3 0	3 2
Prime large Oxen.....	3 8	3 10 ..	3 4	3 6
Prime Scots, &c.....	4 0	4 4 ..	3 8	3 10
Coarse & inferior Sheep	3 0	3 4 ..	2 10	3 0
Second quality do.	3 6	3 8 .	3 2	3 6
Prime coarse woolled do.	3 8	3 10 .	3 8	3 10
Prime Southdown do..	4 0	4 6 ..	4 0	4 4
Large coarse Calves ..	3 8	4 0 ..	3 4	4 0
Prime small ditto	4 2	4 6 ..	4 2	4 4
Large Hogs.....	4 0	4 6 ..	2 10	3 6
Neat small Porkers ..	4 8	5 0 ..	3 8	4 0

SUPPLIES.

	Oct. 24, 1842.	Oct. 23, 1843.
Beasts	3,901	3,995
Sheep	27,320	29,770
Calves	115	128
Pigs	571	314

As is almost invariably the case on the setting-in of cold weather, a very extensive supply of country-killed meat has been received up to Newgate and Leadenhall Markets; while the supplies of that slaughtered in the metropolis have been large. Prime mutton, from its scarcity, has mostly sold at full prices; but the value of all other kinds of meat has had a downward tendency. Beef has sold at from 2s. 4d. to 3s. 4d.; mutton, 2s. 8d. to 4s.; veal, 3s. 4d. to 4s. 4d.; and pork, 2s. 8d. to 3s. 10d. per 8lb. by the carcase.

YORKSHIRE.

The weather has been extremely variable since our last report. The fine weather which characterised the early harvest, continued until every particle of harvest on the most backward moorland in the county was secured; and if the farmer had but patience, which all did not possess, secured in ex-

cellent order. So long did dry, hot, and open weather continue, that most farmers took the advantage, and commenced active operations upon the stubbles. Finlayson's harrow, Ducie's drag, Biddell's scarifier, and every form and character of cultivators were called into operation; and an unusual quantity of acres of land has been cleared for Swedes and potatoes next year. Many farmers still continue the very reprehensible practice of burning the stubbles and weeds, instead of allowing them to ferment for subsequent crops. Burning necessarily expels nearly the whole of the gases from them, and leaves nothing but the earthy and saline constituents, which are often in the soil to excess. The azote, which is the principal fertilising principle in all manures, is effectually dissipated, as well as the carbonic acid gas. This season has abundantly established beyond all contradiction the superiority of Finlayson's harrow to all other implements for light, and of Ducie's drag for strong soils—as every other kind of cultivator for the latter description of soils was perfectly incapable of scarifying the surface. The superiority of thinly working the surface over, ploughing down the weeds—to be again worked up—is now fairly proved. The seed leys have been so excessively hard as to be quite impervious to the plough; and it was not until the 8th October that anything could be done, so that scarcely anything has been sown, except upon the fallows on strong soils. The plough and presser were, however, set to work about that date, and have only been impeded by the few nights frosts we have had, and the covering of snow which to-day (October 17) prevailed over most of the county. Wheat sowing prospects are, therefore, very inauspicious. The demand for seed wheat is very brisk. The quality of the wheat brought to market is very indifferent, especially as regards fineness and boldness of sample, though most of it is very dry. The quantity of produce per acre as regards wheat is still reported to be very short, and this is reiterated in all directions. Barley and oats seem to have yielded a much better return—at least, so far as they have been tested. Prices of corn have maintained a remarkable steadiness since harvest. Wheat has never fluctuated much from 6s. 6d. per bushel; oats from 20s. a quarter; and barley from 34s. per quarter. The agricultural meetings of the season have been, upon the whole, exceedingly well sustained. The great Yorkshire Show at Doncaster took—as it ought to do—the lead, and was a most astonishing exhibition, both as regards numbers and quality. An extreme amount of interest was excited, and the council dinner set the example of a large meeting discussing points of practical agriculture. The Beverley meeting drew together a splendid shew of horses. The Northallerton show was excellent. The Richmond meeting and trial of implements was of a very first-rate character. Altogether, a disposition seemed to be evinced—rather than go over the usual routine of bare compliments—to discuss and elucidate matters of practical and scientific interest to the agriculturist.—October 17.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

WORKSOP FAIR.—The annual cattle fair was held for the first time since the formation of the new road to the Eckington station, on the North Midland Railway, on Saturday last, on a spacious piece of ground adjoining the centre of the town, which has been appropriated for the purpose by his Grace the Duke of Newcastle. This privilege being liberally granted, and Worksop being centrally and conveniently situated, both as regards the transmission of stock for sale, as well as lying within a convenient distance of the manufacturing towns in Yorkshire and Lancashire, to which there is a direct communication by railway from the above station, renders it peculiarly advantageous for the attendance of dealers, salesmen, &c. There was not much fat stock offering for sale, but what was sold realized full prices. Of store beasts and sheep there was an immense quantity on sale, particularly the latter, a great portion of which sold at satisfactory prices. There not being a great demand for lean beasts, prices for that description of stock had a downward tendency. In-calvers were much looked after, and in great demand, some of which were sold for long prices, say 15*l.* to 16*l.* Milch cows varied in price according to quality, from 12*l.* to 14*l.* Scotch Beasts, from Ayrshire, averaged from 6*l.* to 7*l.* each. Scotch sheep were sold from 15s. to 16s. each, ewes from 22s. to 25s. There were some very fine fat sheep exhibited for sale, which, for beauty and symmetry of shape, could scarcely be excelled. On the whole, a good deal of business was transacted, and prices not worse.

HULL FAIR.—This annual fair was held on Wednesday week. The weather was unfavourable, but that did not prevent a large attendance from the country of persons on business. The show of foals fully maintained the well merited reputation of the East Riding, and prices generally ruled high. Mr. Windas, of Beverley Parks, exhibited a prime lot of blood foals, and his black colt, by Falcon, out of a Trojan mare, was sold into Lincolnshire for 30*l.* A Cavendish colt was also sold into the same county for 23*l.*, and another foal for 26*l.* The cattle and sheep fairs were both well supplied, more particularly sheep; good two-shear ewes fetched 20s. to 25s., and the sales of cattle generally were at the prices of late markets.

WOOLLER FAIR.—There was about an average supply of bred and half-bred sheep, but of Cheviot stock the show was considerably less than last year. Notwithstanding that snow and rain fell heavily during almost the whole of the day, the attendance of buyers was great, and upon the whole it was a good market for the sale of sheep, and nearly all were sold. Bred dinmonts sold at from 30s. to 36s., half-bred ditto from 22s. to 27s. Cheviot wedders brought from 17s. to 26s.; bred ewes from 22s. to 25s., and some of the superior quality sold as high as 27s.; Cheviot ewes sold at from 12s. to 15s. The show of cattle was greater than usual, owing to a large lot of steers and heifers, belonging to Mr. Currah, which was left over from his sale at Cornhill the day before, being exposed in the market. The demand was tolerably good. Two-and-a-half-year-olds brought from 10*l.* to 12*l.*; stirks from 5*l.* to 7*l.* There was a poor show of milch cows, for which the demand was dull. There were few horses in the market, and little business done amongst them.

MALTON FAIR.—On Wednesday some very excellent English and Irish beasts were exhibited, many of which were sold at fair prices. On Thursday the sheep, owing to the rain, only cut a sorry appearance. On the whole, however, good sheep sold well, at an advance in price over late fairs in this neighbourhood; the number was not small, though much under that of some years. There was a miscellaneous show of horses, good ones fetching high prices, but the greater number were only of a bad sort.

BLACKBURN FAIR commenced on Tuesday, and, notwithstanding the severity of the weather, there

was a very good show of cattle for feeding. We did not observe any of a superior quality for the butcher. Prices for feeding sorts were advanced, and firm.

MANSFIELD FAIR, owing to the unfavourable state of the weather, was very thinly attended, and very little business done. Cattle met with very dull sale. Cheese fetched from 42s. to 54s. per cwt., some few dairies being sold as high as 56s. and 57s.; the whole were bought up very well.

OAKHAM FAIR was the largest known for many years for both Beasts and Sheep: all went off at a decline, Beef scarcely realizing 6s. per stone, and Mutton hardly 4½d. per lb. The show of lean stock was large, and the decline in price was considerable.

STOCKTON CHEESE FAIR.—Although the buyers from distant places were not so numerous as they have been on former occasions, still all the dairies, about fifty in number, with the exception of two, were disposed of at good prices, varying from 42s. to 50s., and averaging about 45s. per cwt. The first prize of 3 sovereigns for the largest and best dairy was awarded to Mrs. Stonehouse, of Longnewton; the second of 2 sovereigns, to Mr. Wm. Loftus, of Morton, in Cleveland; and the prize of 2 sovereigns for the best of the small dairies to Mr. Burdon, of Mordon, near Sedgefield. Messrs. Crosby and Co. obtained the prize of 2 sovereigns as the largest purchasers of cheeses in the fair. Judges—Mr. A. Smith, Mr. T. P. Dickinson, and Mr. J. R. Walker.

BALLINASLOE FAIR, Oct. 6.—The sales and demand for sheep continued brisk yesterday. The prices did not improve, but, on the contrary, rather retrograded. In some instances wedders sold 7s. a-head less than last year. This was rather remarkable, as in the early part of the day the supply was found to be deficient; the result is nearly 12,000 sheep less than last year. Of sheep there were sold, on both days, 62,726; ditto unsold, 1,364; total, 64,090. I subjoin the return of sheep for the fair of 1842:—Number of sheep sold, 63,263; unsold, 12,644; total at fair, 75,907. Top price wedders, 2*l.* 12s. 6d.; ewes, 2*l.* 9s. The number of high bred rams exhibited and sold was larger than usual. Mr. Pat Taafe and the Rev. John Trench had the largest number and the finest bred. All were sold at high prices. I was glad to see this, as it shows that the Connaught graziers are paying considerable attention to the improvement of their breed of sheep. The Horse and Cattle Fairs.—There were 150 two-year-olds, and about the same number of one year old heifers, of a very superior breed, found ready purchasers. This day proved unfavourable to the horse-dealers, being all through dripping wet; the show of horses was therefore bad, and from inquiries I find that the supply of good ones was small. A sire, "Royalty," of Cleveland blood, sold for 295*l.* Lord De Freye's "Clansman" (a first-rate steeple-chaser), was for sale—300*l.* offered, but refused. A few good hunters were sold at prices varying from 50*l.* to 80*l.*; I could not discover that any brought so large a figure as 100*l.* Good carriage and draught horses sold at 40*l.* each. A few troop horses were bought. The supply of horned beasts will be short; the number of heifers will be considerably under last year. It is expected by the graziers that the prices will be the same as last year, but I am under the impression that there will be a reduction of 1*l.* a-head at the least. The farmers will not make the rent of their land, and I apprehend there will be a crash amongst those of limited capital, and those who can will have to pay at least one half the rent of their farms out of previous earnings. On a calculation made by a very intelligent and skilful farmer, it would seem that the return to the farmer, after payment of expenses, would not give for rent more than 1*l.* an acre for good feeding ground; whereas it stands in, at least, including taxes, 2*l.* 5s. an acre. This looks bad for the country, and justifies the almost universal demand for abatement of rent.

THE SALE AT ALGARKIRKE.—On Thursday last, Mr. W. E. Lawrence sold the excellent herd of shorthorned cattle belonging to Mr. Rogerson. Notwithstanding the unfavourable state of the weather, there was a large attendance of purchasers, among whom we noticed the Rev. B. Beridge, Messrs. Dudding, Panton; R. Smith, Burley, Rutland; S. Smeeton, Mutter, W. Burcham, of Ewerby; &c., &c., and a number of the most eminent breeders and graziers of the county, together with the agents of many noblemen and gentlemen who engage in agricultural pursuits. All of the stock sold well, and for some animals high prices were obtained. Most of the cows are in calf to the Rev. Mr. Beridge's famous bull, Young Spectator, and others by Lord Spencer's Gracchus. Mr. R. Smith purchased three beautiful calves by Gracchus, dams (we believe) Jesse and Lily. Nonsuch, two years and six months old, by a son of Lord Exeter's Emperor, dam Duchess, and in calf by Young Spectator, was knocked down for 27*l.* 10s.; she is a very fine animal. Others fetched from 20*l.* to 25*l.*; the average, we understood, was between 18*l.* and 19*l.* Altogether, this sale has been highly satisfactory, and reflects equal credit on the breeder and the auctioneer. Young Spectator was on the ground, and was much admired. The inclement state of the weather prevented many farmers from attending. Amongst the purchases made were some for Sir J. Trollope, Bart., M.P., the Rev. B. Beridge, Banks Stanhope, Esq., Mr. Smith, of Burley, Mr. Dudding, of Panton and Sir T. Whitchcote, Bart.

PRINCE ALBERT'S ANNUAL SALE OF LIVE STOCK.—Since Prince Albert has been in possession of the Royal farms in the Great Park at Windsor, known as the Flemish and Norfolk farms, his Royal Highness has had an annual sale of the live stock, which has generally realized from 1,700*l.* to 2,000*l.* These two farms of his Royal Highness (who is a very good practical farmer himself) are under the immediate superintendence of Major-General Wemyss (who resides at Cumberland-lodge), the Clerk-Marshal to the Prince. As a considerable portion of these farms consists of pasturage, and as his Royal Highness is the Ranger of Windsor Great Park (in addition to being the chief Ranger and Keeper of Hyde Park and St. James's Park), and has also the "run" for his sheep and cattle of the Home Park, the Prince thus possesses great facilities for keeping an immense quantity of live stock at a comparatively very trifling expence, and of realizing a profit of from 50 to 60 per cent. upon the cost price. The sheep and cattle fed and disposed of annually by his Royal Highness are chiefly purchased by the Prince's agents at the large Welch, Devon, and other fairs, in a lean state, at those seasons of the year when the prices of these descriptions of stock are at the lowest; and hence a profitable return for the capital embarked is the result. The sale for this year, which was conducted by Mr. Tebbott, auctioneer to Her Majesty, took place at Norfolk Farm, and attracted, from the well-koown high character and condition of the live stock of his Royal Highness, all the principal salesmen and butchers for many miles around Windsor, and also several large buyers from the metropolis. The stock which was sold consisted of 417 sheep, 33 Welch oxen, 12 Devon oxen, 8 Hereford oxen, 2 Welch Highlanders, and 9 fat cows and heifers. The average prices realized at the sale may be interesting to a large portion of our readers. They were as follows—70 two-tooth wethers averaged 34s. each; 16 two-tooth ewes, 30s. each; 70 superior ewes, 35s. each; 81 four-tooth wethers, 40s. each; 80 Southdown ewes, 37s. each; 100 fine four-tooth wethers, 42s. each; 19 highly bred Welch oxen, 14*l.* 10s. each; 5 Welch heifers, not in calf, 10*l.* each; 9 Devon oxen, 13*l.* each; 3 do., 12*l.* each; 12 Welch oxen, 13*l.* each; six Hereford oxen, 22*l.* each; two of the same breed, which were in remarkably fine condition, realized 59*l.* 10s.; two West Highlanders produced 25*l.* 10s. each; two red and white heifers sold for 18*l.* each; six Welch oxen averaged 11*l.* each; and seven beautiful cows (which had each produced one calf and then fattened) averaged each 20*l.* The sale realized 1,743*l.*

REVIEW OF THE CORN TRADE

DURING THE MONTH OF OCTOBER.

Although the decline in the value of wheat has been considerable since our last publication, still this great department of the corn trade is evidently in a sounder and more healthy condition than it was at the same period last year, and in the beginning of the present one. The supplies in all the great markets of consumption have generally been as large as they had been at the commencement of any former corn season; but as yet they have not been more abundant than the demand has required, and the depression in prices has been therefore chiefly, if not solely, occasioned by the inferiority of the quality. In the home counties, and in all the districts situated to the southward and westward of the metropolis, complaints continue to be made respecting the variety of quality existing in the wheat crop now gathered, and, from the experience which we have had in Mark-lane for several weeks past, these complaints are not, unfortunately, without foundation; but still some wheat of excellent quality has been, and still is forwarded for sale from the same quarters. North of the Trent, however, and throughout Scotland, the lateness of the season has in every respect been favourable to the last crop, and the quality of the new wheats is unobjectionable. We are, therefore, inclined to believe that the last wheat crop will be found better than in the early part of the last summer could have been contemplated, although neither in quantity nor in quality will it reach an average crop. The most favourable symptom for the wheat trade at present, however, is the increasing consumption of bread corn, of all descriptions, amongst the people; and in proportion to the improvement in the quality of our wheat supplies in future, and they will naturally improve, must the average prices be raised above their present rates. It has always afforded us satisfaction to record the good deeds of even the enemies of the agricultural interest, and in the present instance it is doubly pleasant to be able to attribute the improved prospects in our home wheat trade to commerce and to manufactures; both of which have, since the beginning of this year, risen into great prosperity, and are consequently rendering that part of the industrial classes employed by them more competent to pay for the necessaries of life than they have been during the last four years. This improvement in trade has its origin in natural causes, and it perfectly falsifies the dogmas of the Anti-Corn Law League, for it has actually already occurred, and still the corn laws are not yet absolutely repealed. The fact is, that so long as the transactions of all ranks in our society are founded on unity of action, so long no department of society can either be prosperous, or the reverse, without affecting more or less every link in the fabric of society itself. Five years ago the crops received great injury in this country from unpropitious weather, and during two years afterwards they were also damaged by the same cause. Money consequently was paid in large sums to foreign land proprietors, instead of to British and Irish farmers, for grain for the food of the British people; and the consequence was agricultural distress here, and the want of means on the part of millions to pay for, and to consume, the usual annual quantity of manufactured goods. The home consumption being, in common times, more than three-fourths of the quantity actually manufactured, of course the failure in the demand at home created stocks in the possession of the manufacturers heavier than, in many instances, their capital could well pay for; and to relieve themselves from this unpleasant situation, they deluged all foreign markets by consignments of the surplus quantity of goods, which agricultural distress prevented the consumption of within the United Kingdom. A cure for this evil can never be found in the reduction of the value of provisions, for the purpose of reducing the wages of labour. On the contrary, it can only increase manufacturing distress. To adopt the supply to the demand alone can render commerce sound and healthy, and the manufacturers, acting on this sound principle during the last two years, have so materially reduced the production of goods, that they have now arrived again at that point in which a revival of trade can alone naturally arise. Activity has now arisen in our foreign export trade, and should the agricultural interest soon become prosperous, the home markets for manufactured goods must speedily afterwards become favourable to traders in every department of commerce and manufactures. So far from desiring to gain vast fortunes by distressing the agricultural classes, it should be the object of manufacturers to protect our agricultural property at home from unfair competition with grain, provisions, and goods, produced in foreign lands, and by foreign labourers; for under no other principle can they reap the immense advantages which a brilliant home trade universally confers on them. Trade, we repeat, has received its present impulse from natural causes alone, but it would still be much more prosperous did our farmers receive remunerating prices for the produce of their fields. The real friends of commerce and of manufactures, therefore, should not endeavour to excite the feelings and the passions of the ignorant, and of the inexperienced, against the agricultural interest; nor to induce the multitude to demand the repeal of the corn laws; for on the prosperity of agriculturists depend the wages of all descriptions of industry throughout the United Kingdom. The total repeal of the corn laws cannot do half so much injury to land proprietors, farmers, and field labourers, as it would inevitably entail on the commercial and manufacturing interests themselves, and more particularly on their workmen. The fields can, under all circumstances, abundantly support all who are employed in their cultivation, and therefore protection to agricultural produce is chiefly requisite to the interests of that part of the population not employed in agricultural pursuits. Under the late corn laws at least three-fourths of our manufactures were consumed within the United Kingdom; but to repeal the present corn law, ineffective as it most undoubtedly is, would reduce the home markets for goods to one-half of the present amount, and consequently would throw more than one-half of the manufacturing labourers out of employment altogether; reducing the wages of the other half to the lowest rates on which human nature can subsist. For a few years no doubt, by the reduction of wages which the repeal of the corn laws would occasion, some members of the Anti-Corn Law League would gather more than princely fortunes; but this would be no

national recompense for the wretchedness and destitution which a perfectly free trade would speedily entail on the manufacturing labourers, by whose exertions these highly unnatural fortunes may have been acquired. "To live and let live" has ever been the motto of the agriculturist. To acquire large fortunes from the sweat of the brows of their workmen, is at present the principle of some of the cotton lords; although, to the honour of the manufacturers, the number of these selfish masters be few, still they are dangerous to society. Whenever, by speculation or by any other cause, these characters lose money, they call on the agricultural interest to make good the deficiency. They demand an unnatural reduction in the farmer's produce, in order that they may repay their losses by reducing the wages of their labourers; and unfortunately the late alteration in the corn laws has, to a certain extent, enabled them to accomplish these most unjust purposes, for the value of agricultural produce has latterly been reduced much under the cost of its production. During agricultural distress, on the contrary, no Anti-Commercial League is ever formed, nor have agriculturists, as yet, ever demanded the reduction of manufactured products to prices at which they cannot be made without a sacrifice of property. The farmers have submitted to great losses of money, to which they have been subjected by the unfounded clamour of the trading interest, and that too generally without either murmur or complaint; and yet they have as much right to demand from the other classes in our community the repayment of their losses as manufacturers have to claim a reduction in the value of agricultural property, when by over-trading they find themselves in rather doubtful pecuniary circumstances. There is, however, now a prospect at all events of the produce of the fields coming nearer to its intrinsic value than it has been for some time past. During the last month confidence in the corn trade generally has, in a certain degree, revived. Wheat certainly is still much under the expense of its cultivation; but hopes are entertained that more prosperous times are at hand to the agricultural interest generally. Still we are firmly persuaded that improvement in the value of wheat cannot be lasting, unless wheat grown in this country be much better protected against foreign wheat in the British markets of consumption. At its present price it cannot be produced with profit to the farmer. The wages of labour, we again repeat, depend entirely on agricultural prosperity or adversity, and the protection of our internal industry is absolutely necessary to the well-being of all classes, whether they be agriculturists or traders, within the British empire.

In the Barley trade not much activity existed during the last month. Although the supplies of British growth have not as yet been large, still they have been fully equal to the maltsters' demand, and prices have been fairly supported. The distillers' consumption has been chiefly supplied with foreign grown barleys, of which the importations have continued to be rather extensive than on the contrary. Indeed, when the winds permit, the supplies from the Continent, weekly, are as regular as those from Norfolk, or from any of our home barley districts. This unfortunate circumstance, acting in conjunction with the heavy duties imposed on the manufacture of barley into malt, must compel our barley farmers still farther to reduce the number of acres of land under barley cultivation, and should proper legislative protection not be extended to them, they must, within a few years, cease to grow it altogether; for they cannot with safety to their property continue a competition with foreign agriculturists, by which, if they do not lose money, still their profits are much too small to remunerate them for the capital, talent, and industry employed in these operations. If the real object of the Anti-Corn Law Leaguers was the improvement of the condition of those workmen by whose exertions they have become cotton lords, they would pay some attention to the present state of our excise laws; for by the reduction of excessive internal taxation the revenue would be considerably improved, and the comforts of the people would at the same time be greatly increased. The malt duty is so high, that the majority of the inhabitants of the United Kingdom cannot afford to use beer, unless they sometimes obtain it in a highly adulterated state. At present one half of the beer used is of this description. It is not the pure extract of barley and hops, such as Englishmen were accustomed to consume "before England's griefs began;" but it is a mixture of drugs and other ingredients, highly injurious to the public health. If the cotton lords had any regard for the health and constitutions of their workmen, they would endeavour to obtain for them, at all events, cheap and wholesome beer. In the pursuit of an object so extremely benevolent, they would receive the assistance of the landed interest, of their tenants, and of every productive labourer within the United Kingdom, and their success would be a great public good. To reduce the malt duty would put down the manufacture of impure and unwholesome beer, and would enable hundreds of thousands of her Majesty's poor subjects to enjoy occasionally this the favourite beverage of Englishmen. It would likewise be the means of bringing forward into high cultivation, millions of acres of sandy lands, at present only useful for the production of rabbits. It would also give productive employment to many thousands of destitute families, and the profits arising from these improvements would be much more than adequate for the payment of the increased expenditure, which an increased consumption of beer would occasion. In this channel however the cotton lords cannot see any reason or excuse for reducing the wages of their workmen, and for their comforts they have very little consideration. They say that they want not any protection themselves—a sure proof of the prosperity of their trading operations. They profess patriotism, and to recommend the transfer of the malt duty to manufactured goods, would be a strong proof of their devotion to the general good. They profess the strongest compassion for the distressed condition of farmers, and of farming labourers, but their cure would be the ruin of the former, and the transfer of the field operations of the latter to foreign boors and slaves. By amending our excise laws, we repeat that the wages of all descriptions of employment would be raised, in proportion to the increased field for employment which agricultural improvements would eventually occasion. And as the main and lately declared object of the League was the reduction of the wages of manufacture to that point which would enable them to sell cheaper in all foreign markets than the foreign manufacturers themselves could afford to do, agricultural improvement at home would militate against their policy; and hence they have a pure or impure motive for not interfering with our excise laws, nor for applying an effectual remedy to the injuries which these laws inflict on the industrial classes of all denominations throughout the United Kingdom. If the duty charged on malt, however, be heavy, that charged on the distillation of spirits in England is

outrageously so; being three hundred per cent. on the first cost of home-made spirits. This encourages the crime of smuggling, and all its concomitant evils. It is destructive to the virtue of temperance, and is the best support of drunkenness. By it the morals and the health of the community are injured, and the public revenue is defrauded. It causes spirits of the most deleterious qualities to be introduced into the consumption of the people of England, on which no duty whatever is collected; and these foreign-made spirits deprive the barley producers in this country of a market for the consumption of at least half a million of quarters of barley, in addition to the quantity now in use. Amidst the numerous evils which this state of the distillery trade in England (for in Scotland and in Ireland matters have been managed better) occasions, the system is not attended by one solitary advantage—unless to rob the revenue, and to acquire large fortunes from the illicit introduction of foreign spirits into this country, can be called national benefits. If Mr. Bright would direct his eloquence in exposing these great evils, then indeed might he be considered as the people's real friend, and he would acquire the gratitude of the entire community. To equalize the spirit duties in Great Britain and in Ireland, and to fix them at 4s. 6d., or even 5s., on each gallon distilled within the United Kingdom, would pluck smuggling up by the roots, would improve the public morality, and would restore the people's health to that state in which it was when wholesome spirits alone were consumed in this country. Home-made spirits are far more palatable, and certainly immeasurably more wholesome than Dutch gin and French brandies; and, under fair duties, no foreign spirits would hereafter be introduced into this country. The expence of a great part of the coast blockade would be saved, and the spirit duties now paid into our public treasury would be very materially increased by the reduction of the heavy duty now imposed on the English distiller.

For several weeks past all the great markets of consumption in Great Britain have been most abundantly supplied with oats, chiefly of Irish and of foreign growth, and the consequence has been a variation of about 1s. 6d. per qr. on the average prices. Of the foreign supplies the quality generally has been excellent, and in many instances fair profits have been made by the importers, even after payment of the duty of 8s. per qr. The fine foreign brew have been sold at from 22s. to 24s. per qr., whilst many cargoes from Ireland have with considerable difficulty been disposed of at from 14s. to 17s. per qr.; the best samples being worth only 20s. to 21s. per qr., and the average price of British oats, by which the duties on importation are regulated, being at one time under 18s. per qr. By quality, therefore, a great part of the import duty on foreign oats is now paid, and the difference in freights to the east coast of Great Britain from the Tonning, the Weser, the Crus, and in fact from all the ports of shipment in the German Ocean, between those paid from Galway, Limerick, and all places on the west coast of Ireland, is equal to the balance of the duty not paid by superiority of quality. At the present low prices for British and Irish oats it is impossible profitably to produce them, and it is to the want of proper protection against oats of foreign growth in all our markets of consumption, therefore, that our farmers alone can attribute the present great depression in the value of their oat crops. These foreign importations of oats are made in ships, under foreign flags, and navigated by foreign seamen, and they are paid for chiefly in the precious metals. For want of legislative encouragement, the improvement of waste lands in Ireland must, for a season at all events, cease; for no sane person will embark his money in these operations, so long as the corn law remains in its present most imperfect state. In Great Britain, if rents were entirely remitted by our land proprietors, still the farmers here could not compete in the production of oats with foreign nations, wherein rents seldom exist at all, and wherein the tillers of the fields are serfs, slaves, and boors; and with respect to Ireland, where labour is cheaper than it is here; still, from the position of that island, competition in oats with the opposite coasts of the north of Europe in the British markets is impracticable, so long as Irish oat farmers receive no better protection from the legislature than they now obtain from the corn laws. Ireland, in another generation or two, may be rendered the granary of England, by the cultivation of her great internal sources of real wealth; but the assistance of the legislature is necessary to the acquisition of this immense advantage. In that island many millions of acres of excellent land may be converted from the wilderness into fields of the most productive description. To effect this, capital alone is at the present moment wanted; and although this article never was more abundantly unemployed in England, still capitalists seldom invest their property in any channel from whence they cannot at pleasure recall it. For the cultivation of the waste lands throughout the United Kingdom money cannot be obtained in a direct manner, but still it may be employed in these most patriotic undertakings, if the ministers of the crown would extend to agriculture the same advantages which have been frequently given to several other departments of industry. In many instances large issues of Exchequer Bills have been made for the construction of public works, the security of these works being taken for the payment, at maturity, of these Exchequer Bills. Indeed Government has gone beyond furnishing Exchequer Bills; for, within the last two years, a loan of money for the cultivation and improvement of our North American possessions, to the extent of one million and a half sterling, has been guaranteed by the British legislature. That our fellow subjects there must become independent of the mother country before long is much more than probable, and therefore doubts may be entertained of the propriety of this guarantee; but Ireland is an integral portion of the United Kingdom, and to grant the public credit for the improvement of her waste lands would be attended by no risk whatever, for abundance of security would be found in the improvements themselves, as they progressed towards perfection. The public credit certainly cannot be applied to anything half so valuable as would eventually be the productive employment of the Irish people. In that kingdom there are in great abundance workmen unemployed, and consequently in a state of great destitution; and, what is most wonderful, there is at the same time millions of acres of waste land on which all the idle may find plenty of really productive labour, were their numbers even doubled. To form new streets, and in the construction of railways, &c., &c., private property is taken for the public good, its proprietors being remunerated for their losses; and most certainly laws of a similar description should be applied to the proprietors of waste lands and to the lords of manors, for the cultivation of these lands would indeed be a public benefit. We should soon afterwards become entirely indepen-

dent of supplies of foreign grain of every description. Private property, no doubt, should not be interfered with, unless from absolute necessity; but in this case there is no occasion for hesitation, as the waste lands may be either purchased for the public use immediately at their present value, or leases of them may be taken for a fixed period; and at their expiration, the original proprietors may receive their property back again, on payment to the state of the expences of its cultivation. An annual issue of Exchequer Bills for these purposes would speedily alter the face of the United Kingdom itself, and would diffuse happiness and contentment amongst all classes of its inhabitants. The guarantee of the Canadian loan —to which we have alluded above—was given for the purpose of encouraging agricultural improvements in that country, and to enable our Acadian brethren to compete with British farmers in the British markets for the consumption of agricultural produce. But surely charity should begin at home; and the destitute state of the Irish people—originating entirely in the want of available capital—should have commanded the attention of her Majesty's ministers before this magnificent boon was given to any part of our colonial possessions, highly important as we admit their prosperity to be, to the best interests of the British empire.

Letters have been received from the United States as usual, in due course of post, but they do not communicate any news interesting to the corn trade which has not already appeared in our *Magazine*. Preparations were naturally in progress, in the states bordering on that of Maine, for putting in force that article in their late treaty with this country, whereby the agricultural produce of Maine may be shipped in the river St. John's, and passed into consumption in this country, on the payment of nominal duties. Certificates of origin can easily be obtained, and all descriptions of American agricultural produce, which can be brought down the river St. John's, will speedily be warranted as the produce of Maine alone, and introduced into this country. In another year or two these preparations will be completed, and afterwards our agricultural interest will pay well for Lord Ashburton's liberality. But the consequences of the Canadian corn importation bill into this country will be far more injurious to the real interests of the United Kingdom, and much sooner illustrated than our new relations with the state of Maine can be. Even during the remainder of this year large quantities of flour will arrive in the United Kingdom from the river St. Lawrence, grown and manufactured in the far west states of America, but, by some magic spell, transformed into the produce, and into the manufacture of Acadia. The quantity of flour, we are given to understand, still to arrive is not under one hundred thousand barrels'; and it will be a perfect treat to our farmers and to our millers, who contribute to the British revenue so very materially, to find their property interfered with in their own markets of consumption by American flour and wheat, fraudulently introduced into this country on the payment of perfectly nominal duties. The British and Irish grain producer pays at least, in direct and indirect taxes, much more than the duties at present levied on the importation of grain from foreign states, taking rent and wages into the calculation; and surely a greater act of injustice cannot be done than to admit American agricultural produce into consumption in this country, which contributes nothing towards our national expenditure. This Canadian act will be also as injurious to the field labourers in this country as it is to the agricultural interest itself, for it transfers the wages of *corn producing* from them to the field labourers of America, and thus it does them very material damage. The navigation being now open betwixt the United Kingdom and Lake Superior itself, the quantity of wheat and flour, of which our Canadian corn bill encourages the importation into this country, will be annually increased, and will annually become more and more injurious to the cultivation of our fields at home.

The information received from the Baltic Sea, and from the ports of shipment in the North Sea, is, at this late period of the year, not of much importance. Beyond the wheat now on the passage, no farther quantity can be shipped from the Baltic ports; for the members of the Anti-Corn Law League themselves could not induce *General Frost* to unseal the rivers and harbours there before the approach of the summer months, and our duties are too high at present to encourage farther importations of wheat from any other part of Europe. The stocks of foreign wheat, not being at present very abundant in our markets, hopes may be entertained that our farmers will have to supply for the next half year the chief part of our wheat consumption, and that a part, at all events, of the money lost by them during this and last year, may be again restored to them, and may be again employed in giving living wages to our workmen generally. With barley and oats of foreign growth, however, we shall probably continue to be plentifully supplied, so long as the rivers without the Baltic continue navigable, and prices consequently will be kept much under those rates at which either barley or oats can be profitably grown either in Great Britain or in Ireland.

CURRENCY PER IMP. MEASURE.

OCTOBER 23.

WHEAT, Essex and Kent, new, red	48	54	White	50	53 58
Irish	48	—	Do.	50	—
Old, red	54	59	Do.	58	60
RYE, old	30	36	New	36	—
BARLEY, Grinding 27 30 Malting	34	—	Chevalier	35	—
Irish	26	28	Bere	24	26
MALT, Suffolk and Norfolk	60	62	Brown	56	58
Kingston and Ware	60	63	Chevalier	60	63
OATS, Yorksh. & Lincolnsh., feed	20	21	Potato	22	—
Youghall and Cork black	17	18	Cork, white	17	18
Dublin	17	18	Westport	18	—
Waterford, white	17	18	Black	17	—
Newry	19	20			
Galway	16	17			
Scotch feed	20	22	Potato	23	25
Clonmel	18	19	Limerick	17 19	20
Londonderry	17	18	Sligo	17	18
BEANS, Tick, new	26	30	Old, small	34	32
PEAS, Grey	32	33	Maple	33	34
White	30	33	Boilers	34	38

SEED, Rape..... 27*l.* 28*l.* Irish..22*l.* 26*l.* per last.
Linseed, Baltic....30 38 Odessa 41
English Red Clover.... — — per cwt.
White..... —
Mustard, White 7 10 brown 8 11 per bush.
Tares, old .... — — new — — per qr.
FLOUR, Town-made 50 — Suffolk 40 — pr sk. of 280 lbs.
Stockton and Norfolk, 40 — Irish 40 —

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	—	—	nominal.		
Hamburg	—	—			
Rostock	—	—			
BARLEY	20	—			
OATS, Brew	12	16	Feed	11	15
BEANS	15	19			
PEAS	23	25			
FLOUR, American, per brl	21	23	Baltic	21	23

IMPERIAL AVERAGES.

Week ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
Sept. 9th.....	53 0	31 11	19 7	31 3	31 9	33 8
16th.....	50 10	31 5	18 10	30 1	31 2	33 3
23rd.....	49 3	31 2	18 5	29 8	30 6	32 8
30th.....	49 5	30 4	17 10	30 5	30 8	32 9
Oct. 7th.....	50 6	30 2	17 10	30 8	30 1	32 6
14th.....	50 8	30 1	17 10	30 0	30 4	32 1
Aggregate average of the six weeks which regulates the duty	50 7	30 10	18 5	30 4	30 9	32 10
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London ..	20 0	8 0	8 0	10 6	10 6	10 6
Do. on grain from British possessions out of Europe.....	5 0	0 6	2 0	2 6	2 0	1 6

COMPARATIVE PRICES OF GRAIN.

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Oct. 20th, 1843.

	s.	d.
WHEAT	50	8
BARLEY	30	1
OATS	17	10
RYE	30	0
BEANS	30	4
PEAS	32	1

AVERAGES from the corresponding Gazette in the last year, Friday, Oct. 22nd, 1842.

	s.	d.
WHEAT	50	9
BARLEY	28	11
OATS	18	1
RYE	32	7
BEANS	32	2
PEAS	33	10

PRICES OF SEEDS.

OCTOBER 23.

In Clover seed and Trefoil nothing is passing; prices nominally the same. The supply of Canary seed being again small to-day, and the demand continuing lively, a further advance of about 8s. per qr. took place in prices, 70s. to 72s. having been paid. Carraway seed was rather dearer, but Tares hung heavily on hand, though offered at 5s. 3d. per bushel.

Carraway	—	—	new 48	53
Clover English, red	46	65	white none.	per cwt
Flemish, pale	44	52	do.. 54	75
New Hamburgh ..	none.		do.. none	
Old do.	42	52	do.. 50	75
French	42	56	do.. none.	
Linseed, English, sowing	50	60		
Baltic	—	—	crushing 35	40 per qr.
Mediter. & Odessa	39	41		
Large, foreign....	—	—		
Coriander.....	15	20	per cwt.	
Mustard, brown, new ..	9	11	white.. 6	8p. bush
Trefoil.....	—	—	old.. 14 22	new 18 30
Rapeseed, English new..	25*l.* 26*l.* per last.			
Linseed Cakes, English..	9*l.* 10s. to 10*l.* per 1000			
Do. Foreign..	5*l.* to 6*l.* 10s. per ton.			
Rapeseed Cakes.....	5*l.* 5s. to 5*l.* 10s.			
Hempseed.....	35	38 per qr.		
Rye Grass, English.....	—	Scotch —		—nominal
Tares, winter	5s. 0d. to 5s. 3d.			
Canary, new.....	68	70	fine 72	—per qr.

PRICES OF HOPS.

BOROUGH, MONDAY, Oct. 23.

There has been a large supply of Hops, but nevertheless a more active demand, at about previous quotations, though we alter Mid. and East Kents a trifle. The duty is called 135,000*l.*, or by many, 130,000*l.* only. We give the prices as follows:—

POCKETS, 1843.

Sussex ..... 102s. to 110s.	Mid Kents .... 135s. to 180s.
Wealds ..... 110s. to 120s.	East Kents....135s. to 195s.
Do. Choice ... 120s. to ——	

POTATO MARKET.

SOUTHWARK, WATERSIDE, OCT. 23.

The mildness of the weather, for the season, and the continued liberal supplies, causes the demand to be dull for all but the best samples, there being many inferior goods in the market, which sell but slowly at low rates.

PRESENT PRICES AS ANNEXED:—

York Reds	50s. to 70s. per ton.
Scotch do.	55s. to 60s. "
Devons	55s. to 60s. "
Wisbeach Kidneys.....	—s. to 55s. "
Kent and Essex Whites ..	45s. to 50s. "
Jersey and Guernsey do. ..	—s. to 45s. "
Do. do. Blues ...	—s. to 45s. "
Prince Regents	—s. to 45s. "

WOOL MARKET.

FOREIGN.

The public sales of Colonial and other samples commenced on Thursday, about 18,000 bales being declared. They are held at the new and splendid sale-room of the Hall of Commerce, where the buyers have more ample space. The attendance is large, the biddings are brisk, and prices are rather higher than at the last series, or fully up to the advance at the Liverpool auctions, viz. 1d. to 1½d. per lb.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Hunt's Bone dust, 16s. per qr.
Hunt's Half-inch Bone, 14s. per qr.
Hunt's Artificial Guano, 8*l.* per ton
Rape Dust, 6*l.* to 6*l.* 10s. per ton
Rape Cake, 6*l.* 10s. to 7*l.* per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 6*l.* 10s. per ton.
Gypsum, at the waterside, 32s. 6d. per ton; landed and housed, 38s. to 42s. per ton, according to quantity.
Agricultural Salt, 34s. per ton.
Lance's Carbon, 12s. per qr.
Ditto Humus, 14s. per qr.
Soap Ashes, 10s. per ton.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Poittevin's Highly Concentrated Manure, 30s. per qr.
Nitrate of Soda, 18s. to 18s. 6d. (duty paid) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Petre Salt, 4s. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* per ton.
Chie-fou, 21s. per cwt.
Daniell's new Bristol Manure, 8s. per qr.
Hunt's new Fertilizer, 13s. 4d. per qr.
Grimwade's Preparation for Turnip Fly, 10s. 6d. per packet, sufficient for three acres.
Wolverhampton Compost (Alexander's), 12s. per qr., subject to carriage to London, or forwarded from Wolverhampton.
Guano, 10*l.* 10s. per ton, 12s. per cwt.
Potter's Artificial Guano, 15s. per cwt.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Clarke's Compost, 3*l.* 12s. 6d. per hhd., sufficient for three acres.
Wright's Alkalies, 28s. and 42s. per cwt.
Soda Ash, 14s. to 16s.
Chloride Lime, 28s. per cwt.
Sulphuric Acid, 2½d. per lb.
Sulphur for Destroying Worm on Turnips, 16s. per cwt.
Sulphate Soda, 7s. 6d. per cwt.
The Liverpool Abattoir Company's Animalised Manuring Powder, 2*l.* 10s. per ton.
Harrison's Manure Powder, 16s. per qr.

PRICES OF SHARES.

No. of Shares.	Div. per Ann.	IRON RAILWAYS.	Price per Share.
6,300	10s pr sh	Birmingham & Derby ..100*l* sh pd	
6,300	3s 4dpsh	Do. Thirds, iss. 8⅓ dis. 33⅓*l* sh 25*l* pd	
		Do. Eights.....1½*l* pd	
9,500	1*l* 4sp sh	Do. and Gloucester ...100*l* sh pd	51
10,000	6s 0d	Do. New, iss. 7½ dis. 25*l* sh 17½*l* pd	
15,000	4*l* per ct	Bristol and Exeter..100*l* sh 70*l* pd	
7,500	2*l* 10s	Cheltnm.&G. Westn.100*l* sh 80*l* pd	
3,000		Clarence.....100*l* sh pd	
64,000	8s 0d	Eastern Counties ....25*l* sh 23*l* pd	9⅜ a ⅛
		Ditto Scrip..... 8*l* 0s 8d pd	11⅜ a ¼
	10s	Ditto New Registered.....	10⅞ a ⅝
64,000		Ditto Debentures .. 8*l* 6s 8d sh pd	10½
12,500	2½*l* per ct	Glasgow, Paisley & Ayrshire 50*l* sh pd	
18,000	2*l* 5s p sh	Edinburgh & Glasgow .. 50*l* sh pd	52½ a 3
18,000	7s 0dp.s.	Ditto New ..... 12½*l* sh pd	
16,000	7s 6dp.sh	Glasg., Paisl., & Grnck.,27*l* sh 25*l* pd	
10,918	10*l* per ct	Grand Junction.....100*l* sh pd	
11,000	5*l* per ct	Ditto Half Shares .....50*l* sh pd	
		Ditto Quarter Shares .. 25*l* sh pd	
10,000	2½*l* per ct	Great North of England 100*l* sh pd	
25,000	3*l* 5s p sh	Great Western .... 100*l* sh 65*l* pd	88 a 7
25,000	2*l* 10sp sh	Ditto Half Shares ....50*l* sh pd	62½ a ½
37,500	12s pr sh	Ditto Fifths..... 20*l* sh 12*l* pd	16¼
		Ditto Bonds....1849	
		Ditto Bonds 1850, Letter C	
8,000	4*l* per ct	Hull and Selby ..... 50*l* sh pd	
8,000		Do. Quarter Shares..12½*l* sh 2*l* pd	
2,100		Leeds and Selby.....100*l* sh pd	
5,100	10*l* per ct	Liverpool & Manchester. 100*l* sh pd	
7,968	10*l* per ct	Ditto Half Shares.....50*l* sh pd	
11,475	10*l* per ct	Ditto Quarter Shares ..25*l* sh pd	
36,000	1*l* 10sp sh	London and Brighton....50*l* sh pd	36¾ a ⅝
		Ditto Loan Notes..... 10*l* sh pd	10⅜
48,000		London & Blackwall Av. 16*l* 13s 4d	4⅛
43,077		London & Greenwich Av. 12*l* 15s 4d	
11,136	5*l* per ct	Preference or Privilege Av. 18*l* 17s 2d	
	5*l* per ct	Ditto Bonds (183,300).....	
25,000	10*l* p sh	London & Birmingham 100*l* sh pd	215 a 16
25,000	2*l* 10s	Ditto Quarter Shares....25*l* sh pd	
		Do. Do. New..... 2*l* pd	22½ a ⅞
31,250	3*l* 4s	Ditto Thirds..... 32*l* sh pd	
	1*l* 14s	Ditto New..... 32*l* sh 2*l* pd	35⅛
		Ditto Bonds 1843	
46,200	3*l* 0s 0dp s	London & South West. Av. 41*l* 6s 10d	66 a 5¾
		Ditto Bonds 1842	
33,000	13s 4d p s	London & Croydon..Av. 15*l* 15s 9d	12⅛ a 12
7,000		Do. Scrip, iss. 50*l* dis.....10*l* sh 2½*l* pd	4¾
13,000	3*l* 17s psh	Manchester & Leeds 100*l* sh 70*l* pd	
13,000	1*l* 13sp sh	Ditto New Shares ....50*l* sh 30*l* pd	36½
	4s	Ditto Quarter Shares.....2*l* pd	
30,000	1*l*	Manchester & Birming. 70*l* sh 40*l* pd	32½ a 3¼
		Ditto Extension.....70*l* sh 7*l* pd	
10,000		Midland Counties.....100*l* sh pd	79½
10,000		Do. ¼ Shares, iss. 10 dis. 25*l* sh 15*l* pd	
10,000		Ditto Fifths ..... 20*l* sh 2*l* pd	
	6s	Newcstl & Darlingt Junc. 25*l* sh 12*l* pd	
15,000	3*l* 0s	North Midland..... 100*l* sh pd	80½
15,000	1*l* 10s 0d	Do. ½ Shares, iss. 10 dis. 50*l* sh 40*l* pd	39½ a 9
22,500	1*l* 0s 0d	Ditto Thirds, iss. at 11*l* 13s 4d dis. 21*l* 13s 4d sh pd	
10,256	1*l* 5s	Northern & Eastern 50*l* sh 45*l* pd	45 a ¼
3,136	15s	Do. Scrip..iss. 5 dis. 50*l* sh 15*l* pd	
12,208		Do. ¼ Shares.... .. 12*l* 10s sh pd	
80,000		Paris and Orleans..... 20*l* sh pd	26⅞ a ¾
		Paris and Lyons .... 20*l* sh 2*l* pd	
72,000	1*l* 11s 10d	Paris and Rouen ....20*l* sh 20*l* pd	27⅜ a ½
2,600		Preston & Wyre, appropriated 50*l* sh	
9,600		Ditto, not all appropriated 25*l* sh	
1,200	5*l* per ct	Ditto, New Preference Shares appropriated..... 25*l* sh	
40,000		Rouen and Havre.... 20*l* sh 6*l* pd	
7,000	5*l* per ct	Sheffield, Ashton-under-Lyne, and Manchester .... 100*l* sh 82½*l* pd	
1,000	1*l* 15s	Sheffield and Rotherham 25*l* sh pd	
1,500	15*l* per ct	Stockton and Darlington 100*l* sh pd	
28,000		South Eastern and Dover 50*l* sh pd	27¾ a 8
28,000		Ditto New, iss. 25 dis. 25*l* sh 25*l* pd	27¾ a 8
6,700	10*l* per ct	York & North Midland..50*l* sh pd	107¾ a 7
6,700	10*l* per ct	Ditto New Shares....25*l* sh 20*l* pd	47

Shares.	Div.	CANALS.	Price.
1,766	5*l* 10sp.c.	Ashton and Oldham Av. 97*l* 18s sh	
1,482	4*l*	Ashby-de-la Zouch Average 113*l* sh	
720	14*l*	Barnsley.....160*l* sh	
1,260		Basingstoke .....100*l* sh	5
1,005	5*l* 10s	Brecknock & Abergavenny 150*l* sh	
8000 1/16	10*l*	Birmingham 1-16th sh. 8*l* 15s and 7*l* Addl.	182
4,000		Birm. & Liverpool Junc. 100*l* sh pd	12
460	5*l*	Chelmer and Blackwater.. 100*l* sh	
500	22*l*	Coventry ..... 100*l* sh	300
460	18*l*	Cromford..... 100*l* sh	300
2,060¾	5*l*	Dudley .....100*l* sh	91
600	8*l*	Derby..... .....100*l* sh	115
20,000	4*l* per ct	Danube & Mayne..41*l* 13s 4d sh pd	
3,575¾	4*l*	Ellesmere and Chester Av. 133*l* sh	64
231	40*l*	Erewash.....100*l* sh	710
6,485	8*l* 15sp sh	Forth and Clyde .....100*l* sh pd	140
11,455	7*l*	Grand Junction .....100*l* sh	142
2,849½	1*l* 15s	Grand Union ..... 100*l* sh	25
1,500		Grand Surrey.... ..... 100*l* sh	17
	4*l* per ct	Do. Loan Notes..... 100*l* sh	70
3,096		Grand Western.....100*l* sh pd	
600	13*l* 12s 8d	Glamorgansh. Av. cost 172*l* 13s 4d	210
5,000		Gloucester and Berkley .. 100*l* sh	8
749	12*l*	Grantham .....150*l* sh	210
6,238		Huddersfield .. Aver. 57*l* 6s 6d sh	11
25,328	15s	Kennet & Avon Av. 39*l* 18s 10d sh	9½ a ½
11,699½	1*l* 10s	Lancaster....Average 47*l* 6s 8d sh	25½
2,897¾	34*l*	Leeds and Liverpool.....100*l* sh	660
545¾	10*l* 0s	Leicester.....140*l* sh	141
1,897	5*l*	Leicester & Northamp. Av. 83*l* 10s	71
70	70*l*	Loughborough....Av. 142*l* 17s sh	1375
2,409	8*l*	Monmouthshire .....100*l* sh	
700	5*l*	Montgomeryshire ..... 100*l* sh	100
250	10*l*	Melton Mowbray .....100*l* sh	117
500	20*l*	Mersey and Irwell ..... 100*l* sh	
3,000		Macclesfield ..... 100*l* sh pd	16
247	17*l*	Neath.....100*l* sh	370
1,786	30*l*	Oxford.....100*l* sh	540
2,400	3*l* 10s	Peak Forest Average about 78*l* sh	
21,418	17s 6d	Regent's (or London) Average 33*l* 16s 8d sh	21
5,669	4*l*	Rochdale.....Average 85*l* sh	59
500	8*l*	Shropshire .....125*l* sh	
800	10*l* 0s	Somerset Coal .....150*l* sh	160
36,000	6*l* per ct	Ditto Lock Fund Stock 12*l* 10s sh	11
700	28*l*	Stafford and Worcester....140*l* sh	
500	15*l*	Shrewsbury .....125*l* sh	
300	20*l*	Stourbridge .....145*l* sh	390
3,647	1*l* 10s	Stratford-on-Avon Av. 79*l* 9s 8d sh	29
200	18*l* 10s	Stroudwater.....150*l* sh	
533	15*l*	Swansea .....100*l* sh	240
3,762		Severn and Wye and Railway Av. 26*l* 9s 3d sh	28
1,300	2*l*	Thames and Severn, black 100*l* sh	
1,150	2*l*	Ditto ditto red..100*l* sh	
2,600¼	32*l* 10s	Trent and Mersey ¼ sh.....50*l* sh	500
8,149		Thames and Medway, Average 19*l* 5s 8d sh	
1000 sh } 1000 ½ }	10*l*	Warwick & Birmingh. Av. 100*l* sh	
980	8*l* 10s	Warwick and Napton.... 100*l* sh	125
6,000	4*l*	Worcester and Birmingham, Av. 78*l* 8s sh	57
5,000		Wilts and Berks, Av. 67*l* 10s 8d sh	11
126		Wisbeach .....105*l* sh	
905	1*l*	Wey and Arun .....110*l* sh	

Printed by Joseph Rogerson, 24, Norfolk-street, Strand, London.

THE FARMER'S MAGAZINE.

DECEMBER, 1843.

No. 6.—Vol. VIII.] [Second Series.

PLATE.

A CART STALLION.

Our first plate represents a Cart Stallion, six years old, bred by Mr. Haden, of Baldock, Herts. It was exhibited at the meeting of the Royal Agricultural Society of England, held at Derby, in July last, and obtained the first prize of thirty sovereigns, adjudged to Mr. D. Howsin, of Bathley, near Newark, Notts.

PLATE II.

NUTWITH.

Nutwith stands 15 hands 2¼ inches, but has when mounted the appearance of a smaller horse. He has a long straight head, light and rather short neck, strong shoulders well-laid back, and is good in the brisket; unusually large arms, with clean light legs, and long upright pasterns; his back short, his loins arched; is well ribbed, as a sailor would say, fore and aft; has long quarters, full muscular gaskins and thighs, small hocks, and rather curby in their appearance; tail well set on. Nutwith, bred by the late Captain Wrather, is by Tomboy, dam by Comus; her dam, Plumper's dam, by Delphini, out of Miss Muston, by King Fergus—Espersykes. This Comus mare was bred by Mr. Wrather in 1816, and was also the dam of Hockfall, Colchicum, and Miss Lydia, which, with Nutwith, were her four last foals.

SEA-WEED, AND SALT AND SOOT AS MANURES.

By Cuthbert W. Johnson, Esq., F.R.S.

On several recent occasions I have observed enquiries in the agricultural periodicals with regard to the use of sea-weed as a manure. I will therefore in this paper offer a few suggestions with regard to its employment; and, in continuation of my observations at p. 320 of this volume, add what I have elsewhere had occasion to remark, on the use of the mixture of salt with soot. *(Fertilizers, p.* 329.)

The fertilizing properties of sea-weed must, I am of opinion, be attributed not only to the various gaseous substances which they evolve during putrefaction, such as the sulphuretted and carburetted hydrogen and the carbonic acid gases, but also to their containing a variety of saline substances. They operate, in fact, in the first instance, as all green manures do—by yielding as they gradually decompose in the soil the very gases whose elements enter so copiously into the composition of all plants: and hence they should surely be treated as other green manures are, which the farmer ever turns into the soil in as fresh a state as possible. There is no doubt of the correctness of this mode of their application; the chemistry of the operation tells us that it is the best we can adopt.

"All green succulent plants," said Davy, "contain saccharine or mucilaginous matter, with woody fibre, and readily ferment; they cannot therefore, if intended for manure, be used too soon after their death. When green crops are to be employed for enriching a soil, they should be ploughed in, if it be possible, when in flower, or at the time the flower is beginning to appear; for it is at this period that they contain the largest quantity of easily soluble substances, and that their leaves are most active in forming nutritive matter. Green

crops, pond weeds, the parings of hedges or ditches, or any kind of fresh vegetable matter, require no preparation to fit them for manure. The decomposition slowly proceeds beneath the soil, the soluble matters are gradually dissolved, and the slight fermentation that goes on, checked by the want of a free communication of air, tends to render the woody fibre soluble without occasioning the rapid dissipation of elastic matter. When old pastures are broken up and made arable, not only has the soil been enriched by the death and slow decay of the plants which have left soluble matters in the soil, but the roots and leaves of the grasses living at the time, and occupying so large a part of the surface, afford saccharine, mucilaginous, and extractive matters, which become immediately the food of the crop, and the gradual decomposition affords a supply for successive years." (*Agr. Chem.*, p. 280.)

It is always, as I long since had occasion to observe, very refreshing to find the sagacious conclusions of the philosopher supported by the practical farmer's observations. "In October, 1819," said the late Dr. Browne, of Gorlestone, in Suffolk, in a letter which he sent to me, "a violent gale of wind drove to this part of the coast an unprecedented quantity of sea-weeds; these were eagerly scrambled for, and from my greater vicinity to the beach, I collected twenty-seven cart-loads, each as much as four horses could draw; and although other persons deposited their collections in their farm-yards to rot among their other manure, yet I spread mine, fresh and wet, upon little more than an acre of bean stubble, instantly ploughed it in, and dibbled wheat upon it on the 6th of October. I then salted the adjoining land with three bushels per acre, manured it with fifteen loads of farm-yard dung per acre, and dibbled it with wheat on the 15th of November. The result was, that the sea-weeded portion gave three times the produce of any equal part of the field." (*My Essay on Salt*, p. 48.)

Sea-weed has been analysed by M. de Claubry; in the fucus saccharinus and in the fucus digitatus (which is much used in Scotland as a manure) he found the following substances (*Thomson's Chem.*, vol. iv. p. 298):—

Saccharine matter	Muriate of magnesia
Mucilage	Carbonate of potash
Vegetable albumen	Carbonate of soda
Oxalate of potash	Hydriodate of potash
Malate of potash	Silica
Sulphate of potash	Phosphate of lime
Sulphate of soda	Phosphate of magnesia
Sulphate of magnesia	Oxide of iron
Muriate of soda	Oxalate of lime.
Muriate of potash	

It is by burning these weeds that the kelp and the barilla of commerce are formed; the first of which has been often advantageously employed in Ireland and on the coast of Scotland as a manure. The Suffolk and the Kentish farmers, however, as well as some of the Scotch, employ the sea-weed in both modes—that is, they use it in its freshest state, ploughing it into the soil; or, secondly, they spread it on the top of their heaps of compost. The first plan, however, I have ever seen productive of the best effects.

The salt turf of the sea shore has been long used in many parts of England as an excellent manure, especially for potatoes; and, according to Dr. Holland (*Survey of Cheshire*, p. 143), even the salt mud of the Mersey is extensively used for the same crop, at the rate of twenty tons per acre. "The ground thus manured not only gives a large produce of potatoes, but is in a state of excellent preparation for a succeeding crop of either wheat or barley. The adoption of this practice has increased very greatly the value of land about Weston."

There can be no doubt of the advantage of using the sea-weed, or sea-turf, in the freshest possible state, after it has been covered with the salt water, as by a spring tide; for if the salt water has been suffered to drain away from the weeds, and a partial decomposition has taken place, their value as a manure must be materially diminished. The Cornish farmers, when they fetch the calcareous sand from the sea-beach, are careful to obtain it as much wetted with the salt water as possible: and there are in the juices and other components of marine plants a variety of ingredients which must produce the most luxuriant effects upon vegetation growing at a distance from the sea; and their constituents are peculiarly noxious to the vermin with which all cultivated soils abound. If this conclusion is correct, then the mode adopted by the Isle of Thanet and Suffolk farmers, of collecting the sea-weed into heaps, and suffering it to putrefy, is decidedly wrong; for, by being thus decomposed, half its fertilizing virtues are lost to the soil. The common excuse for rendering dung putrid before it is spread, viz., that it is a necessary practice to kill the seeds of weeds, has no application here, for those of marine weeds will not grow well on arable upland soils.

The use of sea-weed as a manure, in the isles of Jersey and Guernsey, has been very extensive from time immemorial. Thus, in a work upon Jersey, by the Rev. Philip Falle, published in 1694, he observes, that "Nature having denied us the benefit of chalk, lime, and marl, has supplied us with what fully answers the end of them in husbandry—it is a sea-weed, but a weed more valuable to us than the choicest plant that grows in our gardens. We call it *vraic* (*vanec*), in ancient records *veriscum*, and sometimes *wrecum*, and it grows on the rocks about the island. It is gathered only at certain times appointed by the magistrate and signified to the people by a public crier on a market day. There are two seasons for cutting it, the one in summer, the other about the vernal equinox. The summer *vraic*, being first well dried by the sun on the sea-shore, serves for fuel, and makes a hot glowing fire; but the ashes are a great improvement to the soil, and are equal almost to a like quantity of lime. The winter *vraic* being spread thin on the green turf, and afterwards buried in the furrows by the plough, it is incredible how with its fat unctuous substance it ameliorates the ground, imbibing itself into it, softening the clod, and keeping the root of the corn moist during the most parching heats of summer. In stormy weather, the sea often tears up from the rocks vast quantities of this weed, and casts it on the shore, where it is carefully laid up by the glad husbandman."

The plants chiefly valued for making French varec are *Fucus vesiculosus*, *F. nodosus*, *F. serratus*, *Laminaria digitata* and *bulbosa*, *Himanthalia lorea*, and *Chorda filum*. Twenty-four tons of the sea-weeds make one ton of kelp. The Jersey and Guernsey Agricultural Society confirmed this account of the excellent effects of sea-weed, in 1797, in their Report to the English Board of Agriculture, when they observed—"It is judged, that a chabot

(half a bushel), strewed over a perch of ground in winter or the beginning of spring, will be a sufficient manure. Our labourers are unanimously of opinion, that it gives a full ear to the corn, and prevents it being laid—those who have any *varech* to sell may at all times get a chabot of wheat for a quartier or six bushels of *varech*." (*Com. Board of Agr.* vol. i. p. 216.)

The fertilising effects of sea-weed are not confined to the better description of soils; the poorest kind of heath lands are benefited by the application of this manure; thus, Mr. John Sherriff, of Haddington, has described the effects of seed-weed, or sea-tang, as it is called in Scotland, on common heath or moor land, in the following terms:—"Sea-weed, which is a capital manure for any land, may often be procured at little or no expense. Crops almost incredible, of turnips, barley, clover, and rye, have, to the writer's certain knowledge, been obtained on an extensive tract of the most miserable benty wastes and poor rabbit warrens, by the powers of this manure; soils which, twelve years since, were not worth three shillings per acre. The bent was torn up by the common swing plough, burnt, and the ashes spread; the soil was then manured with the sea-tang, as much as could be ploughed in. Turnips were immediately drilled, and rolled to prevent blowing; this crop was succeeded by rye or barley, and that by red clover and rye-grass. On the clover stubble, and sometimes after the turnip crop, plenty of tang was again laid, the ley ploughed down, and sown with oats, barley, or rye, and frequently with turnips, which in this way have succeeded admirably on the ley with one ploughing." (*Com. to Board of Agr.* vol. iv. p. 122.) It is certain, from the experiments of the late Mr. Knight, that green manures of all kinds are an admirable manure; and it seems well established that the more the juice of the vegetables so employed is impregnated with saline matters, the more fertilising are their effects: thus, in Bavaria, borage is very commonly cultivated for this purpose, and the reason assigned for the preference shown to this plant is, that it contains soda and other salts. (*Gardener's Mag.* vol. i. p. 200.)

In many situations I have no doubt but that the sea-weed may be successfully cultivated on the sea-coast, expressly for manure; and it seems that for this purpose hardly any thing is required except placing stones on the shore, to which the fuci can attach themselves, and in two years the crop may be cut. According to Mr. Jamieson (*Min. of Scottish Isles*, vol. ii. p. 251), various kinds of stones have for this purpose been employed in Scotland, as basalt, sandstone, and limestone, which last is the best adapted for the purpose, and after that the basalt.

There are also in many parts of the coast of Britain extensive tracts of land which it would be difficult to enclose, and yet these places are either already covered with a coarse turf, or might be so with a little management; and this turf, when cut and carted on to the light upland soils, is found almost invariably to be an admirable fertiliser—for instance, when spread over land during the winter, and then turned into the soil, for potatoes, the crop is sure to be excellent. No description of fertiliser, perhaps, can be named, which *freshens*, as the farmers say, an over-cropped soil so much as a dressing of from twenty to twenty-five loads per acre of the turf from the sea-shore, soaked with sea-water; and no plant delights in fresh soil so much as the potato. It is, therefore, more than probable, that the excretions of the commonly cultivated corn crops are peculiarly noxious to this plant; and it is certain that the potato, by the deposit which it leaves in the soil, renders it distaseful to the crop by which it is succeeded. Thus the wheat plant rarely looks well on soils where the potato has immediately preceded. Saline fertilisers, in these cases, are sure to be serviceable, for they mix with, and neutralise the effects, as well as promote the decomposition, of the excretory matters which all plants deposit in the soil. — (*Farmers' Encyclopædia.*)

I have recently had occasion, on the grounds of a relative on the banks of the Southampton water, to notice the decided superiority of the potatoes grown on the portion of the soil dressed with the green sea-weed, dug in when it was in a fresh state, to those growing on the adjoining beds, dressed with the same weeds, reduced by partial decomposition to the state of spit manure. The potatoes were not only larger in bulk, but had clearer skins, and always grew more vigorously than their neighbours. I think, then, that we may safely conclude that the weeds of the sea can hardly be ploughed into the soil in too fresh a state. As soon as they are piled into heaps, so soon does decomposition commence; elastic vapours are generated; the mass decreases both in bulk and weight; and finally, if the decomposition is allowed to proceed, a mass of nearly inert ashes only remains to the husbandman.

In noticing the effect of saline substances when mixed with other decomposing matter, I am reminded of the effect produced upon certain crops, such as the wheat, and above all, upon the carrot crop by the mixture of common salt with soot. Some recent experiments, by Mr. J. M. Aynesley, of Fern Hill, Tockington (*Jour. Roy. Ag. Soc., v.* 4. 270), have supplied similar results to my own, and various other persons. In these trials with the red Altringham carrot, Mr. Aynesley found that the soil manured with (per acre)—

	tons.	cwt.
Salt 6 bushel, Soot 54 } yielded	22	8
Coal ashes 24 tons	19	5
Rape cake, 8 cwt.	21	3
Daniel's manure, 31 bushels	21	1
Bone-dust, 24 bushels	21	1
Stable manure, 24 tons	21	18

The white or Belgian carrot with—

Salt 6 bushel, Soot, 54 do. } yielded	29	8
Coal ashes, 24 tons	25	7
Rape-dust, 8 cwts.	27	4
Daniel's manure, 32 bushels	27	3
Bone-dust 24 bushels	26	1
Stable manure, 24 tons	28	8

Various agriculturists have noticed the good results from mixing salt and soot. Mr. George Sinclair, in his prize essay "On Salt Manure," mentions it as *remarkable* in the case of carrots. Mr. Belfield of Elford has done the same with regard to wheat. In Mr. Sinclair's experiments upon carrots—

	Per Acre. Tons.	cwt.	lb.
The soil without any manure produced carrots	23	9	107
Soil with 6½ bushels of salt dug in ..	44	14	17
Soil with 6½ bushels of salt, and 6½ soot ditto	40	4	97

Soot and salt were employed by the Rev. E. Cartwright, many years since, as a manure for potatoes, both by itself and in combination with various other fertilising substances. The soil on which these experiments were made, was previously analysed—400 grains gave— Grains.

Siliceous sand, of different degrees of fineness	280
Finally divided matter	104
Loss in water	16
	400

The finally divided matter contained—

Carbonate of lime	18
Oxide of iron	7
Loss by incineration (probably vegetable decomposing matter)	17
Silex, alumina, &c.	62
	104

The following were the results obtained : —

1. The soil, without any manure, per acre, yielded bushels of potatoes	157
2. Soot, per acre, 30 bushels	192
3. Soot, 30 bushels, salt eight bushels	240

—(*Com. Board of Agri.*, vol. iv., p. 370 ; *Johnson on Fertilisers*, p. 32.)

GREAT OAKLEY FARMERS' CLUB.

The third anniverary of this flourishing club, which has hitherto pursued its useful course so quietly as to be scarcely known beyond the few parishes included in its membership, took place on Monday, November 5th.

The main object of the club being the improvement in the quality and quantity of agricultural produce, a competition on the plan of sweepstakes, takes place every year among its members. The show of roots this year, and also the competition in corn, was highly creditable to the society.

Another object is to promote the cultivation of cottage gardens; and in this department some excellent specimens of potatoes and onions were exhibited.

The successful competitors in agricultural produce were—White Wheat, Mr. Barker, of Ramsey; Red ditto, Mr. J. Salmon, Great Oakley; Barley, Mr. Swinborne, Great Oakley; Oats, Mr. J. Hempson, Ramsey; Peas, Mr. W. Thompson, Thorp; Beans, Mr. F. Stamford, Great Oakley; Swedes, Mr. J. Hempson; White Turnips, Mr. J. A. Hempson, Ramsey; Globe Mangle, Mr. L. Wrinch, Eamsey; Long ditto, Mr. Barker; Carrots (white) Mr. Hempson.

Cottagers' Prizes.—Potatoes—1st., 10s., Jos. Eley, recommended by Mr. M. Cooper; 2nd, 8s., George Wyatt, by Mr. Stamford; 3rd, 6s., John Elsey, by Mr. Everitt; 4th, 4s., Isaac Weaver, by Mr. Constable. Onions—1st, — Cook, by Mr. E. Cooper; 2nd, James Goymer, by Mr. J. Hempson; 3rd, George Wyatt, by Mr. Stamford; 4th, John Barker, by Mr. Stamford.

The Judges of the produce were Mr. S. Wrinch, and Mr. C. Hicks, of Great Holland, and Mr. Everitt, of Capel.

THE DINNER.

At four o'clock about 50 of the members and friends of the club sat down to an excellent dinner provided by Mr. Collins, of the Three Cups Inn; James Barker, Esq., the founder and President of the club, filled the chair, and was supported by the Rev. J. H. Marsden, of Great Oakley; the Rev. G. Wilkin, of Wix; W. F. Hobbs, Esq.; J. A. Ransome, Esq., of Ipswich; — Kersey, Esq., President of the Hadleigh Farmers' Club; — Everitt, Esq., of Capel; &c. A considerable proportion of the agriculturists of the neighbourhood were present. Mr. Hempson, the Treasurer of the club, filled the office of Vice-President.

The cloth having been removed, and the usual loyal toasts drunk with due honours,

The Chairman gave "the Bishop and Clergy of the Diocese, coupling with it the name of the Rev. Mr. Marsden."

The Rev. J. H. Marsden (Rector of Great Oakley), acknowledged the toast.

The Chairman said he was sure they would agree with him in the importance of Farmers' Clubs and societies of a similar character, as a means of exciting enquiry on the subject of agriculture; of disseminating knowledge on the subject; of uniting them more and more in the common bonds of friendship; and (in the beautiful language of Sir Robert Peel) drawing together the landlord, the tenant, and the labourer—softening the necessary gradations of society, and lessening the distinctions between wealth and comparative poverty. The toast he was about to propose to them was "Success to the Great Oakley Farmers' Club." (*Cheers.*) He had been rather hastening over the toasts because he knew that the annual report of their proceedings which was about to be read was longer than was usually the case with such documents; but his impression was that the reports of Farmers' Clubs ought to be something more than an index to the subjects treated of, and should be such as might be referred to for information (*cheers*); therefore it was that in their report they had not only given the resolutions or results arrived at, but the grounds and reasons which had led them to those conclusions. (*Cheers.*) He had great pleasure in proposing the toast he had named. (*Loud cheers*).

H. Spurling, Esq., the Honorary Secretary to the Club, here read the report, which embraced a copious abstract of the discussions at its monthly meetings, and the resolutions they had come to with respect to the topics submitted for consideration. The subjects noticed in it were—The Management of Clover Leys; Wheat Hoeing; Rearing Calves; the comparative merits of Beet Root and Turnips; Washing and Shearing Sheep; Hand Weeding; Management of Cows; advantage of Chalk as a Manure; best mode of Clearing Land in Autumn; and the Management of Fences.

The report was unanimously adopted.

The election of officers then took place, when James Barker, Esq., was unanimously re-elected President; Mr. Hempson, Treasurer; and Mr. Spurling, Secretary, for the ensuing year.

The Rev. J. H. Marsden stated that he had obtained the chairman's permission to propose the next toast. He would previously, however, venture to trespass for a moment upon their time, in order to communicate to them a few curious facts relative to the state of agriculture in the district around them, as it was two hundred and fifty years ago. Unless he was mistaken, it would be interesting to many persons present to mark the wonderful change which had taken place in the

cultivation of the Tendring Hundred since the reign of Queen Elizabeth. The authority from which he quoted was that of John Norden, whose manuscript "Description of the County of Essex," in the possession of the Marquis of Salisbury, had recently been printed by the Camden Society in London. This ancient writer states that the Hundred of Tendring, in reference to its productions, might be divided into three parts, one consisting of dairy farms, another of barren heaths, and a third of woods. The dairy farms were remarkable for the production of "great and huge cheeses, much to be wondered at for their massiveness and thickness." On the heaths were grazed large flocks of sheep, producing a very fine quality of wool; and this was woven at the neighbouring towns of Colchester, Dedham, and Braintree, which then ranked among the principal manufacturing towns in the kingdom. The woods, which were principally of oak, and from which their parish of Oakley doubtless took its name, supplied large quantities of excellent timber, which was shipped and sent to London from various wharfs on the creek below, of which Landermere is particularly mentioned. Look at the same district now, and consider what a marvellous change has taken place between the reigns of Elizabeth and Victoria. The process by which it was wrought was this. As the population increased, the demand for corn increased; and as the demand for corn increased, the land was gradually put under the plough; the dairy farms abandoned their massive cheeses, and became arable; the sites of woods were made arable; last of all, the heaths were inclosed and made arable. Over the Hundred of Tendring the plough reigns lord paramount. To seek for more land for the plough would be a search in vain. Yet still the population increases, and the demand for corn increases. What, then, is to be done? There is obviously only one resource left. The productiveness of the land must be increased by improvements on the modes of cultivating it. They must strive to make two blades of corn grow in the place of one. Knowledge must be sought, acquired, and communicated. They must adopt the reciprocal system of give and take. In other words, they must establish Farmers' Clubs. (*Hear, and cheers*). He trusted that these remarks would not be deemed inappropriate to the introduction of the health of an officer of the Club, to whom, indeed, the club owed its very existence—one whose zeal was equalled only by his discretion—one to whom the club was indebted, not only for its existence, but for that high moral character pervading all its proceedings, to which he had an especial pleasure in bearing testimony—"The President of the last year, and the President elect of the year ensuing—Mr. Barker." (*Loud cheers.*)

The CHAIRMAN: Gentlemen, I beg to thank you most cordially for the very kind and flattering manner in which you have drank my health, and for the compliment you have paid me in again electing me as your President. I can but regret that I cannot bring to your aid a larger amount of practical and scientific knowledge to assist you at our monthly meetings in our search after truth. Farmers' clubs have been most aptly compared to a fund to which all its members may contribute their mite, and from which all may draw without diminishing the fund. I hope our club will bear the test of this comparison. I have never attended a single meeting without obtaining some new and valuable hint on the subject under discussion, and I have been glad to hear some of our oldest and most experienced members admit the same; and I am sure if ever it was needful for us to stimulate and assist each other by laying open our experience, that time has arrived. We are beset with no ordinary difficulties. Our manufacturing brethren are clamorous for us to approximate our prices to those on the Continent, forgetting the peculiar burthens we have to encounter with; and it becomes us to look round cautiously and carefully, and see where we can obtain help. We are told we must improve our cultivation, we must lay aside prejudices, we must physic our soil; but, unfortunately, this advice comes from those least practically acquainted with agriculture. I do not say that cultivation cannot be improved, and that prejudices do not exist; but I am sure that whatever has a tendency to render the cultivation of the land unprofitable will retard the one without removing the other. I would not have it thought by what I have said that I scoff at the idea of improving our soil by the aid of science and chemistry; on the contrary, I believe they are designed to act as powerful aids in the improvement of the soil, and that we are immensely indebted to the many scientific men now labouring for our benefit. I will now allude to one resource within our reach, which I think does not receive sufficient attention—I mean our liquid manure. I have applied it both to pasture and corn during the last two years with considerable benefit; and since I have constructed tanks in my yards I have been compelled to trough my buildings, to avoid the great accumulation of water, which, but for my tanks and troughs, would have passed away, carrying with it a large portion of the best properties of my manure; and I am sure landlords would confer great benefit to their estates by making the permanent improvement of troughing their farm-buildings. We have, for the last two years, had sounding in our ears the necessity of improvement in cultivating our lands; and it has been most gratifying of late to hear landlords of the highest eminence state that they must aid and assist in this good work, by granting long leases and removing unnecessary covenants. The subject of leases is one that I know requires to be approached with the greatest delicacy and caution; but if improvements are to be carried out in proportion to, and to keep pace with, the increasing intelligence of the cultivators of our farms; if we are to feed the increasing population of our country from the produce of our own soil, approached they must be; and I feel assured they only require to be approached in a proper spirit and in a proper manner, and the evils arising from no leases, short leases, and ill-constructed leases, to be pointed out, to gain the willing attention of the landlords of England—evils which affect equally the landlord, the tenant, the labourer, and the public. The evils here alluded to will never be remedied if left to individuals to point them out; they must be pointed out by societies like our own; they will thus obtain a weight which no individul can give—a weight that will draw the attention and gain the support of practical men of all classes—happily some of them are amongst the first classes of our land; and well would it be if they were greatly increased (*hear, hear*). None but a negligent farmer desires to live under an uninformed landlord. The competition for farms, arising from various causes—some of them too painful to mention, would not, I belive, be taken advantage of to the extent it is, if landlords in general were better

acquainted with the hazard and small profits of farming. Nor would clauses in leases, or the want of leases, be permitted, tending to retard, as they do, the cultivation of the soil, and consequently the condition of all classes. I cannot imagine anything that would tend more to the permanent improvement of agriculture than long and well-constructed leases, and a class of sound practical agents empowered to encourage tenants, and to test and practice all modern improvements for the benefit of the estate and the neighbourhood in which they lived. Gentlemen, I beg to thank you for the compliment you have paid me *(cheers)*.

The healths of "the Treasurer," "the Secretary," and "the Committee," were then drank.

The subjects for discussion at the monthly meetings in the ensuing year were then announced; among them was the cultivation of flax and the use of the linseed compound, which is to be introduced by Mr. Barker.

The CHAIRMAN then gave "the health of the judges of the best two acres of beetroot—Messrs. Rolph, Thompson, and Boggis."

[This premium was awarded to Mr. Leonard Wrinch.]

Mr. THOMPSON, in returning thanks, said that perhaps a few remarks upon the task they had had to perform might not be uninteresting. They first inspected some mangel growing upon the farm of Mr. Everitt, of Weeley, upon land evidently cultivated at an unlimited expense: a better piece he had never seen. They next went to Mr. Hardy's, where they saw a piece of the orange globe mangel, very superior in quality, and not a single run-away one could be detected. *(Hear, hear.)* They afterwards went to Mr. L. Wrinch's, where they saw a most splendid piece—the largest roots he ever saw, but certainly not so good in quality as Mr. Hardy's; and he should recommend Mr. Wrinch in future to be more careful in the selection of his seed. *(Hear.)*

The next toast was "the health of the strangers present at the meeting," which was acknowledged by Mr. Everitt, of Capel.

The CHAIRMAN next gave "Success to commerce and manufactures," and begged to connect with it the name of a gentleman celebrated for the manufacture of agricultural implements—Mr. James Allan Ransome.

Mr. RANSOME returned thanks, and said that with regard to that branch of the toast which referred to the industrial classes of the empire, connected as he was with them, and under the present peculiar circumstances which might seem to place them in a position hostile to the farming interest, he must say he felt the delicacy and difficulty of his position in endeavouring to lay before the meeting the claims of the manufacturers upon them and their claims upon the manufacturers for join favours and mutual consideration. But having a conviction—a deep, abiding, and growing conviction, that the permanent prosperity of this country depended not in the welfare of any individual class, but on the just recognition of the rights and claims of all, he felt bound to stand forward on behalf of that class with which he was himself connected, and lay before them their just claims to no ice. It must be evident that the delightful task of agriculture, whether in countries savage or civilized, must be carried on; and that so long as food was to be provided—so long as men had mouths to eat and stomachs to fill, agriculture must stand in the first and most prominent class *(Cheers.)* Distinguished as it was by being the first pursuit of their first progenitor—distinguished as it had since been by the attempts in all ages to improve and advance it, they could not look upon agriculture without a feeling of gratitude to those who filled the useful office of providing food for the community. But it must be equally evident that the other classes are eminently important to the welfare of the state; for the beneficent Deity in his good providence had ordained that the task of providing food for the many should be accomplished by the few; thus leaving a large portion of the population at liberty to employ their time in manufactures, and in various other ways. In that class of manufactures of which he was the present humble representative, he and those associated with him had done their best in endeavouring to provide for the farmer such implements as might best assist him in his occupation; and when they should leave that meeting, forgetting almost every thing in the pleasure they had enjoyed, let them above all things remember the remarks they had heard from other speakers, and keep the plough paramount. *(Laughter and cheers.)* But taking a wider range than his own individual occupation—looking at manufacturers as a class, it could not be denied that they held a very important post in the community. Had they not devoted their time, science, art, and skill, in producing luxuries and comforts in which they all participated? not the rich alone, for there was scarcely a cottager in the land that did not derive advantage from them. It was true there was a difference in their occupations; but though, instead of the pleasant fields and the sweet breath of heaven to work in, they laboured in crowded atmospheres and in suffocating rooms; though while agriculturists were reaping rich harvests on the bosom of the earth, they were diving deep into her bowels and bringing out the iron and the coal which would enable the other classes more effectually to subjugate the elements to their will—*(cheers)*—yet the opportunity they afford of bringing wealth from foreign climes to their own country entitled them to at large share of consideration. *(Cheers.)* Then again they were consumers; and so long as they were in a situation to consume the produce of the land, so long would they be contented, and the farmer profited. *(Cheers.)* If such were the claims of manufacturers, the title of those engaged in commerce to consideration was not less strong. At much greater risk their ships were sent into all parts of the world, carrying away the surplus productions which our manufacturers were enabled to produce, and coming back bearing blessings from other climes; the inhabitants of which gladly exchanged them for the articles produced in this country. From the north they brought furs, and tallow for their candles; from the south, rich spiceries; from the east the tea which might now be seen upon the table of the humblest cottager; and from the west the "fragrant weed" which all so much enjoyed. *(Laughter and cheers.)* When they reflected that all these things were not simply luxuries belonging to the great, but enjoyed in some degree by every poor man in the kingdom, they had reason indeed to feel thankful to those who ventured their property in commerce, and to rejoice that there was such a connecting bond between the nations of the earth, tending as it most assuredly did to promote the universal peace and happiness of the world. *(Cheers.)* He had thus endeavoured to lay before them the claims

of the two industrial classes. Unless in connexion neither of them could profitably pursue his calling; if united they were strong, but if divided they must necessarily be weak; for they were but part and parcel of one body, of which one member could not suffer without the others suffering with it; nor prosper without all feeling the advantage. (*Cheers.*) He trusted that a growing and increasing feeling of friendship would prevail; and believing as he did that the good of the whole was only to be secured by the unity of its parts, he held that man to be a traitor to the common weal who should endeavour to separate them. (*Cheers.*) Let them not be told they must become a nation of shop-keepers; let them not be told that the prosperity of manufactures or commerce alone would ensure the prosperity of England—let them not even be told that the prosperity of England rested solely upon her agriculture. (*Hear, hear.*) The strength of England lay in the intelligence and moral principles of her people: her wealth in the enterprize of her sons; and to endeavour to foster these in the bonds of social brotherhood was the duty of every class, and one which every individual must feel bound to uphold. (*Loud cheers*).

The CHAIRMAN then gave "The Royal Agricultural Society, and the health of Mr. W. F. Hobbs, one of its Council."

Mr. HOBBS, in returning thanks, said he felt assured that the Royal Agricultural Society would derive vast good from the support and co-operation of Farmers' Clubs; and now that they were patronised by the leading nobility of the land, much good would result from their practical operations throughout the kingdom. It was always his opinion that they would do good, and he had done all he could to bring them into operation, and he was pleased to find that the Oakley Farmers' Club was progressing in a very satisfactory way. He had had much pleasure in witnessing their proceedings that day, and must say they had been such as to afford an example to the farmers' clubs generally throughout the kingdom (*Cheers).* He regretted that the distance of his residence from them was such as to prevent his joining their monthly meeting; but he felt sure that the discussion of the subjects proposed for the ensuing year would, if their results were made public, prove useful to the neighbourhood, and be of advantage to the agricultural body at large (*Cheers.*) Perhaps they would allow him to make a few observations with reference to the proceedings at some of their monthly meetings. In the first place he had been much pleased to find, from the report, that they had turned their attention to the management of fences, and to the disadvantage of having trees growing upon them. This was a point which, in the county of Essex especially, demanded serious consideration. At a recent meeting of the East Essex Agricultural Society he had briefly alluded to the subject; and he there stated his opinion that a great proportion of the trees upon hedgerows did ten times more injury than they were worth. (*Hear, hear.*) He had found in traveling through various counties, that there was scarcely one that had so much hedge-row timber as Essex; and as it was considered a great corn-growing county, it was a matter worthy the attention of landlords generally whether many of their trees (which were a good deal like little apple trees, having a large top and scarcely any trunk) could not with advantage be removed. Another subject to which he would allude was the soiling of cattle; and he did think that in the county of Essex, where, during the summer months, they were much annoyed by flies, owing principally to their numerous trees, the system of soiling in houses might be carried out with a very beneficial result. He had this year tried the plan, and he believed there was scarcely a farm in the county of Essex (and particularly in this neighbourhood, where the hedges appeared to be kept trimmed) that could not keep five head of cattle per 100 acres in sheds merely from the brushings of their fields. It would produce a great quantity of manure, which would be found of considerable advantage in farming. If the system of soiling were carried out generally he thought they should find that the increase of manure would be great; while the increase in the number of stock they were enabled to keep would repay them for any extra expense they might be at. Another subject which they had announced for discussion was the construction of leases (*Hear, hear*). That was a subject which deserved the serious attention of the agricultural world; and it was one which had not hitherto been regarded in this part of the country of that importance in which it was held in the north of England and Scotland, the farmers of which parts were closely treading on their heels, and bidding fair eventually to surpass them, unless they were enabled to follow their system of long leases, and of the landlords assisting their tenants in carrying out improvements (*Hear, hear*). If that system were more pursued here than it had hitherto been, it would tend greatly to improve the condition of the tenantry, to increase the production of the soil, and to render more valuable the property of landed proprietors. Before he sat down he wished to make a few observations relative to roots; and he was induced to do so by the observations of one of the judges with respect to the quality of the roots upon Mr. Hardy's farm. The cultivation of roots had been for many years one of his hobbies, especially that of mangel wurzel, being so unfortunate as not to have much turnip land upon his farm, and being fully determined to keep upon it the best possible stock; and he had found that the globe mangel was the best produce for this purpose. Mr. Thompson had said that Mr. Hardy's roots were excellent in quality and of good general character; and as the seed had come from him (Mr. Hobbs) he felt gratified at the approbation of the judges, although they had not been successful in winning the prize (*Hear.*) That might have arisen from the superior quality of Mr. Wrinch's land; but at all events, if that gentleman was inclined to make a comparative trial of his (Mr. Hobbs's) seed, he should have it for nothing, unless it produced as good or better roots than the kind he was now using (*Hear*). He (Mr. Hobbs) was a practical man himself, and his observations were therefore generally of a practical tendency; and coming among them that day he was much surprised to find that scarcely one farmer had his mangel taken up (*Hear, hear*). He thought if they were to sow a month earlier they might take up a month earlier ("*Hear*," *and* "*No, no*"). His opinion was that mangel wurzel ought not to remain in the ground after the month of October. He threw out this hint because he thought that after that time considerable injury was done to the soil by carting, which was more generally attributed to the mangel than the cause to which it ought to be laid. He felt much obliged by the compliment that had been paid him, and if ever his services could be of any avail to them he should be happy to

afford them all the assistance in his power *(Cheers.)*

The CHAIRMAN then entered into the details of some experiments he had made with a view to test the comparative weight and other qualities of turnips, mangel, and carrots, upon a given quantity of land; and also dwelt upon the important fertilising powers of liquid manure. In conclusion he proposed "the health of Mr. Kersey, the President of the Hadleigh Farmers' Club" *(Cheers)*.

Mr. Kersey returned thanks, and invited the Chairman, and such of the company as could do so, to return his visit, by attending the anniversary meeting of the Hadleigh Club, on the 1st of December next.

The CHAIRMAN gave "the health of Mr. Leonard Wrinch, and the other successful candidates."

Mr. WRINCH returned thanks, and, after some observations on the growth of mangel wurzel, accepted the offer made to him by Mr. Hobbs.

The Rev. J. H. MARSDEN rose and said that the next toast on the list was that of the Honorary Members, and being the only one present he had begged to have it changed to that of "the cottagers who had been successful candidates for prizes that day:" a toast which it gave him peculiar pleasure to propose. He thought that the gratifying proceedings of the evening could not be better concluded than by a toast which would dismiss them all with a pleasing reflection upon the joy introduced by them into the poor man's cottage. And he could not refrain from saying one word more. After the many proofs which had been laid before them that evening of the efficiency and usefulness of Farmers' Clubs, as well as of the necessity of making every effort to acquire knowledge and aspire after improvement, it had struck him that a comparison might be made between such farmers as thought themselves already wise enough, and the case of certain unlucky troopers who formed the guard of honour by the side of the Queen's carriage during Her Majesty's late entrance into the University of Cambridge. As the speed of the royal cavalcade increased, these gallant equestrians, being forbidden by etiquette to break out into a canter, are said to have still persevered in their stiff military trot, though the pace was something like twelve miles an hour. The consequences were, that they were well nigh shaken to pieces. Now an old-fashioned farmer, who neglects to avail himself of every feasible mode of improvement, or, in other words, who refuses to break out into a canter, will have to endure the pain of being shaken to pieces; and besides this, will inevitably lose the race at last *(Hear and applause.)*

Other toasts followed, and the meeting separated shortly after nine o'clock.

GLOUCESTER FARMERS' CLUB.

The November meeting of this club was held on Saturday, November 3rd, and was numerously attended. The subject of the evening, viz., "The advantage of a better method of entering upon and leaving farms," was brought forward by Mr. John Long of Whaddon. The next meeting will be held on Saturday, December 2, when Mr. Walrond will introduce as a subject, "The best method of bettering the condition and increasing the comforts of the agricultural labourer, by such means as are in the power of the owners and occupiers of land."—The following is a copy of Mr John Long's lecture:—

"Mr. Chairman and Gentlemen, the subject for our consideration this evening is that of tenants entering upon and leaving their farms, in the vale of Gloucester. This subject has been so ably handled and so fully explained, by my friend Mr. Peter Matthews, that I conceive there is little left for me to say. It would be quite unnecessary I should dwell upon any remarks which fell from him, for I do most cordially agree with the whole of his statement on that occasion, as far as relates to his district. Now our locality, the vale of Gloucester, to which I shall particularly allude, requires a great variation in its lettings and management from that of the Cotswold Hills. The greatest portion of the land in this district is grass, and adapted principally for dairy and grazing purposes; in some few instances a quarter part, or perhaps half may be arable, and that principally of a heavy quality. In the first place I consider the present law of landlord and tenant a defective one, and that it requires an amendment; inasmuch as the tenant is so uncertain, 'particularly with a needy landlord,' that it prevents him from making improvements which are really requisite, and which he is really anxious to make, but by the present law of giving six months' notice to quit his farm, the whole of the improvements are placed in the hands of the landlord to deal with them as he pleases, and without giving any compensation for them, except only such acts of husbandry which have been performed within the last year, and for which the landlord, or his coming-in tenant, receives the immediate benefit. This law I consider to be bad in principle; an industrious improving tenant, who has been farming highly and brought his land into good condition, ought in fairness to have a compensation upon quitting his farm, not only for the last year but for the last three years at least, upon all lands which have been highly cultivated within that period. It appears this is not only my opinion, as I am borne out by a member of the House of Peers (Lord Portman), who is an extensive landowner; he has given notice of his intention to bring in a bill for the amendment of the present Law of Landlord and Tenant; I hope and trust he will furnish details in that bill which will, if carried out, put an end to the evils I have been complaining of, and protect fairly the interest of both parties. If this should be made the law, we shall cease to see so many farmers of little or no capital, and whose only object is getting into the possession of land and reaping the advantage of their predecessors' industry, perseverance, and outlay. All coming-in tenants would then (and very fairly so) have to pay down a sum of money, equivalent to the condition of the land upon which they are about to enter. Again, this state of things would in some degree be remedied if a lease was granted containing clauses which would secure to the tenant, or at his death to his family, the repayment of the sum expended upon permanent improvements, in case he had not occupied the farm a sufficient time to profit by the alterations made by him. It might happen that a tenant had received a promise from his landlord of a new lease, and that in consequence he had commenced making a heavy outlay in improvements, and before his intended new lease was executed, he (the tenant) died, not leaving any part of his family able to carry

on the farm. In such a case I cannot but think it unjust and unfair if that family should lose the sum expended by their parent, which would have been amply regained by him, if he had lived to work out another lease. These are my reasons for thinking that leases should be granted to tenants requiring them, and with such clauses that would give to the cultivator an equal security, in his capacity, with the owner of the land. I consider that no occupation in life more requires a good understanding between those engaged in it than the one we are following; and if all would consider, whether we are the owners or occupiers of the land, that we are by the ties of fellowship bound to lend our assistance, so that others may be prosperous and happy together with ourselves. In the second place, I give you my opinion as to the terms upon which I think in fairness leases should be granted. The legislature of this country is so frequently making alterations in the Corn and Provision Laws, and consequently materially affecting the value of agricultural produce, that I think the taking of a farm upon a long lease at this time at any stated rent is running a much greater risk than is prudent. Being impressed with this idea I will suggest that leases should be taken at a corn rent; both landlord and tenant would then be equally affected by any sudden change that may take place in the value of produce. I may be asked in this dairy country, what terms shall we make upon our dairy farms? I will answer it would be equally fair to let those farms at a rent varying with the value of cheese, instead of corn. If all the farms were let upon this principle, it would put matters on so plain a footing, that no complaint could in any way arise, and it must I consider be for the mutual benefit of both landlord and tenant. In the third place, gentlemen, I will make a few remarks upon the yearly holdings in the vale of Gloucester. The principal part of the farms in this locality are held by yearly tenants, and notwithstanding this tenure many of them are held under agreements which are severely restrictive in favour of the landlords. It is notorious that there are many farmers who either from want of thought or careless ignorance are induced to sign these agreements, and for which the agents invariably pocket a considerable sum. When those documents are presented for signature the tenants are informed the clauses are rather severe, but they are only formal and not intended to be carried out;—but in the end on giving up the farm many have suffered rather severely in pocket by being called upon to fulfil their agreement up to the full extent of its meaning. This I consider should be put on the same footing as the leases, which would with a candid landlord be the means of giving comfort to many farmers who are yearly tenants, and whose age tells them they ought not even to think of a lease. The terms on which many farms are now let are so oppressive, as to prevent all improvements and keep the tenant in a state of fear instead of comfort. Such an order of things I think it is the duty of all parties to discontinue. That some proprietors prove by the manner of letting their estates that they are no improvers of the soil, nor at all inclined to promote any increase in its production, we are all aware. To explain this, I have in my possession a copy of an agreement under which a large landowner in this county lets his estates, and principally to yearly tenants; it is a document of so oppressive a nature that did I not know it to be genuine, I should doubt if any landlord could be found who could think of so fettering his tenantry, and much more, that farmers are to be found to take such a yoke upon them. I cannot suppose that these terms of letting estates could even enter the thought of any landlords, they surely must be led by the feeling of their stewards, who are many of them totally unacquainted with the necessity of improvement. Gentlemen, this club was established with a view of promoting agriculture. I take it to be the duty of all its members to show up any circumstance which may appear detrimental to its progress. If the chairman will permit, I will read a few clauses of the agreements to which I have been alluding. In the fourth place, I cannot suffer the present opportunity to escape of remarking upon the excessive reduction in value which has taken place upon the produce of dairy farms, and which is and will be severely felt in this our immediate district. I am inclined to think that the only remedy we have in our power is the breaking up of a greater portion of pastures, which in the present state of things cannot but be of benefit to the owner and occupier of the land. But the prejudice of many proprietors in favour of green fields is so great, that they steadily refuse any application made to them for that purpose. If landlords generally would well consider this subject, it does appear to me that they would in their leases, and yearly agreements, give greater scope for the use of the plough. It is to be regretted that a large portion of the lands in the vale of Gloucester, and no doubt in other parts of this county, is suffering greatly for the want of draining; this we are aware is a great drawback upon production, and ought to be removed either by the proprietor or occupier. If the owner would make the outlay that may be required, the tenant with equal fairness would make no hesitation in paying a fair interest upon the sum expended upon so desirable an improvement. Sir Robert Peel, at the Tamworth farmers' club lately held, says, 'seeing the competition to which the farmer is exposed, and to which he must look forward,' he considers it is the duty of every landlord to make some sacrifice for the benefit of the tenant farmer. It appears the Honourable Baronet has given the agriculturists of this country a severe broken head, and now in his great sympathy for them is applying a healing balm. I cannot but feel proud to say that in our part of the county we have many landed proprietors, and some of them are present, who are putting their shoulders to the wheel in the shape of improvements and removing nuisances which have hitherto been a great bar to the improving farmer. I mean the cutting away of trees, removing hedges, draining, and breaking up some inferior pastures, and for all which desirable improvements and alterations we are greatly obliged to them; but it must be borne in mind that these alterations and improvements, however desirable they are, bring upon the tenant a considerable outlay of his own capital. Therefore, gentlemen, my opinion is, after all the arguments and improvements that can possibly be made or set forth, the business will not be complete without a considerable abatement of rent. I do not at present think of any other topic that I can touch upon, except that of thanking you Mr. Chairman, and you gentlemen, for the patient hearing you have given me, and hoping my remarks may be of some benefit both to landlords and tenants.

"*Whaddon, Nov.* 4th." "JOHN LONG."

WEST HEREFORDSHIRE FARMERS' CLUB.

This valuable, and, we are happy to say, flourishing society, held its annual meeting on Monday, Nov. 6th, for the award of prizes for the best ploughing in the respective classes to which premiums had been offered. The match took place in two fields belonging to Mr. Parry, of Old Court, Bredwardine, situate a short distance from the Lion Inn, in that village. It was numerously attended, and most of the leading agriculturists in the neighbourhood and members of the club were present, and appeared to be deeply interested in the proceedings.

Ten G. O. ploughs started, six single teams, and three for the third class prizes for farmers' sons and lads under 20, the gift of Col. Powell, of the Hardwick. The time allowed for the completion of the task was three hours, but several completed their work considerably within that time.

Several ploughs were exhibited, a trial of which took place in the same field; two were highly spoken of—one exhibited by Messrs. Carless, of Hereford, the other by Mr. Meredith, of Kington. Five samples of wheat were shown, and the quality for this season, we believe, was considered remarkably good. Seventeen or eighteen lots of turnips, Swedes and common ones, were exhibited, with some of which we were much struck, imagining, from the unfavourableness of the summer for this description of produce, that such could not have been found; one of the common turnips measured, we believe, upwards of 30 inches in circumference! The judges for the occasion were—Mr. Davies, of Webton, Mr. Wintle, of Chanstone, and Mr. Waring, of Letton. About half-past two they entered upon their survey, which they completed at half-past four. Every thing seemed admirably arranged by the committee and their invaluable secretary, Mr. Matthews. The kind courtesy which we experienced from him is such as we shall not soon forget, and for which this acknowledgment is but a faint return.

THE DINNER.

At half-past four, a party of gentlemen, friends of the society, and some of the principal agriculturists of the neighbourhood, to the number of 50, sat down to an excellent dinner at the Lion Inn, Bredwardine, provided by mine host Powell. Col. Powell, of the Hardwick, presided on the occasion. The vice-chair was most ably filled by Mr. Trethewy, and Mr. L. Gwynne, of the Hay, officiated at the side-table.

The usual loyal toasts having been drank,

The Chairman gave "Sir Velters Cornewall, and long life to him." (Drunk with loud and protracted cheers).

Mr. Trethewy, on behalf of Sir Velters, in an able and appropriate address, acknowledged the compliment.

The Secretary was then called upon to read the report of the

AWARDS.

Ploughing Matches.

Class 1. G.O. Ploughs. In this class there were ten competitors. To the best ploughman 1*l.* 10s.; to Samuel Williams, servant to Mr. Benjamin Parry, of Old Court. To the second best ditto, 1*l.*; to William Weale, servant to Mrs. James, of Monnington. To the third ditto, 15s.; to Samuel Jones, servant to Mr. Plant, of Mccass.

Class 2. For single teams. Six competitors. To the best ploughman, 17s. 6d.; to Thomas Powell, servant to Mr. Davies, of Huntley. To the boy, 2s. 6d. To the second best ditto, 8s. 6d.; to William Pritchard, servant to Mr. Benjamin Parry, of Old Court. To the boy, 2s.

Class 3. Colonel Powell's premium of 5*l.* for farmers' sons and lads under twenty years of age. Three competitors. To the best ploughman, 2*l.* 10s.; to Thomas Barber, servant to Mr. Hobby, of Bredwardine. Second-best ditto 1*l.* 10s.; to William Preece, servant to Mr. Davies, of Bodcott, Third best ditto 1*l.*; to John William, servant to Mrs. Webster, of Kenley. The ploughing in this class of the two first was much admired, and highly spoken of.

Best samples of wheat—five shown; to Mr. Ambrey of Lower Blakemere. Sample—Cumberland Red.

Turnips—Swedes, best; to Mr. James, of Monnington. Common turnips, best; to Mr. James, of Monnington. One of the common turnips exhibited in lot 1 was 34¼ inches in circumference.

Implements.

Quantity ploughed,—an acre. Several ploughs of superior workmanship were exhibited, and the judges in making their decision found two so very nearly equal in their merits, that they decided on dividing the award equally between them. These were exhibited, one by Mr. Carless, and the other by Mr. Meredith, of Kington. Mr. Carless most generously placed the award made to him at the disposal of the Treasurer and committee, which act of generosity was much applauded. A plough exhibited by Mr. Preece, of Portway, was very strongly recommended, and an award made to him.

Several other useful agricultural implements were also exhibited by Mr. B. Whately, of Dorstone.

At the conclusion of the report the health of the Judges was drunk with applause, and a compliment paid them for the discharge of their arduous duties.

Mr. Davies replied—in doing which he remarked that he and his colleagues had entered the field with no prejudices in favour of any one, as they did not know either of the competitors. If their judgment was approved of, it was a great pleasure to them; if they had erred, he hoped it would not be set down as wilful, and concluded by returning thanks for the compliment paid him and his brother judges.

The Chairman had a toast he was about to propose, in which he felt as much interest as any of them—"Success to the West Herefordshire Farmers' Club."—(*cheers*).

Mr. Trethewy returned thanks on behalf of the Society. He commenced his address by saying that he felt great pleasure in replying to this toast, as his interest for the success of the Society was great. During the short time it had been in existence, its progress had exceeded his most sanguine expectations; that at first only two or three teams had competed for the premiums offered by the Society, and that day they had had ten in one class. He passed a high compliment upon the liberality of the gallant Chairman, in offering a premium of £5 for lads under 20 years of age, whose ploughing that day, was equal, he could say, to any in the county of a similar age. In another year he hoped there would be more competitors in this class, as the funds of the Society were in such a state as to offer a premium. He said the object of the Club was not confined to ploughing matches, as at their monthly meetings discussions upon agricultural matters took place, and books connected with this branch of science, were eagerly sought after. In the month of June last, when the worthy Chairman inspected the farms, he (Mr. Trethewy) did not, on account of the unfavourableness of the season, expect to see such sorts as they had seen to-day; they would do no discre-

dit to any district in England; and if the meeting had taken place on the 6ih December, instead of the 6th November, they would have been much larger still; the wheat also was very superior to what he could have expected to have seen; some of the samples were very good, which is not generally the case this year. He observed that, while he was on his legs he would beg to remind some of the members that they had not attended the monthly meetings so often as he could wish; unless they attended more regularly, they could not expect the final object the Society had in view, and for which it was instituted, to be attained. He concluded by expressing a hope that more members would attend their meetings of discussion, which would amply repay them for their attendance, as much more information would be gathered, than they had obtained last year; and once again he begged to return his most sincere thanks to the gallant Colonel, for having done the Society the favour of his valuable assistance *(applause)*.

Mr. Maddy, of the Llan, proposed the health of Colonel Powell.

Colonel Powell said—In the month of June I had the bonour to address you in this room, and then I was in hopes that ere this an improvement in matters would have taken place; but, as I believe in the most brilliant diamonds some speck is to he found, so we are also doomed to be disappointed in our expectations in life. I am sorry I labour under disappointment. At this time I could have wished that the cloud that now envelopes the agricultural horizon had been dissipated, and that a brighter dawn had arisen—that an amendment in the value of property would have taken place; but I am sorry to say the cloud still impends over of the same dark hue, and I see no prospect of its being chased away by a more prosperous state of things in the value of agricultural produce—not much alteration has taken place for your benefit, although I believe re-action may be seen, still nothing materially to assist you. I can see no prospect of any benefit till rents become more equalized with, and parallel to, the value of the produce of the land. *(Cheers.)* Many meetings connected with agriculture have of late taken place, and various plans at these meetings have been adduced to meet the pressure of the times; but, gentlemen, although good in themselves, they do not hit upon the right remedy; one says "drain, drain!" You are all to be drained. *(Laughter.)* Another tells you to keep up your orchards, nothing equal to Herefordshire orchards; but I fancy I hear some one saying I will put the apple juice down if I can get it; others say guano, this new manure will produce such immense crops that yourselves will fail to receive the bulk; this will be a remedy for all evils. Another says, if you are eaten up with hares and rabbits I will have them all killed; by the bye, a proposition not to be entirely despised. *(Hear, hear, hear.)* This will be quite sufficient, nothing more is wanted; however, I will do you every justice in my power, and render you all the assistance I can. I will send to Birmingham to buy a bull for you. *(Cheers and laughter.)* I knew Birmingham in my younger days, and there would have been no difficulty in purchasing a bear or a monkey; but as to a Birmingham bull—a capital place to get a cast iron one—I cannot judge what figure it would cut in a farm yard: I think it would cut a much better one in the Zoological Gardens in Regent's Park than in a Herefordshire farm yard amongst breeding cows. *(Immense laughter and cheers.)* Gentlemen, there is only one thing that can be done to alter your position at the present time—it must come to this—that rents must be adjusted to the prices of the produce, and long leases must be granted. *(Prolonged cheers.)* There must be fresh rents, and corn rents. I say it must come to this, or tenants will be dissatisfied, and they will soon join the immense efforts that are being made to get a free trade in corn, and unless the landlords meet the tenants upon fair and equitable terms, confidence will be lost between them, which, indeed, is beginning to be the case in some instances, and a free trade in corn will be the consequence. Draining, manuring, &c., are subjects worthy to be attended to certainly, but these, if we may judge from the tone of the addresses that have taken place at some of our meetings lately held, are to be a specific remedy. There is a new dictionary just published which contains a vast number of words; many new ones, and a most excellent work it is, and some critics speak most highly of it, but it has an omission of one little word—one little word is left out. That word, gentlemen, is "rent;" to some this is a most perplexing little word, and to many it proves so. At all meetings that take place the speakers use excessive caution about repeating this little word, and I observe invariably the word "rent" rarely comes out—this bolus *(laughter)*, gentlemen, they cannot articulate, much less digest. Draining is no new thing—all my lifetime this has been advocated; and even in my memory it was almost impossible to live in the vale of the Wye, and at this season of the year they were obliged to quit it. If you met, in the latter end of autumn, a pale-looking and unhealthy countenance, and asked where he came from—"Letton, to be sure," was the answer. If in spring you met a jolly ruddy looking face, and asked whither bound to—"Letton," was the reply. But now, gentlemen, the vale of the Wye is all, or nearly so, drained; although I do not say but that some improvement in this department may yet be effected, and this district rendered as healthy as any other part of the county. A foreigner would imagine, in looking over our agricultural reports, and take it for granted, that we were living in bogs from one end of the kingdom to the other—that the whole kingdom was like the fens in Lincolnshire or Cambridgeshire. I say, gentlemen, that one thing only can benefit us so as to do us any lasting good, that is, fresh rents, corn rents, long leases—these form a just and equitable guide between landlord and tenant. The farmer would then know what to depend upon—this would be only fair between man and man.

The Chairman.—This is a most useful institution, and societies of this sort are calculated to produce vast advantages, because they admit of discussion, and they ought therefore to meet with that liberal support they deserve, and as much as possible to be kept up; if they were more general than they are, it would be well—but the question is, who is the man that will come forward and start them? There is much tact and judgment required to bring them to perfection. I am happy to say this progresses well, and promises to be productive of much good—an example most worthy of imitation. The toast I am about to propose is the health of the gentleman who first started it, and to whom we are indebted for its success. I will give you "the health of the Vice-President, Mr. Trethewy" *(applause)*.

Mr. Trethewy, in replying, observed that it would be needless on his part to remark with how great pleasure he had witnessed the flattering compliment just paid him. One error the worthy chairman had fallen into in saying that he (Mr. Trethewy) was the prime starter and patronizer of this society. With

all due deference to the gallant chairman, he must say the patronage all belonged to him (the chairman). He next gave a brief outline of the first commencement of the society, the great success that was attending its operations, and the liberal support it had met with from the resident gentry and clergy in the neighbourhood, as well as the principal agriculturists. To the clergy and patrons they were under great obligations. He mentioned that he had solicited one of the clergy, the Rev. Thomas Powell, of Dorstone, about three weeks ago, who without any hesitation, said he should be most happy to contribute to the funds of the society, and more than that, should be happy to place at the disposal of the committee, the sum of one, two, or three, pounds to be awarded as premiums for some purpose, such as to the cottager who could produce the greatest quantity and best honey, or best cultivated garden. Mr. Trethewy next spoke at considerable length upon the subject of artificial and common manures, and gave some interesting details of his own experiments—he said some had done good, others had failed—he advocated the use of common manures as being more likely to meet the views of the agriculturist than the artificial ones. Gypsum had entirely failed, and he had no further confidence in it; salt and soot he had tried on wheat land, and it had answered his expectations of it, therefore, he considered money might be laid out advantageously in its purchase—but as to the generality of manures now so much recommended, he thought money might be laid out with more advantage in the purchase of home manures—he would not recommend any one to use guano, it would require from 50s. to £3 to dress an acre, and the return would not be adequate to the outlay.

In a discussion that ensued between the vice-president and the secretary, on the relative merits of manures, the former strongly recommended the money to be laid out on cleansing the ditches and forming a compost of lime and soil wherever it could be done, as being likely to answer the expectation of those who tried it. In conclusion, he begged to return thanks on behalf of the society to the patrons and honorary members.

The Vice-President proposed the health of P. B. Giles, Esq., in a complimentary speech—to which that gentleman replied in a pleasing address, in which he expressed his intention of placing a premium in the hands of the committee, to be given away at their next meeting. This announcement was received with applause.

The Chairman.—I now beg to propose the health of a gentleman who contributes much to the welfare of this society; in fact, I may say, is almost "the staff on which it leans." The health of the Secretary *(drunk with cheers)*.

Mr. Matthews returned thanks in a very able speech, in which he gave some interesting details respecting the use of manures; he did not consider guano a dear manure; he had used it with advantage on wheat land, and after a month or two had elapsed, could evidently see the results of it; considered bones a good manure, but that they sometimes failed—this arose from our not being better acquainted with the soils on which they are used. He also agreed with Mr. Trethewy, that our own manures ought to take the preference; but if these could not be obtained in sufficient quantity, then artificial ones might be resorted to with great advantage, and in some instances lucratively so. He sat down amidst loud cheers.

Numerous other toasts were drunk in the course of the evening with applause, which want of space prevents us particularizing; among them, however, were "the better health of Mr. Thomas Cooke, of Hereford, and may he soon be amongst us again," proposed by Mr. Jonathan Davies, of Madley; "Successful candidates;" "Unsuccessful candidates;" "the health of Mr. Ambrey, of Blakemere;" of "Mr. Brown;" "Messrs. Parry, of Old Court;" "Hadley, of Weston;" and "Davies;" "Town and trade of Hay," responded to by Mr. Gwynne, of Hay; "Stewards of this Club;" "Mr. Edge, and the liberty of the press," to which he replied on behalf of the Hereford press, of "the ladies who had favoured the society with their presence in the morning;" all of which received suitable replies.

In consequence of the discussion that arose respecting the relative advantages of artificial and natural manures, the worthy Chairman proposed to place the sum of £2 at the disposal of the committee, to be given away as a premium to test an experiment to be made upon a quarter of an acre of turnips, grown by artificial and common manures.

The greatest harmony prevailed throughout the whole proceedings, and we must say we ourselves were pleased with them, as being one of the most interesting and intelligent meetings we have been at for some time. That it will increase in numerical strength and in its amount of premiums, is clear from what has passed at this meeting, and we trust each succeeding one will increase in interest and sterling usefulness.

The company began to separate about ten o'clock. —*Hereford Times*.

ISLE OF SHEPPEY AGRICULTURAL ASSOCIATION.

When time shall have developed the ameliorating influences effected through the agency of agricultural societies, the historian will discern the powerful support given thereby to the rights of property and the maintenance of order. Political economists may glibly advocate this or that change in the principles of legislation—may uphold, as fundamental, "competition" in preference to "protection," or *vice versa;* yet, did our legislature understand how acutely the industrious and labouring classes feel every deviation from established usage, it might induce more caution, and lessen the desire for experimental laws which, but for the soothing agency of local associations, might ere this have endangered our social system, by driving the discontented into union with the disaffected classes of our countrymen. In the race of philanthropy, the Isle of Sheppey Agricultural Association has ever maintained a good place; and on the 2nd of November last celebrated with great *eclât* its ninth anniversary meeting, commencing the day with a ploughing match at Minster, in a field belonging to Mr. Masters, whose residence, being contiguous, was hospitably opened to a numerous and fashionable company of ladies and gentlemen. In the field were 23 candidates, with turn-wrest ploughs, drawn by four horses each, with a driver. And perhaps, in this scientific age, some smart theorist may exclaim—"poor demented souls, to use four horses to a plough with a driver;" and it may be so—for, although the Sheppey farmers read the Magazine, and are not unacquainted with the pages of the giant *Quarterly* and other periodicals, and are many of them also familiar with the

standard works of agricultural literature, from the persevering Jethro Tull to the learned Professor Johnston, yet they prefer the turn-wrest plough with its expensive appurtenances. And why? Because every other variety hitherto tried on their waxey soils have been "found wanting." On this occasion, from the untoward rain of the previous day, the land was in a most deplorable state, yet the skill of the men proved equal to the emergency, and each allotment of four ridges (half an acre) was completed within time, and the workmanship elicited from the judges—Messrs. W. Pye, Cuxton, Rochester, and R. Food, Borden, Sittingbourne—marked expressions of surprise and admiration. Whilst this animating contest was in progress, the visitors were occupied in examining a superb collection of mangel and other roots—some exhibited as specimens of unusual merit, others in competition, by the members joining annually in a small sweepstakes of one shilling each, to promote improvement in their cultivation and varieties.

At the close of the field operations, the premiums to ploughmen were distributed by the Rev. J. Barton, Rector of Eastchurch, who, in the absence of the president, De-la-Mark Banks, Esq., presided throughout the day's proceedings, and from a waggon ably addressed the candidates, explaining the design of this and similar associations, and congratulating the competitors on the ability they had displayed under unusually trying circumstances, and called forward the champion, Richard Philpot, waggoner to Mr. Terry, to receive 1*l.*, and 2s. 6d. the driver, as the best of the class which had previously obtained the principal premiums. In the next class, John Hart, waggoner to Mr. Thos. Coveney, 3l.; and 1*l.* the driver. Wm. Stickings, waggoner to Mr. Palmer, 2*l.*; and 10s. the driver. Wm. Watts, waggoner to Mrs. Mitchell, 1*l.*; and 5s. the driver. Edward Field, waggoner to Mr. Cadhams, 10s.; and 2s. 6d. the driver: and to each unsuccessful candidate 2s., and 1s. the driver.

At the dinner which subsequently followed, at the Waterloo Inn, Minster, the large room was crowded, the rev. chairman being supported by Messrs. G. B. Chambers, W. P. Cullen, Rev. H. Hilton, S. Sackett, J. Matson, R. Edmeades, the judges, &c., &c.; the vice-chair being occupied by Messrs. T. Burford and J. T. Smithson; when after the customary loyal toasts, the remaining candidates were introduced, and feelingly addressed by the rev. chairman, who, as a much-esteemed resident clergyman, was personally known to the majority, and whose commendations were received by them with evident marks of just pride. At the close of this interesting scene, the chairman gave "the health of the judges," who, coming from a considerable distance to give an impartial award, had conferred a favour on the society and a benefit on the neighbourhood.

The toast was responded to by Mr. Pye, and followed by that of the chairman, who, in returning thanks, expressed his hearty concurrence in the objects of the Association, and readiness at all times (although it was unusual for his profession to preside at convivial meetings) to forward the welfare of an institution, which by its stimulating influences had already produced much good fruit; and concluded by proposing "the health of Mr. G. B. Chambers," who, as honorary secretary, had ably carried out the views of the Association, and to whose exertions its continued prosperity was mainly to be ascribed.

Mr. Chambers briefly returned thanks, and ascribed their present prosperity, not to his own labours, but to the confidence and support with which the members had so many years favoured him; and subsequently, at the suggestion of the Chairman, drew the attention of the company to the merits of three transplanted roots of red globe mangel, exhibited in the morning as a superior sort for transplanting in those seasons of failure, which occasionally occur in heavy soils, having tried them this season, in competition with the yellow globe and the long red, with marked effect. The seed was from Messrs. Wrench and Son, London-bridge; the weight of the roots about 11lbs.

Mr. EDMEADES proposed "the health of the Rev. H. Hilton," who, in returning thanks, confirmed the sentiments of the Chairman as to the moral good flowing from such societies, and although no longer a resident amongst them, yet a sense of duty, as a landowner and one intimately connected with those possessing a considerable interest in the Island, would always make him anxious for the prosperity of the Association, and induce as frequent an attendance as his other duties would permit. He likewise guaranteed, on the part of his father, to supply the sheep necessary for the shearing match in June next.

The CHAIRMAN then gave "the health of Mr. Masters, with best wishes that a beautiful crop of wheat might recompense him for the loan of his field," &c., &c.

Mr. MASTERS returned thanks, expressing the pleasure it gave him to forward the objects of the Society; and although he felt some apprehensions for the future crop, from the tender state of the land, yet hope predominated; for the old adage of "More slop, more crop," was both soothing and consolatory.

On the health of the two Vice-chairmen being drunk, Mr. BURFORD acknowledged the compliment, and alluded to the great improvement visible this year in the several specimens of mangel, turnips, carrots, &c., &c., proving the advantages following the system of exhibition and competition which the Society had adopted, and which, if pursued with the same spirit, would eventually place the agriculture of the Isle of Sheppey on a par with the most favoured districts.

A short yet animating scene followed, by the Honorary Secretary calling on those willing to compete for next year to enrol their names; and upwards of 100 subscribers of 1s. each were classed, for various sweepstakes of mangel, Swede and white turnips, red and white carrots, red and white potatoes, onions, parsnips samples of red and white wheats, oats, canary, &c., &c.

"The health of Mrs. Barton and the Ladies" having been proposed by Mr. SACKETTE, and acknowledged by the CHAIRMAN, he proposed as a parting toast "Good night;" and the major part retiring with him, the meeting shortly after dispersed at an early hour, with the conviction that the day had been well spent, and in strict accordance with the motto of the Society, viz.—"To promote industry and reward merit."

PREMIUMS PAID AT THE TABLE.

TO FEMALES.

Mary Anderson, employed 28 years by Mr. S. Pym on the same farm, 1*l.* Sarah Farrew, ditto, 23 years, 5s. Mary Collar, 216½ days' field labour by Mr. Burford, 1*l.* Elizabeth Anderson,

128½ days' ditto, by Mr. G. B. Chambers, 5s. Mary Wyatt, widow, 225 days' ditto, by D. Banks, Esq., 1*l*. Ann Jarrett, 100 days as chairwoman, by Mr. W. Coveney, 1*l*. Lydia Stickings, widow, receiving the smallest amount of parochial relief, employed by Mr. R. Bigg. 10s. Maria Hills, single woman, 4 years' farm service with Mr. H. Pym, 2*l*. Sophia Mathews, under 13 years of age, having lived 1 year in farm service with Mr. Cadhams, 1*l*. in useful clothing. Sophia Payne, under 15 years, ditto with Mr. T. Coveney, 10s. in clothing. Sarah Ann Buckhurst, single woman, 6 years and 10 months, yearly household servant with Mr. Aldridge, 2*l*. Susan Pattisson, 6 years ditto with Mr. R. Brightman, 10s. Mary Nightingale, under 15 years of age, 2 years, ditto with Mr. W. Shrubsale, 1*l*. in clothing.

SHEPHERDS AND LABOURERS.

Thos. West, shepherd to Messrs. Hilton, Munn, and Co., having weaned 1,627 lambs from 1,500 ewes, one-third young ewes, 2*l*. James Hobbs, shepherd to Mr. G. B. Chambers, ditto 400 lambs from 350 ewes, one-third young ewes, 1*l*. Obadiah White, shepherd to Mr. Noakes, ditto 178 lambs from 137 ewes, one-third young ewes, 1*l*. Robert Soley, shepherd to Mr. S. Pym, 113 lambs from 100 ewes, ditto, 10s. John Stevens, shepherd to Mr. S. D. Shrubsall, 131 lambs from 140 ewes, without reference to age, 1*l*. Edward Holding, shepherd to D. Banks, Esq., 68 lambs from 53 ewes, ditto, 10s. Edward Wilson, in the employ of Messrs. Hilton and Co., contributing to a benefit club, 31 years, 2*l*. Joseph Baker, employed by Mr. Yates, 30 years ditto, 10s. Joseph Baker, ditto 26 years on same farm, 2*l*. Thos. Carrier, 25 years ditto with Mr. Verison, 10s. James Hodge, employed by Mr. Matson, and maintaining with credit 7 children under 15 years of age, 1*l*. Thos. Farrier, 5 children ditto, in employ of Mr. Pym, 10s. Wm. Kisby, employed by Messrs. Helton and Co., having 5 children in creditable yearly service, 1*l*.

FARM-SERVANTS.

Thos. Kempsal, single man, in service with Mr. Edward Bigg, 6 years and 3 months member of a benefit club, 1*l*. Wm. Stickings, ditto with Mr. Palmer, 3 years and 3 months ditto, 10s. John Fagg, ditto 8 years yearly service with Mr. Masters, 2*l*. John Kingsland, 7 years ditto with Mr. H. Pym, 10s. George Austen, under 16 years of age, 2 years ditto with Mr. Brisley, 1*l*. in clothing.

TO BOYS.—THE AMOUNT IN CLOTHING.

Joseph Kennett, under 14 years, employed by Mr. Masters, 313 days field labour in the past year, 10s. G. Bush, ditto 312 days by Mr. Burford, 2s. 6d. Wm. Turrell, under 12 years, 313 days by Mr. J. Bills, 10s. James Kennett, ditto 96 days by Mr. G. B. Chambers, 2s. 6d.

GUANO.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Your present month's publication, which I have just received, contains, I perceive, a letter signed "A Derbyshire Farmer," corroborating the statements I made in your number for September last, in reply to certain "objections," "hints," and "suggestions," which "A Middlesex Farmer" had previously volunteered, from an anxiety to promote the welfare of the agricultural community. And, presuming from his silence that your Middlesex correspondent feels convinced of the fallacy of his gratuitous observations, I beg now to inform him, that since my last I have been kindly favoured with the reports of several experiments made this year with guano, in comparison with other tillages, in various parts of the country, all of which exhibit results still more "magical" than those contained in the two treatises perused by your correspondent, and which, as I before stated, tend to establish the accounts already given, demonstrating, as they do most satisfactorily, not only the pre-eminence, but also the *permanence* of the guano.

Should "A Middlesex Farmer" be desirous of perusing these reports, it will afford me great pleasure to supply him with a copy of them, provided he will favour me with his true name and address, directed to T. E. H., No. 8, Exchange Chambers, Liverpool. And I have not any, the slightest hesitation, in saying, that if he will consider them with the same degree of attention with which he informs us he perused the two former treatises, he will not only become more firmly convinced of the erroneousness of his statements and opinions, but will, I am almost persuaded, also become an user of that very article which he has so unmercifully and unjustly condemned, and thus, *by a proper mode of application*, render himself *certain* of its superior efficacy.

At the same time, while considering the reports, I would respectfully solicit him to divest himself entirely of the extremely illiberal idea, that they are prepared "rather to force a profitable sale than to establish truth," inasmuch as all such ideas operate, not only as a preventive to improvements in every science, especially in that of agriculture, but are also a serious check upon the progress of truth, for the establishment of which the entertainers of this and similar ideas, by a strange anomaly, invariably profess a peculiar jealousy.

Probably, however, "A Middlesex Farmer" may be a "disappointed man," in consequence of having been an unsuccessful user of the guano; but this idea, Mr. Editor, did not occur to me when I last addressed you, and, if such be the case, your correspondent ought then candidly and honestly to have avowed it, and instead of virtually calling in question the veracity of some of the most respectable men in the country, it would, I submit, have manifested greater propriety if he had furnished a detailed report of his experiments, impartially showing the mode and rate of application, the description of crops, nature of soil, and cost of the manure he made use of; for then a remedy might have been prescribed, so as to prevent a similar loss in future, all failures being easily traceable to their specific causes. And, assuming—which we certainly are warranted in doing from the tone of his letter—that "A Middlesex Farmer" has made use of the guano, and that his application of it has been attended with failure and vexatious disappointment. Now, such failure may have been occasioned either by his own "improper or injudicious mode of application," as suggested by your Derbyshire correspondents; or it may be, that being desirous of obtaining a somewhat larger profit on his produce, he may have invested his money in a low-priced article, imagining perchance that, if not *quite* so *pure* and potent as the higher priced quality, it would nevertheless produce all the *desired* effects, and perhaps yield him as profitable a return with

a smaller outlay; whereas, in fact, he was at the same time making use of a perfectly worthless article, large quantities of which are at present in the country.

In conclusion, permit me to state that, if your Derbyshire correspondent should feel any curiosity to see the reports I have alluded to, I shall have great pleasure in sending him a copy of them also, if he will address to me as before directed; and, thanking you, Mr. Editor, for your kindness in giving a place to my former communication, which favour I trust you will extend to this, I remain, Sir, your's very respectfully,

AN EYE-WITNESS TO THE EFFECTS OF GUANO.

November 13, 1843.

P.S. I should have attached my proper signature and address to this and my former letter, but was desirous of meeting "A Middlesex Farmer" on his own grounds, and allowing the public to judge of the merits of each case.

RUTLAND PLOUGHING, AND TRIAL OF AGRICULTURAL IMPLEMENTS.—OCT. 13.

In the past week some very interesting experiments and tests of agricultural implements have taken place at Cottesmore; and in fact the whole week was one of great activity, and devoted to public usefulness. On Friday Mr. Baker gave a most excellent review of implements in work to a large party of the most influential practical agriculturists of the neighbourhood. The party met at 10 o'clock, and proceeded to test the merits of the paring plough upon oat stubble: the ground was exceedingly hard, but it cut the whole of the surface quite clear, taking about seventeen or eighteen inches in each furrow by one-and-a-half to two inches deep, and leaving the whole in a fit state for harrowing and burning. This was considered an important operation, and much praise was bestowed upon the holder and maker, William Bellairs, of Langham. It was also tried upon turf, which it raised and set on an edge as neatly as if done by hand; it worked very light, and the dynamometer marked the draught at 3 cwt.!

The party then examined some wheat stubble broken up by the Rutland plough in the present hard and dry state of the ground. The iron roll passed over it; then Biddell's extirpating harrow, which brought all the stubble that had been covered to the surface. The Suffolk iron harrows followed, which reduced the whole into a suitable tilth for receiving the seed. The extirpator thoroughly worked the land to the depth of the plough, at a draught of only 5 cwt.: it was then put upon the unploughed ground, which it worked to the full depth that it was ploughed last autumn most completely, at a draught of only 7 cwt. This implement was highly approved, and we present our readers with a description of it:—Biddell's extirpating harrow is a new implement, invented by Arthur Biddell, of Playford, near Ipswich, and is similar to the Scarifier which bears his name. It is intended for breaking up land when it is too hard for the heaviest harrows, and for bringing winter fallows into a state of fine tillage. In working summer-lands it is calculated, by the shape of the teeth, to bring to the surface all grass and rubbish. The teeth are placed in three rows in order to allow sufficient distance from each other to prevent choking, and the implement is so constructed, as that by means of levers the teeth may be elevated or depressed at pleasure. According to the form of the lands it may be required to operate upon, it may either be used perfectly parallel, or the fore-teeth may be made to penetrate deeper than the hinder ones; whilst those at either side may, when one wheel is required to run in the furrow, be instantly adjusted to the level of the land, so that every tine shall penetrate to a uniform depth of six inches if required; and they will work equally well at any less depth.

Grant's patent lever horse rake was next in operation, and performed its work to the full satisfaction and admiration of all present. This rake is becoming well known, and is rapidly getting into use in many parts of the kingdom.

A series of trials then followed with the ploughs upon strong land barley stubbles, which yielded to the plough. A selection of ploughs was made, and they seemed to do their work well:—The improved Rutland, with patent whipple trees, 2 cwt. 2 qrs.; the Rutland, 2 cwt. 3 qrs.; a plough made by Bellairs, 3 cwt.; Bedford, 3 cwt.; and Z.Z. 3 cwt. 1 qr.—Furrow, 7½ in. wide by 4 or 4¼ deep.

The luncheon was next in order, and afterwards the chaff machines; a description of that which was universally declared to be the best that had ever come under their notice, we subjoin: the chaff engine, patented by Messrs. Ransome, combines the advantages of some of the older plans, with the power of altering the length of the cut, and also avoiding the difficulty of supplying the materials to be cut, so evenly, that it may be delivered at the mouth pressed so close as to stand against a knife. The alteration of the length is accomplished by adding a second shaft, placing the screw upon which impels the rollers upon one shaft, the wheel carrying the knives upon the other, and connecting the two by toothed wheels of varying diameters, and capable of change at pleasure; this introduces a variable rate between the velocity of the rollers and the revolutions of the knife wheel, and the hay or straw is cut into lengths proportionate to such variation. By means of a plate called the presser, the material is secured close together; and this plate in the patent engine, instead of being fixed to the support of the upper roller, has a motion round the axis of it, consequently if the feed is thin the presser follows down, or if thick rises up, so that at all times the proper pressure is applied: the fault of previous engines being, that the proper pressure was insured only when the feed was uniform. Another advantage also is thus gained, inasmuch as no loss of power takes place, for whereas in the old form of engine, a feed that was too thick was pressed also too lightly, and a feed too thin not pressed at all, and the work therefore deteriorated; in this engine a slight pressure is uniformly given, which while it answers the purpose, opposes little resistance to the passage of the material. The parts being strongly constructed, a considerable velocity may be given to the wheel carrying the knives, and from 300 to 350 cuts may be made per minute, through an area of 30 to 50 square inches; 12 cwt. of hay may be cut into half-inch lengths per hour with the power of two horses, and the chaff is so uniform as to require no subsequent sifting.

Three flour mills were then put into work, one grinding wheat into fine flour, coarse flour, and bran; a second grinding barley for pig-feed; and a third grinding barley and separating the fine flour

from the offal or pig fead.—About 40 or 48 minutes is required to grind and dress a peck of wheat. The flour appeared very good, and the bread from it was excellent.

The following is a description of it:—Herbert's patent duplex flour mill is designed for the grinding of wheat and barley, and at the same time to separate the meal of either grain into those sorts which are most suitable for domestic use. In grinding wheat by this mill, there is immediately deposited, in the drawer marked white, fine flour for making white bread; in the other drawer marked brown, coarse flour for making brown bread; while the offal, consisting of coarse pollard and bran, passes down the spout at the end of the machine. In grinding barley, the fine white flour, received into the first drawer, may be advantageously mixed with the wheaten flour to make good bread; and the remainder of the barley meal, being mixed together, will make excellent food for pigs and other animals. This mill is likely to come into extensive use for cottagers.

A further trial of the extirpator took place upon summer-fallow land, and lastly upon strong bean stubble, which it completely broke up, although to the observer the ground was as hard and as crusty as possible.

The ploughs were then worked on the summer-fallowed land.—Improved Rutland, with patent whipple trees, 2 cwt.; Rutland, 2 cwt. 1 qr.; Wm. Bellairs' plough, 2 cwt. 1 qr. 16lb.; Z.Z. plough, 3 cwt.

Thus ended the business of the exhibition, which was declared to be the most perfect and satisfactory that the party assembled had ever witnessed.—Mr. Baker was requested to send the chaff-cutter, the extirpator, and the corn-mills, to Uppingham, on Tuesday.

RIPON.—TESTIMONIAL OF ESTEEM.

On Thursday afternoon, November 16, 1843, a large party of gentlemen assembled at the Black Bull Inn, Ripon, for the purpose of presenting to J. Ord, Esq., of Melmerby, a portrait of himself. Mr. Ord has long enjoyed the esteem of numerous friends for his kindness and urbanity, and no one has exerted himself more to spread that knowledge of improvements which is so necessary to the farmers of the present day. Always willing to make known for the benefit of others, the information acquired regardless of expense or trouble to himself, his neighbours felt that some mark of regard was due from them; and a subscription list being opened, it soon received nearly eighty signatures. Mr. Brown, of Ripon, was engaged, and has produced an admirable likeness. The figure is three-quarters length, sitting in an easy position. The painting is set in a massive gold frame, and its execution elicited general remarks of approval from the company.

The chair was taken by W. Morton, Esq., of Ripon; the vice-chair by T. S. Dickens, Esq., of Kirkby.

After the usual loyal and patriotic toasts had been given, the CHAIRMAN rose, and, after a few preliminary remarks, said—

GENTLEMEN,—We have assembled here this day for the purpose of presenting a testimonial of our esteem to Mr. Ord, and I believe we shall all agree that we do ourselves honour by this friendly offering. It is notorious to us all that Mr. Ord is a gentleman who has resided amongst us for a great many years in high respectability, and has passed his time in one continued round of useful occupations; and I believe we may challenge any district to produce a person possessing more general knowledge on agricultural subjects, or one whose various experiments on draining, on the use of new implements, on the application of manures, and the course of crops, have been conducted with greater accuracy than those of our friend before us. The neighbourhood, in consequence, has derived substantial benefit, Mr. Ord being ever ready to communicate the results of his experiments to his neighbours. Gentlemen, I will now advert to that higher motive by which we were all actuated in standing forward upon the present occasion—namely, to testify our regard for Mr. Ord's private character, as a gentleman of unsullied integrity and of sterling worth, and unrivalled as a friend, a neighbour, and a social companion. May this testimonial of our regard for your excellence and worth, be handed down to posterity as a tribute of the high estimation in which you are held by your friends around you; and may the recital of the circumstances attending the presentation of your portrait hold out an inducement to others to tread in your steps and follow your example, by the imitation of all that is praiseworthy and good; and may your declining years be accompanied with that real enjoyment which is the certain reward of an honourable and well spent life. The Chairman concluded by presenting the picture, and proposing Mr. Ord's health, which was drank with much enthusiasm.

Mr. ORD replied to the following effect:—

Mr. Morton and Gentlemen,—I receive this tribute of your regard with the greatest deference and respect. If any thing can enhance its value, it is the manner in which it has been presented. To see around me such a number of gentlemen, headed by the gentleman who has done me the honour to take the chair—all assembled to pay me this mark of respect—is too much for my feelings, and I am quite unequal to making a suitable reply. My friend has spoken too highly of my character, but I take it as a proof that I stand pretty fairly among you, and I feel very much gratified: to feel otherwise would show me unworthy of your notice and friendship. My name has been coupled with agriculture. I delight in farming. There is an inexhaustible source of labour before us; and to promote the improvement of agriculture, to progress with the improvements in society, and to keep pace with scientific knowledge, is worthy the attention of the most enlightened man. Before I sit down, I must acknowledge the compliment that has been paid me by a lady, and that lady is Mrs. Morton. Will you, Sir, convey to her my high sense of the honour she has done me by allowing her name to appear in the list of subscribers to this handsome present. I conclude with repeating that I receive this tribute of regard with feelings of deep and lasting respect, and beg to return you my warmest thanks for your kind wishes.

The evening was spent in great hilarity; and amongst the healths drank we may notice, "The Mayor and Corporation of Ripon," "Mrs. Lawrence," "T. R. Wayne, Esq.," "Mrs. Morton," "Mr. Alderman Snowdon," "Mr. W. Heddon," "Mr. Williamson," &c., &c.

STEWPONEY AGRICULTURAL SOCIETY.

(ABRIDGED FROM THE WORCESTER CHRONICLE.)

On October 10 (Tuesday)the annual meeting of this Society was held, and, owing to the fineness of the day, and other favourable circumstances, (not the least of which was the kind and courteous attention of Mr. Thompson, the Assistant-Secretary), the whole passed off in the most comfortable manner.

The show of stock on this occasion was much smaller than usual, but there was a good collection of roots and implements, particularly the latter. Large collections were shown by Mr. Hill, of Brierley Hill; Mr. Nock, of Kinver; Messrs. Foster and Orme, of Stourbridge; and Messrs. Proctor and Ryland, of Emscote, near Warwick, and Lister-street Wharf, Birmingham, who exhibited nearly seventy specimens; and many others contributed their quota to the general stock, the whole forming a much larger collection than we had expected to see. Among the articles in the show-ground of comparatively small pretensions, but which was one of the most complete things we ever saw, was a patent rolled five-barred gate, manufactured at the Oak Farm Iron Works. It is patented by Mr. James Bowdell, jun., and, as it is manufactured in a few minutes, is of course very cheap, but, owing to its simplicity, is not likely to get out of order, and is consequently very durable.

The ploughing-match came off in a field belonging to Mr. Yardley, on the Stourbridge-road, about half a mile from the Inn. The principal feature in the landscape (apart from the hills by which the prospect was bounded) was the domain of Prestwood, and the mansion of its esteemed owner, J. H. H. Foley, Esq., who, as well as Mr. Thompson, laid us under great obligation by the anxiety he exhibited to conduce to our comfort and enjoyment. There were six entries for the ploughing-match, the whole being G. O. ploughs. In another part of the same field the operations of a plough, on a new construction, attracted much attention. It is the invention of Mr. Curzon, of Kidderminster (who calls it the turn-tail plough), and is peculiarly adapted for hill-side ploughing, as it is constructed on the double principle, each end being similar, and will work in the same furrow without turning. On finishing a furrow, instead of turning the plough round, the horses are unhooked and fastened to the other end, and the operation goes on without the trouble of shifting the plough, a great advantage in hill ploughing, though we should add that the plough is equally applicable to land in all situations. In an adjoining field a subsoil plough was at work, together with an improved scarifier or "flay" belonging to Mr. Hill, of Brierley Hill, both of which instruments were much admired. The arrangements in the show-yard, at the ploughing-match, and in the pavilion were first-rate, showing that the worthy secretary (Mr. Foley) and his able assistant (Mr. Thompson) had entered into the proceedings of the day *con amore*.

THE DINNER,

was served up in a spacious pavilion, expressly constructed by Mr. Barney of Stourbridge, and Mr. Smith of Oldswinford. Soon after four o'clock nearly 150 gentlemen set down to dinner, which was served up in a manner which fully bore out the high reputation which the worthy host and hostess (Mr. and Mrs. Davies) have long sustained.

The chair was ably filled by the President of the Society, Sir R. Pigot, M.P., and the Rev. Mr. Wharton performed the duties of chaplain. Among the gentlemen present were Sir Thomas Winnington, Bart., M.P., Captain Winnington, J. Foster, J. H. H. Foley, G. Grazebrook, W. Grazebrook, G. Bate, W. B. Best, W. Moseley, J. Brown, F. W. Fryer, W. B. Collis, E. Rogers, R. Price, J. Matthews, H. Saunders, J. Jasper, T. Bache, W. Stokes, G. Thompson, and W. H. Freer, Esqrs., &c., &c.; the Revds. Dr. Penfold, J. Peel, C. Jesson, G. Wharton, C. Whitmore, J. Topham, and E. Hardwick; Messrs. J. Yardley, E. Pratt, G. Hackett, F. R. Roberts, J. Freer, Oates, Smith, Barney, Starling, Mellard, John Robins, J. Newbold, — Thompson, jun., &c., &c. Among the spectators on the ground there were the Rev. Prebendary Ingram, C. Noel, W. Foster, P. Foster, W. Foster, jun., T. Thursfield, John Crane, and H. Bate, Esqrs., &c., &c. The cloth having been removed, and the dessert put upon the table,

The CHAIRMAN gave "The Queen;" and then "The Queen Dowager, Prince Albert, Albert Edward, Prince of Wales, and the rest of the royal family," both of which toasts were drunk with the usual honours.

The Rev. J. PEEL said he rose with unaffected diffidence to propose the health of the Judges, because he should have been much better pleased if the toast had been placed in the hands of some one better acquainted with the interesting subject which now occupied their attention. Though it would be presumption in him to offer remarks upon the stock or implements which had been exhibited, still there were circumstances connected with the meeting of that day to which he hoped he might be permitted to allude. They had all read in the papers accounts of similar meetings to that at which they were then present, and though they might have been of more importance than theirs as regarded the amount of stock exhibited, yet he doubted if the implements had been better or more numerous than those which they had seen that day. The advantages of these societies were many, and of the highest importance (*hear*). They removed prejudice, they spread useful information, and brought those who were separated by distant residence or other causes into friendly intercourse. For these reasons he wished them well, but he would remind them that, however sincere these wishes might be, they must be ineffectual unless they were accompanied by a corresponding degree of zeal and exertion on their parts, because in that, as in everything else, success could only be expected from perseverance. He called upon them then to promote the objects for which they were assembled, and he could not perhaps point them to a better or more useful example than that of his hospitable friend and neighbour who instituted the society, to whose sacrifices of time and money it was mainly indebted for its continuance, and to whose superintendence it must look for prosperity (*loud cheers*).

Mr. FOLEY (who was set down in the printed list of toasts to respond to the sentiment given by the reverend gentleman) then rose and said: Whatever difficulty I might, and always do, feel in addressing you, that difficulty has been greatly increased by the kind but flattering remarks of my friend Mr. Peel; but I may say, as secretary, I am happy to be able to give a good account of the state of this society, which at the present time consists of 230 members. The funds have been greatly assisted by the liberal premiums given by different gentlemen on this day, and I hope to see their good example followed for

next year. The society is, I am glad to say, without any debts, and will have a small reserved fund left at the end of the year to make it independent of any accident that may occur. *(Cheers.)* There can, I think, be no doubt that the usual good results have attended the formation of this society, as well as others of a similar description, but being now completed, I am anxious to see its utility increased as much as possible, and I trust I am not taking too great a liberty in pointing out the means by which I think that can be done. *(Cheers.)* They are these. By reading the accounts of the proceedings of other societies, by discussing them, and, what is of still more importance, by trying the systems and experiments recommended, and reporting the results when done. I would recommend you strongly to form a farmers' club, attached to this society, however small the number you begin with. Surely twelve competent gentlemen, out of your number of 230, may be found willing to become members of it ; let them select twelve subjects they consider most connected with the agriculture of this neighbourhood ; let them fix on one for discussion once a month, and report their opinions to the committee of this society. You have now in your library nearly one hundred volumes, comprising most of the recent works on all agricultural subjects, which any member may have to read by applying for. It is reported that the members of the Agricultural Society of Scotland have given Professor Johnston a salary of 500*l.* a year to assist them with his knowledge of chemistry and geology : we cannot attempt to do anything so magnificent, but let us take the best means afforded us. We have in our library the lectures of Professor Johnston, and his recommendations of various experiments with new manures founded upon those lectures, together with the results of many of them tried by Scotch gentlemen, in 1841 and 1842, with reasons as to the probable causes of their failure or success. Why should we not try these and other experiments on the soil of our own farms? *(Hear, hear.)* There is an old saying that "seeing is believing," and one good farm showing experiments successfully tried will do more to improve agriculture in the district of this society than anything else. *(Cheers.)* Let us then use our books, clubs, modern implements, and manures, as a means only whereby we may obtain an end, and consider them as parts of a model, which, carefully put together, will show at one view the intention and result. *(Loud cheers.)* Mr. Foley then proceeded to say that before he sat down he wished to announce that Lord Lyttelton would give two premiums for labourers to the amount of £5 (*cheers*), and he (Mr. Foley) would also be happy to give premiums to the amount of £10 for the following year. (*Renewed cheering.*) The committee had also determined to give a prize for the year 1849, the terms of which he read, as follows :—

"Ten sovereigns to be given by Mr. Foley, in addition to twenty offered by the society, for the best essay on the results of spade husbandry. The ground to be double trenched in the year 1844 (and also in 1845 at the option of the candidate), but, in succeeding years, to be cultivated in the usual manner ; the quantity to be not less than seven acres of land, belonging to or in the occupation of a member of the society, and the land to be within the society's limits, and to be in one field. Notice by candidates to be given to the secretary before Saturday, the 4th of November; the land to be measured and valued, and its marketable letting value to be ascertained by an experienced land surveyor, to be nominated by the society ; the expense of such valuations to be defrayed in equal portions by the candidates. The reports of the surveyor to be lodged with the secretary and registered. The same surveyor (if living) to make another survey of the land, when the experiment shall have been completed, and, in case of his death, the society to appoint another surveyor, whose charge shall be paid in the same way as above stated. A plain statement to be made of all expenses and receipts of all produce and cultivation during the years 1844, 1845, 1846, 1847, 1848, and 1849, including the interest of money expended, showing a debtor and creditor account of the profit or loss of the six years, with remarks on the advantages or disadvantages accruing therefrom."

Gentlemen might think this a long time to look forward to, but still he thought it involved an important question, and doubted not but that some gentleman would take it up. Mr. Foley then resumed his seat amid loud cheering.

The successful candidates for the labourers' prizes were then ushered to the cross table, and congratulated by the Chairman, in kind language, upon their success. After concluding his address to the labourers, the Chairman read the awards of the Judges, as follows :—

JUDGES.

Turnips, Roots, Stock, &c.—John Jasper, Esq., Mr. F. R. Roberts, Mr. G. Hackett.

Implements and Prizes for public competition.—Jeremiah Matthews, Esq., Wm. Stokes, Esq.

Essay.—The Royal Agricultural Society has kindly consented to decide this prize.

REWARDS AND PREMIUMS.

Ten sovereigns for the best crop of Swede turnips, not less than ten acres ; the expense of manure, quality of the land, and the general appearance and cleanliness of the (whole of the candidate's) turnip crop, to be taken into consideration. No person to be eligible as a candidate, who has not in the opinion of the Judges a proper quantity of turnips in proportion to the extent of his farm.—To Mr. Richard Evans, of Pendeford, near Wolverhampton.

Five sovereigns for the second best crop of Swede turnips, subject to the same conditions.—To Mr. John Yardley, of Stapenhill, near Stourbridge.

Five sovereigns to the occupier of any farm, under one hundred and twenty acres, who shall produce the best crop of turnips, according to the nature and quality of the soil, thoroughly cleaned from weeds, and regularly thinned. The number of acres to be in proportion to the quantity of arable land in such farm.—To J. H. H. Foley, Esq., Prestwood; Mr. Charles Harris's (Trysull) Swedes highly commendable.

Five sovereigns for the best essay on manures, to be founded on experience or observation alone—The Royal Agricultural Society undertook to adjudicate upon this prize, but, from some cause or other, their decision has not been received.

ROOTS.

Three sovereigns for the best exhibition of turnips, carrots, potatoes, cabbage, and mangel wurzel, not grown in a garden; the Judges have the power to divide this prize if they think proper.—Two sovereigns to Mr. Foster, Wordsley House ; one sovereign to Mr. Pratt, of Wanderton.

SEEDS.

Two sovereigns for the best exhibition of agricultural seeds, grain not included.—To Mr. John Perry, of Stourbridge.

WHEAT.

Two sovereigns to the exhibitor of not less than three bushels of the best wheat, grown by the exhibitor, and the produce of the harvest of 1843, (given by Mr. Perry, of Stourbridge).—To Mr. Baynton, Trysull.

BARLEY.

Two soverigns to the exhibitor of not less than three bushels of the best barley, grown by the exhibitor, and

the produce of the harvest of 1843.—Not sufficient merit.

The Prizes to Labourers and Servants in Husbandry were next read.

LEICESTER OR LONG-WOOLLED SHEEP.

Five sovereigns for the best Leicester, or long woolled yearling ram, bred by the exhibitor.—To Mr. John Wilson, Aston.

Five sovereigns for the best pen of five yearling Leicester ewes, bred by the exhibitor.—To Mr. Edward Pratt, Wannerton.

Fifty shillings for the second best pen of five yearling Leicester ewes (given by Mr. Pratt, of Wannerton).—To Mr. John Wilson, Aston.

Four sovereigns for the best pen of five yearling long woolled ewes, bred by the exhibitor, and kept regularly with the flock up to the day of exhibition (given by Mr. Foster, of Wordsley House).—No candidate.

Five sovereigns for the best pen of five yearling long woolled wethers, bred by the exhibitor (given by Mr. J. Wilson, of Aston).—To Mr. Edw. Pratt, Wannerton.

SOUTHDOWN OR GREY-FACED SHEEP.

Five sovereigns for the best Southdown yearling ram, bred by the exhibitor (given by Mr. Foley, of Prestwood).—To the Rev. T. Baker, Hartlebury.

Five sovereigns for the best pen of five Southdown or grey faced yearling ewes, bred by the exhibitor.—To Mr. John Davis, Stewponey.

Five sovereigns for the best pen of five Southdown or grey-faced yearling wethers, bred by the exhibitor.—To Mr. William Perry, Lye.

PIGS.

Two sovereigns for the best in-pig or suckling sow.—To Mr. James Parish, Enville.

One sovereign for the second in the same class.—Mr. W. Foster, Wordsley House.

Two sovereigns for the best boar, bred by any person, but the property of the exhibitor.—To Mr. James Parish, Enville.

One sovereign for the second in the same class.—To Mr. Edward Banister, Wall Heath.

Two sovereigns for the best pen of not less than four store pigs, of the same litter, and under six months old.—To Mr. Foster, Wordsley.

PRIZES FOR PUBLIC COMPETITION.

To Manufacturers of Agricultural Implements.

Five sovereigns for the most extensive exhibition of the most useful agricultural implements.—To Mr. Edward Hill.

Five sovereigns for the most useful, new, or improved agricultural implement.—To Mr. Nock, for Gooch's barley machine and hummeler.

Three sovereigns to the owner of the best plough for general purposes.—To Mr. E. Hill.

Two sovereigns to the owner of the second best plough.—To Mr. John Wilson.

EXTRA PREMIUM.

Given by J. H. H. Foley, Esq.

Ten sovereigns for the best exhibition of agricultural implements for all purposes, either worked by steam or otherwise. Specimens of the best constructed carts and waggons, machines for ventilating ricks, stubble lever, horse rakes, &c., will be considered a useful addition to the above.—To Messrs. Proctor and Ryland.

CONTRIBUTORS TO THE SHOW.

Mr. J. G. Watkins, Woodfield House, Fat Leicester ewes (highly commended); do., do., Store Leicester ewes; do., do., yearling Leicester ram. Mr. W. B. Best, Blakebrook, pigs (very commendable). Mr. Foley, Prestwood, flatpole cabbage. Mr. Foster, Wordsley House, Heifers; do., do., bull; do., do., horse. Messrs. Young and Spence, various implements. Mr. Thomas Bedward, ditto. Mr. Hammond, one implement.

Mr. Moseley, in proposing "The Judges," said that this year there were nine candidates for Swedes and one for the others, while last year there were no less than 16 competitors. He trusted there would be more next year, as it was most important to cultivate turnips. He hoped that all would strive to the utmost in this respect, and if any tenant of his gained the prize for turnips, he would reward him as well. (*Cheers.*) After eulogizing the judges for their impartiality, Mr. Moseley concluded by proposing their healths.

Mr. Jasper, after appropriately replying to the toast, said that the judges wished to make a few observations in reference to the best turnips. It was generally allowed that this was not a turnip year. (*Hear, hear.*) The early part of the year was against the crop, but, taking that into consideration, and taking the worst 10 acres on Mr. Evans's farm, they agreed in saying that they must be called excellent. (*Cheers.*) Taking his crop of Swedes of 104 acres, his turnips 36, and 20 acres of carrots and cabbages, as regarded Swedes, it was a most difficult task for any man to say which was the best 10 acres, they were so uniformly good. (*Cheers.*) Taking the whole together, the Swedes and common turnips, they were a most excellent crop—they were superlatively good. (*Renewed cheers.*) Mr. Yardley's crop was also particularly good, and did him a vast deal of credit. (*Cheers.*) Mr. J. concluded by saying that it would always give him great pleasure in rendering any service he could to this most useful and important society.

Sir Thomas Winnington said that the next toast had been entrusted to his care, and however unable he was to propose the health of their worthy president (*cheers*) as it ought to be done, still he was most happy to do so. From the distance of his residence from that of their esteemed Chairman, many present could say more of him as a landlord and a gentleman than he could, but he believed he was only telling the truth, when he said that no one was more anxious to carry out the principles of their Society than was his worthy friend, the President, whose health he now begged to propose. (*Loud cheers.*)

The Chairman acknowledged the compliment in a very able speech. After apologising for his previous absence from their meetings, he proceeded—"But though I appear before you for the first time, I can assure you I have viewed your proceedings with great pleasure, and am fully sensible of the value of this Society. (*Hear, hear.*) When I witness, as I have done this day, the objects for which the Society is established—when I see the admirable manner in which arrangements are made for attaining that end — when I see farmer contending against farmer in amicable rivalry, grazier against grazier, and machinist against machinist—again, when I see the man of science stepping in to add his quota to the fund of knowledge daily increasing—but, above all, when I see good placed in such striking contrast to that which is bad—so striking as to bring home to the least enlightened in the agricultural community those points in which perfection lies—I come to the decided opinion that, in the present distressed state of agriculture, and the almost impossibility of accommodating an old system to a new state of things, it is through the medium of such societies as these, and these alone, that we can hope to throw off the weight that oppresses us, and promote the regeneration of agriculture. (*Loud cheers.*) I trust there is no one so blind in this day, as not to see that a sort

of public interdict has gone forth against the return of high prices throughout the world (*hear, hear*), and, apart from all political influences—though no doubt it is very agreeable to us to be able to talk over those days when sowing and gathering were mere mechanical operations, and when the profits were sufficient to cover any deficiency, either of produce, industry, or skill—depend upon it those days will never return. (*Hear, hear.*) Agriculture is now a science, and as a science we must treat it. Throwing aside all those prejudices which rural life is apt to engender, let us all join together in one cordial effort and see if it is not possible to restore to agriculture its former ascendancy. (*Cheers.*) See, gentlemen, what these societies have already done for you in combatting two of the worst enemies you have—water and weeds. (*Laughter and cheers.*) Why, I believe I am in a condition to state that, such are the improvements now introduced into draining—and I believe we are more indebted for them to Mr. Smith, of Deanston, than to any one else—deep draining is exploded. Thirty inches only is now found to be sufficient, and the operation is so simple and easy, and the price of tiles so reduced, that the landlord who likes to get them finds the sacrifice but trifling; and the tenant, even, who meets with due encouragement from his landlord, would not expend more per acre in draining than he is now spending in artificial manures. (*Cheers.*) Now, as I know farmers like facts, I will state a fact as to the price of tiles. I have begun to manufacture them, and I offer them to the public (*laughing*) at twenty-two shillings per thousand. (*Roars of laughter.*) Well, I believe, with the exception I have stated, you have no worse enemy than weeds. (*Hear, hear.*) All I have spoken to to-day admit that you may break up the scutch, and tear it as much as you please, but in the ground it will remain, and grow and ramify in future years. Now, I think an instrument has been discovered, that will cure all the weeds under the surface of the ground. (*Loud laughter.*) I regret exceedingly that it has not made its appearance here to-day—it is "Bright's revolving harrow."

Mr. Foley: It was here last year.

The Chairman resumed: "Well, I am sorry that it has not made much progress among you, but having tried it myself, I can say that a more effectual instrument a farmer cannot have." He then proceeded to speak of the selection of manures and seeds, remarking that as men were vieing with each other in giving cheap food to men, why should not farmers endeavour to give cheap food to the land. He did not wish to convert them into chemists or vegetable physiologists, "but," he continued, "if I had more knowledge of the decay of substances and the operation of manures upon the soil, I am sure I should not think myself less accomplished, but a much better farmer. (*Cheers.*) What I ask you is, while there is such disposition from all to impart knowledge, to come forward and meet your friends half-way." He next reminded them of what they had been glad to do in times that were past, remarking that if gentlemen had not stepped forth and asked for information where it was to be got, he did not know what would have become of them, and concluded by again asking them to meet half way those who were disposed to give them the information which the world was acquiring day after day. (*Loud applause.*)

Mr. Best proposed, "Agriculture, manufactures, and commerce."

Mr. Foster responded to the toast.

Mr. Foley then rose to propose "Success to the Stewponey Becher Club," in doing which he said—"I must beg to remind you that at our general meeting, two years ago, it was determined to afford to the labourers and the lower classes generally within the limits of this society, the means of making an equitable insurance for an annuity, payable after a certain age, and also a sum at death, with weekly allowance in sickness, by means of a club and insurance office united; and I am happy to inform you that our efforts have been successful—(*cheers*)—notwithstanding the depression of the times and some very heavy payments made to the parties insured. And here permit me to mention an extraordinary instance of the great uncertainty of human life, and therefore of the advantage of providing for it. A lad, of the name of James Felton, entered the club on the 5th September, 1842, aged 18. He obtained a certificate of health from the medical officer at the time, but afterwards caught a cold, which he neglected, and then became consumptive, and died in May last. His payments to the club were 10s. for ten months, and 3s. 4d. for medical relief, making 13s. 4d. He received seven weeks' pay at 6s., amounting to 2*l.* 2s., and 6*l.* were paid to his friends at his death, amounting altogether to 8*l.* 2s. By the monthly report sent me last week the state of the club is as follows:—Number of members, 171; club money invested in the Bank of England by the Commissioners for the reduction of the National Debt, 100*l.*; ditto in the Savings'-bank, 18*l.* 3s. 7d.; cash in hand in the honorary fund, after paying all expenses, 16*l.* 16s. 7d. Subscriptions due, 42*l.* 19s. I trust you will agree with me that this is a satisfactory account of the poor man's insurance office, established in bad times, and which has not been in operation eighteen months. (*Loud cheers.*) A set of account books has been procured, in which the whole system is arranged in the most simple manner, and can be balanced at any time in half an hour. I hope that the prejudices we have had to contend with against this act of justice are fast subsiding, and that though we have quietly left the club to work on its own merits, we may expect in better days to have a considerable increase of members and many new districts formed. (*Cheers.*) Mr. Oates, of Stourbridge, to whom great credit is due for the excellent manner in which the accounts are kept, will be happy to show the books to any gentleman who will favour him with a call. (*Applause.*)

W. B. Collis, Esq., rose to propose "Practice with science." He regretted very much that the toast had fallen to him instead of Mr. Scott (for whom it was originally intended), not only because he would have done it so much better, but also because the meeting would have been glad to have seen him there. All who were present that day must have been convinced of the importance of combining science with practice. The appearance of the roots that day—Mr. Foley's, as well as Mr. Foster's and Mr. Pratt's, but particularly Mr. Foley's, as his were grown on very poor land—must have convinced them of the importance of resorting to science in growing their crops. The President, continued Mr. Collis, has stated that he is a manufacturer of tiles, and he has also said that the landlord would be glad to meet the wishes of the tenant; but, at the same time, I do think that if the tenant had a more fixed tenure in the land—(*cheers*)—that the landlord would not only get as good rents, but better perhaps, and more regularly paid—and it would be to his advantage as well as to the advantage of the tenant. (*Loud cheers*). There is no other means of accounting for the prosperity of the Scotch farmer, except that he has a better tenure than we have. (*Cheers.*) I read with great pleasure a speech of Lord Hatherton, in which he said that light and poor lands were not only better cultivated where the tenant had got a lease, but the tenant was able to pay much higher for them. (*Cheers.*) We must also recollect the very able paper, by Earl Spencer, on Lord Leicester's farm—very light soil which has been reclaimed, but which now grows excellent crops. It is quite impossible a tenant can do this unless he has

a fixed tenure—*(loud cheering)*—because, whatever may be his faith in his landlord, circumstances over which he has no controul might occur—the tenant himself might die as well as the landlord, and then his family would not have any return for the money which he had spent upon the soil. *(Cheers.)* Besides, great advantage must arise to the landlord as well as the tenant, because the land would be very much benefited, and thus become more valuable. I lately read a speech of the Earl of Stair, in Worcester—and I find the farmers there are framing it—in which he says he will grant his tenants leases on certain terms; no scutch is to be burnt, and the tenant is to lay out money as well as the landlord, and the only advantage to the tenant—and a great one it is—will be that he is to have a lease. After a few more observations, Mr. Collis resumed his seat amid loud cheers.

The Rev. T. BAKER proposed "The Agricultural Labourer."

Mr. W. GRAZEBROOK proposed "The Successful Candidates."

Mr. FOLEY rose and said, as the other successful candidates were bashful, he supposed he must reply. Though he did not wish the prize to be given, from the fear that there would be so many competitors that the society would be put to great expense, yet he was not sorry he had obtained it, because it showed him what might be done with poor land—land which was so bad that no one would wish to have it. He knew he could not make it worse, and he determined to see if he could not make it better. He thought, also, that he would try if it would not only grow something, but pay, for that was the true test of farming. *(Cheers.)* His tenants had very kindly, on many occasions, adopted his advice in trying experiments, and he could safely say that he had never recommended anything that had not paid. *(Cheers.)* Mr. Foley then said that on the poor wretched land upon which the crop had grown, he found there was what was called "a pan," which he had got rid of by double trenching, which, in itself, was a good thing, as it employed a good many labourers. He next proceeded to give some highly interesting details respecting his mode of treating a crop with four sorts of manure, viz., farmyard, guano, Fisher's fertilizing compost, and bones; but we regret to state that our space will not allow us to enter into them.

The Rev. Mr. BAKER also returned thanks, and said that he intended to hand over his prize to the Stewponey Becher Club. *(Cheers.)*

The CHAIRMAN then proposed "The Royal Agricultural Society of England," in doing which he said if there was one thing more remarkable than another in these times of strong political feeling, it was that men of all parties should forget their differences, and unite in the formation of societies so eminently useful to agriculture as they had within the last two years proved themselves to be. *(Cheers.)*

The Rev. G. WHARTON proposed the next toast, "The Exhibitors of Implements." They must all have witnessed the collection of implements in the show yard that day, and he hoped the farmers would purchase their machines of those who were at the trouble and expense of exhibiting them. If farmers did not use machinery they stood in their own light, and if they could not afford to purchase as many machines as they wished to have, or did not farm extensively enough, perhaps two or three neighbours could unite together, and thus get a set between them. *(Cheers.)*

Mr. Hill, Mr. Wilson, and Mr. Curzon severally returned thanks.

Mr. FRYER proposed the next toast—"The Honorary Contributors to the Show," in two or three brief sentences.

Mr. FOSTER returned thanks in a humorous speech, and expressed a confident hope that they should next year have a steam plough to exhibit. *(Cheers.)*

Mr. CURZON said he should be very happy to do all he could to forward Mr. Foster's object. *(Cheers.)*

The CHAIRMAN then gave the last toast on the printed list, which was "The Unsuccessful Candidates."

WAKEFIELD FARMER'S CLUB.

ON THE POSSIBILITY OF GROWING WHEAT OR OTHER CROPS, SUCCESSIVELY AND PROFITABLY, ON THE SAME LAND WITHOUT EXHAUSTING THE FERTILITY OF THE SOIL.

BY HENRY BRIGGS, OVERTON, NEAR WAKEFIELD.

The short paper which I am about to read to this society, I must, on the outset, acknowledge to be more of a speculative and theoretical nature than based upon real and sound practical proof, and many, no doubt, will at first smile, and consider as quite Utopian, the doctrines that are advanced; but as we have no rule in our society that precludes a member from introducing merely theoretical speculations, which may not have been actually reduced to practice, when they are intended to further the cause of agricultural improvement, I do not hesitate to bring forward what has occurred to my mind, in the course of the little leisure time that I have lately devoted to the study of chemistry as applied to agriculture. Being an occupier of nearly 850 acres of land, it may be presumed that the prosperity and improvement of agriculture is to me an object of no mean interest.

The prime object and endeavour of the farmer ought always to be, to raise from the land the greatest possible quantity of the most nutritive and valuable produce, and at the least cost. I imagine that we must mainly look to chemistry as the agent whereby this is to be effected, not only as it teaches us what ingredients we should apply to our land, for the purpose of affording nutriment to the plant, but also as it instructs us what substances may be introduced into the soil, in order to correct or neutralize what is hurtful therein. I trust that I need not, in this company, dilate upon the benefits that may accrue to the agriculturist by the study of chemistry, although I am aware that there are numbers who ridicule the idea of the applicability of that science to the cultivation of the land; even the most common and every-day operations on the farm may be referred to chemistry, in its more enlarged sense, for an explanation of their efficacy. It is a very common remark, that theory and practice seldom go hand in hand; but I maintain that few useful inventions or discoveries are realized, of which the first ideas and preparatory trials have not been dictated or suggested by theory. If there were no theorists in the world, there would be fewer important inventions and discoveries. Let us not, then, scout and ridicule all theory as idle and visionary, merely because it does not square with our pre-conceived notions; but let us always, calmly and dispassionately, enquire whether any new schemes or ideas on any subject that are propounded to us, may not be grounded upon substantial and rational principles. If land be still unproductive, after being thoroughly drained (for I consider draining as the very foundation of all good husbandry), the best and most rational mode of proceeding is, to ascertain the cause of its infertility by chemical analysis; and this, combined with a knowledge of the constituents of different cultivated plants, will give an idea, as I before stated, not only of what ingredients are deficient in the soil, necessary for the proper development of the cultivated plant, but will also detect anything injurious to vegeta-

tion that it may contain, for the correction of which chemistry again teaches us what substances to introduce. The analytic table by Boussingault and Sprengel, which I have had reprinted, and which I believe is in the possession of every member of our society, gives some idea of what substances plants are composed. As an instance of the benefit of analysis, I may here briefly mention that on a recent chemical examination of the soil of several of our fields at Flockton, Mr. Haywood, the analytic chemist whom we employed, discovered in it an appreciable quantity of phosphate of iron, and traced this substance to be the cause of the red rust which so frequently attacks the wheat. To satisfy himself that the presence of this substance was the cause of that disease, he collected a quantity of this rust, which he minutely analyzed, and he satisfactorily proved that it was composed of phosphoric acid and iron—a combination which, it appears, is injurious—but to ascertain a mode of correcting or decomposing this injurious compound, he subjected it to the action of quick-lime, when he discovered that two fertilizing substances were immediately formed, namely, phosphate of lime, which is the chief ingredient of bones, and peroxide of iron, which also is a substance possessing fertilizing properties, both from its being an ingredient in many cultivated plants, and from its having the power of fixing ammonia. The known fertility of many of the red soils is owing to the presence of this latter compound, and the efficacy of burnt clay, as a tillage, is in a great measure due to the conversion of the *protoxide* into the *peroxide* of iron, by the operation of burning. On afterwards examining fields of wheat which had been lately limed, and others which had not been so treated for many years, in the former we did not discover the rust, but in the latter it was very prevalent.

But to proceed to the more immediate subject of this paper.—It is generally supposed by agriculturists, that it is vain to attempt to preserve arable land in a state of fertility, except by adopting a rotation of crops. That this mode of culture has the desired effect, I by no means deny, nor am I disposed to doubt that land can be cultivated to a profit upon this principle; but my mind has lately been much impressed with the speculation, whether a more economical method of raising and producing the necessary food for man may not be discovered. Many farmers, I believe, consider their corn crops as those which are to enable them to pay their rents, and view the intermediate green crops as merely preparatives. Some descriptions of land are calculated more for raising to advantage one kind of produce, and other natures of soil more adapted for a different product. Now, on the four-course or common system, namely, turnips, barley, clover, and wheat, whether the land be either light or stiff, it will not, from general experience, be suitable for the best production of more than two out of four of these crops; for it is found that the two former (turnips and barley) thrive the best on light land, and the two latter (clover and wheat) on stiff land, assuming, at the same time, that it is properly drained. Supposing that this principle, namely, the adaptation of different soils to different crops, is admitted, an interesting enquiry ensues—cannot those soils which are more adapted for the profitable raising of any given crop be confined to that production without destroying their fertility? The purport of this paper is to enquire into the possibility of accomplishing this desideratum.

In order to arrive at a true understanding on this subject, we must enquire what food vegetation requires for growth and the preservation of life; and then proceed to consider the most efficacious and cheapest method of supplying that necessary food, and whence it may be derived.

There are three sources from which this food may be supplied, namely, from the air, water, and the soil; and the vehicles through which the plant imbibes its food are the roots and the pores of the leaves. I think that every one will acknowledge it is fair reasoning to conclude, that those substances of which plants, on analysis, are found to be constituted, must be the most likely to afford materials for building up their structure; in fact, it seems almost superfluous to make this remark, as it is, indeed, a truism to say that a thing is composed or made of the materials which compose it; if you wish to build a house, you must of course supply the bricks, stone, or other materials, in necessary quantity, before you can accomplish your purpose. On reference to the analytic table, you will perceive that ninety-six to ninety-eight parts of plants, out of every hundred, are gaseous or volatile—that is, they are dissipated by the action of fire, and that the remaining two to four per cent. of constituents are solid or fixed in their nature. These volatile constituents are water, carbon, and nitrogen. The first is, of course, supplied by rain; the second chiefly from the air, in the form of carbonic acid (which is a combination of carbon and oxygen), and partly from the vegetable matter in the soil; and the last (nitrogen) is derived from ammonia (a combination of nitrogen and hydrogen), which is partly afforded to the plant by rain-water that is usually impregnated with a perceptible quantity of that compound, absorbed from the atmosphere when it was floating there in a gaseous state; and the remaining part is derived from the decay of animal matter or stable manure introduced into the soil. It is ascertained by vegetable physiologists that the plant imbibes these volatile constituents through both the roots and the leaves. The fixed or solid constituents are eleven in number, namely, potash, soda, lime, magnesia, alumina, iron, manganese, silica, sulphuric acid, phosphoric acid, and chlorine, or the base of muriatic acid. I believe that these are considered all to be introduced in a state of solution through the root of the plant; and, consequently, the soil must be the means by which that introduction takes place. If the analysis referred to be correct (I say if, for I do not vouch for its accuracy), and the previous reasoning be also founded on proper principles, it unavoidably follows that, when the soil contains all the substances above enumerated in proper proportions, without, at the same time, any large intermixture of deleterious ingredients, a good crop may be calculated upon; and, whenever these substances are exhausted in the land by the removal of the crop, it appears to me that their restoration, by artificial means, may reasonably be expected again to place it in a fit state to perform the same work; and so on, *ad infinitum*, provided that proper cleanliness and extermination of weeds are attended to. Should this be found feasible, the farmer may select that description of crop, for the growth of which his land is most adapted, or upon which he can make the most profit, and confine his attention conti-

nuously to the cultivation of that crop, provided it be not of such a nature, or has necessarily to be sown at such a time, as to preclude the possibility of his effectually cleaning his land.

I shall now proceed to state the means by which I imagine this important object may be accomplished, and shall take wheat as the crop which I should wish to cultivate continuously. The tillages required per acre in this case would be :—

		Cost per Acre. £	s.	d.
Water and carbon, 6,395lbs..	which would be supplied by the rain or air	0	0	0
Nitrogen, 88lbs.....	of which, it is calculated, about 65lbs. would be supplied by the rain, and the remainder by one ton of farm-yard manure and two bushels of bones, afterwards mentioned	0	0	0
Potash, 6lbs.....	at 4d. per lb.....	0	2	0
Soda, 6½lbs. ..... Chlorine, 1½lbs.....	amply afforded by one stone of common salt (being a combination of their substances)	0	0	2
Lime, 12¾lbs..... Magnesia, 3½lbs.....	afforded by one bushel of Brotherton or Knottingley lime..	0	0	6
Sulphuric acid, 2¾lbs.	supplied by 6lbs. of sulphate of lime or gypsum	0	0	2
Phosphoric acid, 8¾lbs.....	amply supplied by two bushels of bones, at 1s. 6d. per bushel	0	3	0
Farm-yard manure, 1 ton ..	affording 11lbs. of nitrogen, a quantity of carbon, and a small portion of other constituents.....	0	7	0
	Total cost of tillages, per acre, per annum.....	£0	12	10

N.B.—Alumina (the basis of clay,) silica or sand, and the oxides of iron and manganese, are generally naturally in the land in sufficient quantity.

According to this theory, therefore, wheat may be grown successively on the same land (provided that nothing deleterious exists in the soil), at an expense in tillages of 12s. 10d. per acre per annum, and the land not be injured by the process. But I would here remark that it might probably be advisable to apply about one-third more of each of the fixed or mineral constituents (potash, &c.), in order to make up for any waste that may arise by dissipation from the plants not imbibing them with sufficient rapidity, which would increase the expense about two shillings per acre; and the application at twice (half each time), at an interval of two months, might also be preferable, especially of those constituents which are the more soluble. The quantity of lime here mentioned is necessary for the proper growth of the crop; but if any injurious ingredients in the soil require correcting, a much greater quantity may be, and most frequently is, required. The efficacy of guano as a manure, when applied alone, I conceive to be attributable to the circumstance of its containing all the necessary constituents of plants —a virtue which is possessed only by those manures which are of animal origin. Other reputed tillages are, I believe, efficacious merely when those constituents in which they are deficient, are either present in the soil, or are introduced artificially; hence the solution of the occasional failure of bones, rape-dust, &c. As an instance of the value of guano as a fertilizer, I may mention that in two separate fields we have turnips now growing on plots of ground, side by side, each of an acre in measurement, one plot in each situation having been treated with 15 tons of farm-yard manure, at a cost of 5*l.* 5s., and the other with 3¼ cwt. of guano alone, value 2*l.* 5s. The latter turnips are, in both instances, far more luxuriant in their growth.

The same principle, as referred to the continuous growth of wheat, I imagine may be applicable to all other cultivated crops, the constituents of which may be learned by reference to the table of analysis; but I must here remark that I believe there is an error in the statement of the exhaustion per acre of fixed constituents in the table referred to, as far as turnips, cabbages, and green crops are concerned, as these different kinds of produce were analyzed in their dry state, and the statement per acre is made in their green or sappy state. For this reason, the fixed constituents of Swede turnips ought to be only one-tenth of what is stated; of white turnips, one-half; of cabbages, one-eighth; of beet, one-fifth; and of clover, lucerne, and sainfoin, one-third.

I believe you cannot obtain a properly developed plant without all the different constituents being present in the soil, and have often familiarly compared them to the several links in a chain of a necessary length; if only one link be absent, the chain is comparatively useless; but should many be wanting, it may then be laid aside as absolutely so. Several of these constituents do exist in the soil naturally, but the best mode of ascertaining which are absent, or deficient in quantity, is by having recourse to chemical analysis, otherwise you must be proceeding blindly. Mr. Haywood,* whom I before mentioned, discovered that in our Flockton land we had abundance of potash—in some of the fields even as much as seven tons per

* In connection with Mr. Haywood's name, I have great pleasure in referring to an educational establishment which is about being formed at Grange Hall, near Wakefield, late the residence of Sir J. L. L. Kaye, Bart., and an extract from the prospectus issued by the conductor, Dr. I. F. Silbermann, will show that one important design of the projectors is, the diffusion of chemical knowledge, as practically applied to agriculture, under the immediate superintendence of Mr. Haywood. Extract: —"In this establishment the principles of Professor Liebig, of Giessen, as developed in his 'Agricultural Chemistry,' will be reduced, as far as possible, into practical operation, under the superintendence of Mr. J. Haywood (late of Worksop, Nottinghamshire). For this purpose, there will be a small experimental farm attached to the institution, upon which the principles of Liebig and other eminent chemists will be tested, and the best means of improving the soil ascertained. The laboratory will be arranged after the style of that of Professor Liebig (with whom Dr. Silbermann is in correspondence), in which the pupils will have facilities of learning chemical manipulation and analysis, including that of soils.

acre, six inches deep of soil, as much as will be required for centuries; but at the same time he found that we were deficient in phosphoric acid, which must be introduced by the application of bones. Before obtaining this analysis, we should have spent money uselessly in applying potash.

I am aware it is maintained by many intelligent persons, that plants excrete or give out some matter or substance into the soil, which renders it unfit to sustain the same crop year after year; but I imagine that the circumstance of the prairies or plains in America, when newly broken up, being capable of growing plentiful crops of wheat for twenty years successively, will be considered a sufficient refutation of that idea. I imagine that these plentiful crops are in the first place attributable to the real supply of fixed constituents existing in the soil, and their exhaustion by successive cropping, is the reason of the subsequent failure. I myself have grown potatoes on the same plot of ground for seventeen years, without any perceptible deterioration in the crop; grass, also, will continue to flourish for an unlimited time, if properly supplied with manure, though it may here be said in reply, that grass is a perennial, whereas wheat is only an annual. The common theory of the benefit attending a rotation of crops is, that one crop exudes some substance which the following one requires, and that therefore they play into each other's hands, as it were; but this supposition is by no means proved—indeed I think it cannot be maintained on rational principles; for plants cannot create anything—they can only give out what they have previously received either from the soil, water, or air—an acquisition which the successor has equally the power of making. It cannot, however, be denied that a white or corn crop does generally succeed better after a green crop than after one of the same nature; but I think that this may be rationally explained on other principles—namely, that the green crop generally has a tap-root, and therefore obtains the greatest portion of its nourishment from the substratum and lower part of the cultivated soil, thereby sparing that nearer the surface; and when its roots and stubble are ploughed up and decayed, their mineral constituents, which were obtained from below, are deposited on or near the surface, and thereby become available for the succeeding white crop, whose roots run nearer the surface. The true theory of the benefit of rotations I conceive to be, the alternate growth of one crop possessing a tap-root, with another whose root does not penetrate so far down. As an instance, I will state the mode in which I conceive beans operate as a preparative for white corn. Corn requires a large quantity of silica; on the other hand, beans need but little—the bean root releases and obtains a considerable quantity of the necessary fixed ingredients from the lower stratum; now silica can only be imbibed by the corn plant when in a state of solution, and this necessary solution can take place only through the agency or by the assistance of potash and soda. Is it not, then, fair reasoning to say, that the luxuriant growth of the corn is more probably due to the potash, &c., obtained through the bean roots and stubble becoming available for the solution of the necessary silica, and for the supply of the other constituents, than that the beans exude something which the corn requires? It may be asked—Why, if the system of rotations acts so well, should we not be satisfied with that "well?" I answer, we ought never to be satisfied with doing "well," if we can by any means do "better;" and surely two good crops of wheat must be more valuable than one of wheat and another of beans: moreover, if the analyses of the two crops be correct, the two wheat crops are the much less exhausting to the land. Rest again is frequently recommended for increasing the fertility of land, but this I consider as an erroneous idea; for rest, as mere rest, cannot be needed by an inanimate substance, as by a beast of burden. When land is very much overrun with couch grass and noxious weeds, a summer fallow may certainly be the most advisable course to adopt, in order effectually to exterminate those troublesome guests, nor do I deny that some benefit may be derived by the exposure of the soil to the action of the atmosphere and sun, but I cannot conceive that this latter benefit is adequate to the loss of the year's rent, rates, and taxes. But a question arises—can the land be kept clean and at the same time produce wheat continuously? This, I think, would be doubtful, provided that it was absolutely necessary always to cultivate Michaelmas wheat; but there are different varieties of wheat as of other plants, some sorts coming to maturity earlier and in a shorter time than others; and therefore I should, in this case, adopt the plan of selecting my sorts according to the time when my land could be got ready for sowing, first using the latter description of wheat on the land ready the first, then the earlier sorts, until at last I should sow the real early spring wheat, which will come to maturity if sown by the middle of March, or even later, when the season is good. This year we have, a fortnight ago, housed some spring wheat, in good condition, which was sown the last week in March. The specimen of Spalding's prolific which I have on the table, was sown the first week in April, but I should not recommend that sort for late sowing, as the bulk of the crop, though cut, is not yet perfectly ripe. Hand-hoeing in spring, when the wheat is either dibbled or sown with the drill, is also a very advisable mode of preserving the land in a state of freedom from weeds, and of promoting the luxuriance of the crop; and I may here remark, that a distance between the rows of not less than nine inches has been found to be the best, as insuring the most abundant crop, with economy in seed, and affording the greatest facility in the operation of hoeing. As an experiment, we are this year drilling some of our wheat at a distance of eleven inches, and using five pecks of seed per acre. An objection may be urged to the plan here propounded, on the ground that the landlords would forbid its adoption, being so contrary to all pre conceived notions of good husbandry. But if it can be proved that wheat is a less exhausting crop than almost any other, and that by the due introduction of the abstracted constituents the land is restored to its original state of fertility, surely all hostility to the process will be appeased. At the late Doncaster agricultural meeting, I had some conversation on the subject with Lord Wharncliffe, under whom we occupy two hundred and twenty acres, and he said that he should not object to the trial, although, at the same time, he must confess his doubts as to its feasibility. In order to give some idea of the relative cost, or exhaustion per acre of the mineral or fixed constituents of different crops, I have made the following calculation:—

	Potash, at 4d. per lb.				Salt, 2d. per stone.				Lime, 6d. per bushel.				Gypsum, $\frac{1}{3}$d. per lb.				Bones, $\frac{1}{2}$d. per lb.				Total.		
	lbs.	£	s.	d.	lbs.		s.	d.	bl.		s.	d.	lbs.		s.	d.	lbs.		s.	d.	£	s.	d.
Wheat	6	0	2	0	14	..	0	2	1	..	0	6	6	..	0	2	34	..	1	5	0	4	3
Barley	14	0	4	8	17	..	0	$2\frac{1}{2}$	1	..	0	6	12	..	0	4	48	..	2	0	0	7	$8\frac{1}{2}$
Oats	42	0	14	0	7	..	0	1	1	..	0	6	9	..	0	3	8	..	0	4	0	15	2
Rye	9	0	3	0	10	..	0	$1\frac{1}{4}$	1	..	0	6	16	..	0	$5\frac{1}{4}$	13	..	0	$6\frac{1}{2}$	0	4	7
Beans	88	1	7	8	44	..	0	$6\frac{1}{4}$	$1\frac{1}{2}$	..	0	9	8	..	0	3	70	..	2	11	1	12	1
Peas	$28\frac{1}{2}$	0	9	6	36	..	0	5	2	..	1	0	32	..	0	11	60	..	2	6	0	14	4
Swedes	106	1	15	4	100	..	1	2	$1\frac{1}{2}$	..	0	9	70	..	1	11	66	..	2	9	2	1	11

If the analysis be correct, and the foregoing hypotheses also based on proper principles, it follows that wheat can be grown at less expense per acre than any other crop; and it equally may be deduced that it is less exhausting to the land. It also follows that such land as contains the greatest portion of potash and phosphoric acid can be cultivated the most economically.

In conclusion, I will merely add that my ideas of good husbandry are—first, to attempt to eradicate and correct any injurious substance, or any bad condition in the land, both by thorough-draining and subsoiling, and by the application of that great and important corrector and ingredient in all fertile soils—lime; and then to add such tillages, applicable to the crop which is to be cultivated, as on analysis are found to be deficient in the soil. I must also lay great stress upon aiming at cleanliness in the land, by working, hoeing, and pulverization, as weeds require nutriment as well as the cultivated crop; and if they are not eradicated, they rob the soil of that which ought to be devoted to better purposes. A little knowledge of chemistry also seems to me to be indispensable; and I cannot too strongly recommend the members of our club to turn their attention to the study of the first principles of that science. Great depth is not required, and a very little time devoted to it, aided by a willing and a thinking mind, will serve the purpose.

P.S. Since writing the above, a letter from an experimental agriculturist, residing at Clitheroe, in Lancashire, dated October 6th, originally inserted in the *Manchester Guardian*, has been copied into the *Wakefield Journal* in which the writer asserts the possibility of growing wheat successively and profitably on the same land; and in confirmation of this opinion, states that he himself has tried the experiment since the year 1841, when he commenced operations on a field previously exhausted by excessive cropping, unaccompanied by any adequate application of manure, oats having been the last crop. In the spring of 1842, he manured one portion with guano, after the rate of two cwt. per acre; another with two cwt. of nitrate of soda; and to a third he applied nothing. The result was 27 bushels of wheat per acre from each of the two manured portions, and $19\frac{3}{8}$ bushels per acre from that without manure. Last year he again sowed the field with wheat, dividing it into three portions, and on the 10th of April he applied three different sorts of chemical manure, furnished to him by Mr. Blyth, of Church, near Accrington, and in about a fortnight afterwards the experiments were further varied, by covering a part of each division with guano, at the rate of two cwt. per acre. The result of these applications was, that instead of the crop deteriorating, the produce was $41\frac{1}{4}$ bushels per acre on two of the portions, and 36 bushels on the other, being an increase of $14\frac{1}{4}$ bushels per acre in the produce, previous to the experiment, and 22 bushels upon the part previously unmanured, thereby satisfactorily proving the increased power of the land to produce wheat; but at what cost, or what were the component parts of the chemical manures by which the effect was produced, is not stated.

ECONOMY OF MANURE.

BY MR. TOWERS.

(From the Journal of the Highland Agricultural Society of Scotland.)

We have felt, and on several occasions made allusion to, some peculiar advantages that farmers possess above all other persons, and of which they might avail themselves to procure abundance of gratifications which, in the general way, they appear to overlook. Some years ago, a few pages of this Journal were devoted to this subject, and, subsequently, our pen has not been idle, where an opportunity was presented, to prove that, as, from their position and the ordinary course of cultivation, farmers require and possess a store of manure and of other decomposable substances, which extricate a great volume of heat, they might so apply it as to render it of threefold value to the land, and to the general domestic economy of the establishment.

As it is, a dunghill, or mixen, is nothing more than a mass of fermenting materials exposed in waste places to the air for many months, wherein its heat and developed gases are lost for the time, while the liquid drainage is absorbed and rendered perfectly unavailable for the purposes to which it is best adapted. Nature, in one sense, is man's best friend; for the gases received by the atmosphere are therein stored, or so laborated, as to be returned to the earth in showers which nourish while they enliven vegetation; but, nevertheless, man is not true to himself while he neglects to improve any one of his resources.

The cultivation of garden vegetables is not usually treated of in an agricultural periodical, but the subject, with strict limitation, is not irrelevant when it can be made to coincide with the preparatory duties of the farm. Such is the case in the instance we are now prepared to notice.

Nearly ten years have elapsed since attention was first excited to a course of routine in the melon department of a large garden intrusted to the management of a person who has reputably retained his situation during twice that period. The machinery employed in the course may be

described in a very few lines. A range of pits, of simple four-inch brick-work, are furnished with any number of lights for the purposes required. Those of the garden in question are fifteen in number; they are seven feet long, three and a-half wide, and they slope at an angle of about eighteen degrees, reckoning the ground level as the base line. The number and dimensions are indifferent, provided they conform to the object in view, and always slope to the south, or south by east.

The first operation was to excavate the ground within the walls to the depth of four feet, and then to fill the space with tree leaves from the park, coppices, and shrubberies, treading the mass from time to time till it was rendered compact; it then formed a gentle hot-bed, which (as there was a double range of pits) was used in one instance to grow a set of pine-apple plants, and in another to excite a crop of young potatoes, a quantity of loam being, in the latter case, spread over the leaves after their heat had much moderated. In the meantime, other masses of leaves—the fresher the better—were used as linings to pits, or as hot-beds under frames; and these, collected in autumn, annually, become sufficiently prepared and decomposed, to all intents and purposes, in six or nine months, for the future subjects of the routine.

After the early potatoes, the loam was stirred and intermixed with the leaves below to the depth of a full spit, and a fresh quantity of semidecayed leaves, that were prepared during the winter and spring, was laid as a deep hill or ridge under each light. The melon plants for the late crops being ready, one for every hill was planted in its centre, being transferred with an entire ball of roots from its pot, and watered just to settle the soil about them. This planting would take place late in June or early in July.

The lights were closed day and night, and shaded with mats, till the plants were perfectly established and began to grow; but no artificial heat was employed. This was the introductory course of the first season.

We have lately inspected the progress of melons in these pits wherein the lower and now perfectly decayed leaf-soil has never been disturbed for ten years, and have seen the roots wander through the entire substance of the new ridges put on in June. It does not appear that the old-leaf mould is appropriate to the melon, but it forms a mass, and elevates the new ridge toward the glass, a circumstance of moment in melon growing, though, at the same time, it must be insisted on that the new semidecayed leaves, gathered in the preceding autumn, form the pabulum of the melon plants, and a medium more congenial than loam and turf of any kind.

Writers are much in the habit of directing the application of strong maiden loam, and, doubtless, the melon has thriven therein; but it is equally true that many failures have occurred, and plants are seen to lie torpid for weeks in loam, whereas they start off at once, retain a rich and intense verdure, and bear much fruit of very large size, in leaf mould. Melons cease to bear in September, and then the beds are cleared with all despatch to receive another crop, the preparation for which consists in levelling the ridges, laying over the surface a coating of decayed spit dung, reduced almost to the condition of humus, and forking the whole together to produce a pulverized homogeneous bed, in which strawberry plants are set by trowel, six inches apart, in rows (running from back to front (twelve inches asunder. These plants are obtained either by the runners of July, pegged down close to the strongest plantlet, so that it may take root immediately, and come up with a complete ball in September; or, better, by plunging the smallest pots (size 60) filled with light loam, and fastening the runner plant upon its surface. These pots are carefully attended to by watering, &c., till they become filled with roots, when the plants and balls are transferred to others of a larger size, the soil of which is enriched by adding one-third of mellow dung. This mode of raising strawberry plants is certain, but gardeners find it take up too much time; for the amateur, however, and the farmer who can spare a hand for the work, it is admirable. The best variety of strawberry is the true Keen's seedling, its fruit bearing heat extremely well, and being heavier, bulk for bulk, than that of any other sort, unless we may except (not yet, however, sufficiently proved) the British Queen.

The strawberries being planted and watered, the sashes are closed, and kept close for some days, till the roots lay firm hold of the soil; when air is given by degrees, and, at length, before the frost sets in, the sashes are removed, and the plants exposed to the air, by which they not only are fortified, but brought into a state of rest. But, on the approach of vigorous weather, the sashes are put on, and kept closed every night, though air is given by day when there is no falling weather.

After turn of days, and as the power of the sun increases, air and light waterings are given to prepare for the growth, which never fails to commence many weeks ere strawberries in the best open ground give any signs of vegetation.

When the runners protrude, they are removed, and every care taken to promote strong growth, without permitting vegetation to become rank by "drawing," as it is called, through want of air.

The crops thus produced are amazing. We have known 400 ounces to be gathered in April, under a few lights, and sold to a collector of fruit—who, of course, would purchase cheaply—for 10*l*., money down. The strawberry plants impart some loam to the bed; but this is digged into the leaf-mould beneath, after the fruit is gathered, when the plants are either destroyed or moved to some plot in the garden where it is intended to make a fresh plantation.

There is a considerable demand for this fruit in the neighbourhood of great towns, about the month of April, five or six weeks before the time when they ripen in the open air; and, near London, persons make a business of calling at gentlemen's gardens to collect fruit through the season. For strawberries they pay from 9d. to 4d. per ounce; gather the fruit, pay for, and take it away without any trouble to the grower. In the meantime, the public pay, in the shops, from 10s. 6d. to 1s. 6d. per ounce. An amazing difference, which, however, is of no avail to the grower, who, were he to apply to the great fruit-shops, would receive very little extra remuneration though he were obliged to incur the entire trouble and risk of conveyance.

Most persons force strawberries in pots—hence the supply is limited; but where pits adopted, the plants would be abundantly more productive, and the pits always in requisition for successive crops, which may be rendered profitable to a greater or less extent. In the establishment which we have taken as a model, the crop after strawberries con-

tinues to be late melons, prepared for annually by the leaves collected in the preceding autumn.

There are two or three objects of moment to be considered. The first is a range of pits, say of twelve lights, divided by a four-inch brick wall into three departments, which may provide every sort of vegetable or fruit which a farm could require, early and late, by aid of the dung at hand, which might be timely and advantageously heaped at back, and, indeed, round the erection, while, by a simple contrivance, the liquid drainage could be made to pass into a cemented tank furnished with a pump. Experience, and the object in view, must regulate the heat to be applied; but whether the manure were hot or cold, it might be profitably deposited around the walls. Farmers, therefore, possess appliances which the gardener is frequently obliged to purchase at high prices. Second, leaves of trees, reduced to that condition wherein they become brown, moist, adhesive masses, are so congenial to the roots of the melon, that it is no uncommon thing to see them trace ten or more feet in length, sending forth laterals even to the surface in every direction.

Black perfectly reduced leaf-mould is one of the purest conditions of vegetable aliment; in it the strawberry revels; but for the melon the hill or superstratum must be renewed yearly.

In a pit of three divisions, early potatoes may be substituted, in one of them, for strawberries, and be off in due time for late melons. Early melons can be raised by warm linings applied in March, and cucumbers at any season of the year.

In the garden referred to, the same soil has remained in one large pit for ten or more years; and never have we seen fruit produced in greater abundance or of finer quality than in that department. Why then should a farm be destitute of an appendage which it is calculated to support in a style altogether superior?

We have of late years heard a good deal concerning diseases and failure of potatoes; and in the present season mention is made of blanks in the rows. We have proved, and so have many others, that a blank is no proof of a failure; as, from some cause, a haulmless potato may furnish a numerous and fine progeny of tubers. This circumstance will serve as an introduction to an experiment upon the production of very early potatoes, which, coming from the pen of the late Mr. Knight, in a private letter, dated June 12, 1832, may be much appreciated, and certainly will not be irrelevant to our subject. He wrote thus—

"I collect the largest of my early potatoes so soon as ripe, in the end of July, and lay them close to each other upon the ground, covering them about two inches thick with mould. Thus circumstanced, they vegetate in the autumn; and if the young shoots then produced be taken off, and the tubers preserved, they generally will not produce foliage, but will immediately generate tubers. These will ripen more or less early in spring, in proportion as the tubers are kept more or less warm; and it will be easily practicable to obtain young potatoes of exceedingly good quality during the months of May and June. There will always be a period of considerable length between the period of the tubers having acquired their growth, and subsequently becoming excitable, and during that period they are very good. Under favourable circumstances, three bushels of old tubers will afford about one of new at this period (May and June.) Now, as I can certainly raise, and am doing it, 600 bushels and upwards on the acre, the produce of half an acre of such potatoes in young tubers, if sold, must be a very profitable crop."

This process had previously been communicated to the Horticultural Society of London, and it proves that if, by accident or design, a first development of shoots be removed, and the tubers then remain for some weeks out of ground, they will be very likely to produce a new crop of tubers within the soil, without exhibiting any appearance of external vegetation.

FLAX.

The following is an extract of a letter from Professor Henslow, of Hitcham, in Suffolk, to John Warnes, Esq.:—"I am fully persuaded that the cultivation of flax is admirably adapted to our climate, and that the general introduction of it will be of service to the country. Still I feel that I am not a competent judge of so purely practical a question, and my opinion on the subject ought not to be considered of much value. With respect to some of the consequences you anticipate from the introduction of this culture, I confess that I cannot forsee any probability of our realizing all the advantages which you so confidently expect. I feel fully persuaded that whenever it shall be considered worth while to set about contriving machinery for facilitating the spinning of flax, some one will be found capable of mastering whatever present difficulties there may appear to be in the way of doing this; and then no power on earth will be able long to proscribe the use of such machinery. Neither can I agree with you in what you have said respecting the introduction of machinery into the arts; believing, as I do, that every improvement which tends to lighten bodily labour, must prove of ultimate benefit to the human race. Would you give up the best Ransome plough for the one employed by Cato and Virgil? or even for some of those which are still lingering and lumbering over certain districts of Old England? I can understand the abhorrence of our labouring population to the introduction of additional machinery beyond that which they have already in employ, even whilst they have no objection to continue their good Suffolk spades, or of their hoes, and forks, and ploughs, and flails, nor even of their chaff-cutters, and scarifiers, and bean-crushers, and a host of other implements in daily use among them. They must feel inconvenience and positive distress from having their labour lightened wherever they are not allowed to profit by the accumulation of that capital which might result from the employment of improved machinery. But wherever sufficient intelligence and enterprize shall direct such increasing capital into channels leading to the direct improvement of our culture—there, I conceive, the labourer must profit by the introduction of machinery, and his employer also must further profit by continuing to employ him. So far as you propose a direct benefit to the farming interest, by the introduction of flax in addition to the present crops usually cultivated in England; and so far as you propose superseding the necessity of our importing foreign oil-cake for the fattening of stock, your calculations appear to me sufficiently correct to justify all practical men in attending to your suggestions. But I can feel no assurance in your schemes becoming so perfect a panacea for

all our grievances as you seem to imagine—in fact, I am strongly impressed with the conviction that our poorer brethren are not likely to be very long benefited by the manual preparation of flax. I have considered this part of your subject since I last saw you, and though I believe that a flourishing trade of the kind you propose may be established for a while, yet I think I foresee that it must soon be swept away again, and only leave those who may have become dependent upon it more wretched than before. I am led to dread this the more from what I see daily passing under my eyes. There is still lingering in this impoverished parish a remnant of the trade of hand-spinning in wool; and many persons here occupy themselves with it whenever they can procure the raw material, which, however, they cannot always command. By spinning most diligently for six days in the week a first-rate spinner may, perhaps, earn eighteen-pence, but the more usual earnings are from nine-pence to a shilling. The once flourishing trade of spinning wool by hand, has migrated from Hitcham to wherever more powerful producers than primitive distaffs may be creating capital, which, rightly directed, would probably secure employment for hundreds instead of tens, and for thousands instead of hundreds. I shall not now ask whether we ought to lament or rejoice at such revolutions as these; it is enough to know that such revolutions are inevitable; and I draw my inferences from what has happened, as to what will surely happen again. As with the immutable laws of vegetation, so with the sound principles of political economy, we shall ever find it to our cost to oppose them, but we shall ever find it to our comfort in calling them to our counsels, and suffering them to assist and guide our judgments. I trust you will pardon this free expression of opinion on a subject which you will admit to be deserving of your most serious attention, even though you should arrive at very opposite conclusions from myself. I only ask of you to allow the *possibility*, even if you cannot see the *probability* of machinery being speedily brought to bear upon flax-dressing and flax-spinning; and that you will not omit in your calculations the immediate consequences which must attend its introduction. Neither can I adopt your view of the ill consequences which you argue from our approach to free trade principles; for there are many thoughtful and enlightened minds, of different political parties, who believe our adoption of free trade principles more likely to secure a healthy condition of society than any of our long cherished artificial systems of commerce. The great puzzle and universally acknowledged difficulty with such minds is rather as to how we ought to get rid of our present pampered state with least danger to private interests. A very gradual but sure progress to so desirable a position seems to be the method advised, and perhaps the one which we are actually taking. Any movement then, which may at all savour of the 'Anti-progressing' principle, should be marked with the greatest hesitation, lest we should inadvertently be calling evil good, and good evil. Whilst, therefore, I once more most heartily wish you all success as regards the introduction of the culture of flax, I most anxiously invite you to caution, in not raising our expectations too highly, as to the probability of its affording any permanent employment of the poor upon a trade dependent alone upon their manual labour. I should much rather see one of the objects of your society to be the offer of a good premium, for the discovery of a machine which might assist in diminishing the cost of production."

TAMWORTH FARMERS' CLUB.

Professor BUCKLAND, on rising, was loudly cheered. For himself, and for his fellow-labourers in the field of science, who had endeavoured to exert themselves, as far as in their power lay, to contribute to the improvement of agriculture, they would allow him to return his most grateful and fervent thanks. He might assume, he trusted, on the present occasion, that they were thoroughly convinced, by what had fallen that day from their distinguished chairman, and from what, on a recent occasion, had also fallen from his eloquent lips at an agricultural meeting in an adjoining town; he said he might assume that they were thoroughly convinced of the importance to all agriculturists of considering that there was vast room for improvement even amongst those who, in their own localities, considered themselves to have attained the highest point of perfection. It was one of the advantages of meetings like the present, that they found out their own imperfections by the comparison of their practice with the better practice, not of their neighbours, but of their distant fellow labourers in the same field—the field of scientific agriculture, and the cultivation of the earth, as it was now carried on upon scientific principles. (*Hear.*) He would assume also that there was no person present at that meeting who was not convinced of the truth of the dogma which was now accepted as being at the basis of all agricultural improvement, that it was totally useless to attempt any experiment in the hope of improving lands which were not by nature dry, until they had drained them. (*Hear, hear, hear.*) It must be well known to many individuals present, what had been the result of experiments performed in their own immediate neighbourhood of Drayton Manor, where a small field of the worst, most worthless, and wettest description, had been brought by draining, only three years ago, to produce a result, in one year only, which was recorded in the Transactions of the Royal English Agricultural Society. (*Hear.*) That field the first year produced twenty-three tons of turnips; whereas, but the year before, it produced only one single ton of bad and worthless hay. (*Hear.*) It must be obvious to many who had the advantage which he had not hitherto possessed, but which he hoped shortly to enjoy, of seeing the splendid improvements which he heard, from the best authority, had been made by Lord Hatherton in an adjoining district—what wonderful effects had been produced by thorough draining, properly carried on, as it had been with such splendid success by that distinguished nobleman and agriculturist. (*Cheers.*) They might also recollect the observations to the point, that fell from the lips of Lord Stanley, as a result of his practical experience, at a late meeting at Liverpool. That noble Lord, by his successful experiments, had converted his slight grounds into fertile fields of corn, and had set an example in a neighbourhood which, of all places in the kingdom, most required it. He alluded to the neighbourhood of Knowsley, and the district of Lancashire to the north of Manchester, and between Preston and Lancaster; of all the fertile fields bestowed by the Creator, and left in a state of slovenliness by man, those fields, for miles and leagues, were the worst. Not so was it in the more southern parts of the empire, now that the great reviver of the system of draining, Mr. Smith, of Deanston, had established himself in the metropolis, as a consulting agricul-

turist, ready to give his aid to restore fertility to those lands which were now sterile—simply, because no means had been adopted to remove the water which fell from the heavens, or sprung from out of the bowels of the earth. The mention of the earth reminded him of a subject to which, to a peculiar degree, he had devoted his attention for many years. (*Hear.*) Had time permitted he could have entered into many subjects connected with the earth, of the highest interest to agriculturists; but he would only now advert to the remarkable provisions which appeared to have been made in the act of its creation for the benefit of those who, in future times, were to be employed in the cultivation of its surfaces. He would scarcely allude to the provision of the metals; to the provision of that gold and silver which was the ultimatum of all agricultural pursuits (*A laugh*); to that provision of iron, which was ten thousand times more valuable than gold and silver (*hear, hear*), and without which not one of these agricultural implements could have been forged, and they would have been reduced to the condition of the Esquimaux and Indians, who were compelled to avail themselves of the teeth of sharks and the bones of fishes as the only instruments by which they could capture their prey. (*Hear, hear.*) They saw in the dispersion of this iron, an article of such universal necessity to all mankind, a providential foresight, laying up a store for the wants of man in every position of the civilized globe (*Loud cheers.*) This same foresight they might further see in the preparation of the great earth itself; in the composition of rocks, which consisted of the elements of flint, of clay, and of lime, forming thus a provision for that superfices which it was the intended and allotted duty of a large proportion of the race of mankind to cultivate. (*Loud cheers.*) But the surface of the soil itself was that which more immediately demanded their present attention. That surface, the origin of which he had briefly alluded to, now daily, in its cultivation, displayed new wonders—wonders almost equal to those disclosed by geology. In the course of the last fourteen days, he had seen wonders performed on the surface of the soil; such as he had never seen before. It was no wonder to see that land, which the hand of God had made fertile, continue fertile, until it was unfertilized by the carelessness of those who ought to be its cultivators. He regretted indeed to say, that, in the most rich and fertile lands of this country, be found the agriculture to be most slovenly, and the condition of the agriculturist the most miserable. On those rich lands in the neighbourhood of Bridgewater, which had produced, and would produce for thirty years successively, thirty to forty bushels of wheat, the farmers were most careless and neglectful; and the grazier there bought his ox, turned it into the marsh land, and visited it no more until he turned it out to the butcher. It was not in that region that they were to look for agricultural improvement; but to those sterile and barren districts which, until a few years past, produced nothing. (*Hear, hear, hear.*) He had lately witnessed, in two districts of Lincolnshire, effects resulting from agricultural science, which he could not have believed had he not seen it. They were districts far removed from common observation. In the Wolds, as they were called—meaning the wealds, or wilds, of Lincolnshire, a term expressive of their natural sterility—in those Wolds, not yet forty years ago, in the beginning of the present century, Young, in his "Agricultural Tour," described them as passing through a country covered with furze bushes. Lord Yarborough said, Young was an excellent landlord; and he wished him no more harm than that he should be thrown from his hunter into the middle of one of those furze bushes; for a little pricking would do him a deal of good, and would tend much to the benefit of that part of the country. (*Laughter.*) That same Lord Yarborough lived to plant four thousand acres of trees, which had now attained a height of from fifty to sixty feet; and, what was more important, he lived to bring into existence a race of tenantry, now the glory of the land—tenants who occupied from five hundred to one thousand acres of land each. Land which, thirty years ago, was covered with furze bushes, and was not worth 5s. an acre, now produced 24s. an acre. The rent of land had increased five-fold; whilst the wealth of the tenantry had also augmented in the same proportion. Every farmer whom he visited possessed the finest hunters; many have carriages; some, whom he did not visit, had hothouses and pineries. (*Hear, hear,*) And yet, while this was the situation of the tenantry, the landlord had benefitted five-fold. But, what was better than all, was the condition of the labourers. He had never heard of such labourers: 38*l.* a year for wages; all of them kept a pig; a cow was kept for each; and they were compelled to eat meat three times a day. (*Laughter, and loud cheering.*) Those who had visited Lincolnshire, must have witnessed the beautiful architecture with which every village of that county was adorned. Such churches, and such steeples; displaying more exquisite taste and skill than was to be found in any other part of the country. But, lofty and beautiful as were those churches, they were, for the most part, outrivalled in height by the ricks which presented themselves every where. (*Laughter and cheers.*) Such ricks! streets of ricks—acres of ricks, disposed in rows. (*Laughter and cheers.*) Near Lord Yarborough's house, there were streets of ricks, as long as the longest street in Tamworth—streets longer than the length of the Parthenon, at Birmingham; and all from land which, thirty years ago, was not worth 5s. an acre. (*Loud cheers.*) And what became of all this abundant produce? It went to the manufacturing districts to be disposed of. (*Hear.*) But there was another district, in the vicinity of the metropolis of a county, not five miles from the town of Lincoln, in the midst of which stood a column, bearing this inscription:—

Columnam hanc
Utilitate Publicæ
D. D. D.
F. Dashwood.
MDCCLI.

In 1751, that column was erected in the centre of a desert, to guide the traveller in the midst of a howling wilderness. On that plain might now be seen hayricks standing together in rows, almost like the squares in London. (*A laugh.*) It was in fact, a city of hayricks. There were there also the remains of an asylum of the Knights Templars. There lived there now a farmer, seventy years of age, who, in thirty years, had realized a fortune of 60,000*l.* They might ask him (Dr. Buckland) how had those results been produced? They had been produced by a judicious application of capital, and of the good sense which was the charac-

teristic of the farmers of England. The present proprietor of the Templars' Asylum imported ship loads of bones and oil cake to be ground for his farm. The cattle ate the straw, and produced that manure which was the foundation of all the success of the crops upon his farm. In that and other farms in that district, the produce was never less than thirty bushels per acre; and that was only one example out of many of what could be done by judicious application of capital. The next example to which he would call their attention was one more to the purpose. It was the example of Mr. Coke (the Earl of Leicester,) and the Duke of Bedford, which had produced such favourable changes in the agriculture of the eastern part of the country. He found, however, that the farmers in that (Tamworth) neighbourhood approximated nearer to those of Somersetshire than of Lincoln; and he protested that between Hampton and Tamworth he had seen more thistles in one field than he had seen in the whole of Lincolnshire. (*Hear.*) He trusted that the influence of that society would put to shame the man who was the occupier of that field. He would advise them to go and see the farm of Lord Ducie, near Bristol, admirably cultivated as it was under the care of Mr. Morton. The first thing done there was to drain the marsh, and thorough drain the small fragments of land. The farm he should say, was commenced in a marsh, and consisted of two hundred acres. It now produced forty ricks; and required a railroad to carry the corn to the barn and thrashing-mill, which was worked by the same engine as that used for the railroad. (*Hear hear, and laughter.*) The whole surface of the land was covered with artificial crops; and there was not one blade of natural hay to be seen. The great principle on which the farm was cultivated was, that it should be self-supported; and that not one farthing should be spent in money for any foreign purpose. Of course, it was impossible for them to bring their farms at once to such a state of perfection. They must at first make use of foreign manures; but, in a short time, they would arrive at the self-supporting system. They must not forget, that the dunghill was the farmer's greatest treasure. There was a proverb in Scotland,—"The midden makes the meal-ark;" which meant, that the dunghill was literally, the produce of everything. They must sell, however, nothing but grain and flesh. They must cherish that midden as their first-born child; give it plenty of sugar and pap—

"Sugar and spice;
And all that's nice."

(*Laughter.*) They must take care, also, that the valuable ammoniac vapours were not, as too commonly is the case, lost; but that they should be covered over with a coat of earth. This system might, he thought, be applied almost universally in that county: he saw no possible objection to it. As to their general object, he was sure that the support which it had received, and the example set by influential individuals in that neighbourhood, was such as to insure its success. The examples of such men as Lord Hatherton, as their Right Hon. President, and others, spoke volumes in its favour; far more than could any recommendation from himself, who had only to apologize for the length at which he had spoken; and to recommend them, as the best mode of ensuring prosperity, to follow the example of those distinguished agriculturists to whom he had alluded. (*Loud cheers.*)

LYTHAM AGRICULTURAL ASSOCIATION.

MEETING, OCT. 3.

[ABRIDGED FROM THE PRESTON CHRONICLE.]

Mr. Beesley, the secretary of the society, read the awards for the premiums and sweepstakes.

PREMIUMS.

CLASS I.—FARM CULTURE.

Division 1.—System and Management.

Premium 1.—Messrs. Richard and Robert Cookson, Layton Hawes, for a farm in the most approved state of cultivation, exceeding 100 acres in extent, 5*l.*—seven competitors. Mr. John Cartmell's farm was also entitled to commendation.

2.—Mr. James Cartmel, Lytham, for a farm in the most approved state of cultivation, not exceeding 100 but more than 50 statute acres, 3*l.*—two competitors.

3.—Mr. John Hardman, Lytham, for a farm in the most approved state of cultivation, not exceeding 50 but more than 20 statute acres, 2*l.*—single entry.

2.—Draining.

4.—Mr. Lauder, Salwick Hall, for the greatest length of drains in a farm of the largest size (see premium 1), 4*l.*

5.—Mr. Johnston, Clifton Lodge, for the greatest remaining length of drains in a farm of the largest size (see premium 1), 2*l.*—six competitors for Nos. 4 and 5.

6.—Mr. George Houghton, Clifton Lodge, for the greatest length of drains in a farm of the middle size (see premium 2), 3*l.*

7.—Mr. Thomas Salthouse, Lytham, for the greatest remaining length of drains in a farm of the middle size (see premium 2), 1*l.* 10s.—two competitors for Nos. 6 and 7.

8.—Mr. Thomas Nixon, Westby, for the greatest length of drains in a farm of the smallest size (see premium 3), 2*l.*—single entry.

9.—For the greatest remaining length of drains in a farm of the smallest size (see premium 3), 1*l.*—not awarded.

3.—Fencing.

10.—Mr. Henry Cragg, Little Marton, for the hedge of whitethorn of greatest length, planted and protected in the most judicious manner, and preserved in the best condition, 2*l.*—two competitors.

4.—Manuring.

11.—Mr. Wm. Johnson, Westby, for "top-dressing," with marl, the greatest extent of land, having a sandy or incoherent surface soil, 2*l.*—three competitors.

12.—Mr. John Braithwaite, Little Marton, for "top-dressing," with moss-soil or sand, the greatest extent of land, having a strongly coherent surface soil, 2*l.*—four competitors.

5.—Cropping.

13.—Mr. Richard Walker, Layton Hall, for laying down land permanently for grass crop, the greatest quantity, 2*l.*

14.—Mr. Edward Bonny, Warton, for laying down land permanently for grass crop, the greatest remaining quantity, 1*l.*—six competitors for Nos. 13 and 14.

CLASS II.—FIELD PRODUCE.

Division 1.—Roots.

1.—Mr. Johnston, Clifton Lodge, for the best crop of Swede turnips, drilled, and not less than one statute acre, 3*l*.

2.—Mr. Edward Bryning, Westby, for the second best crop of Swede turnips, drilled, and not less than one statute acre, 2*l*.—sixteen competitors for Nos. 1 and 2.

3.—Mr. Scott Bryning, Clifton, for the best crop of common turnips, drilled, and not less than one statute acre, 3*l*.

4.—Mr. Edward Bryning, Westby, for the second best crop of common turnips, drilled, and not less than one statute acre, 2*l*.—seventeen competitors for Nos. 3 and 4.

2.—Grain and Pulse.

5.—Mr. C. Crookall, Lytham, for the best crop of barley and sown grass, succeeding a green crop, 2*l*.—four competitors.

6.—Mr. John Ward, Westby Hall, for the best crop of drilled beans, not being less than two statute acres, 2*l*.—three competitors.

CLASS III.—LIVE STOCK.

Division 1.—Horned Cattle.

1.—Mr. Henry Porter, Clifton, for the best short-horned bull of any breed, 5*l*.

2.—Mr. Richard Walker, Layton Hall, for the second best short-horned bull, of any breed, 3*l*.—eight competitors for Nos. 1 and 2.

3.—Mr. Lawrence Snape, Clifton, for the best bull-calf of any breed, 2*l*.—five competitors.

4.—Mr. Henry Porter, Clifton, for the best cow in calf of any breed, 3*l*.—eleven competitors.

5.—Mr. Henry Fisher, Carleton, for the best heifer, under three years old, of any breed, in calf or milk, 2*l*.—thirteen competitors.

6.—Mr. Henry Fisher, Clifton, for the best heifer, under two years old, of any breed, in calf or milk, 2*l*.—thirteen competitors.

7.—Mrs. Taylor, Lodge Hall, Warton, for the best heifer-calf of any breed, 1*l*.—seven competitors.

2.—Horses.

8.—Mr. William Dewhurst, Moss Hall, Lytham, for the best brood mare for general purposes, 3*l*.

9.—Mr. William Fayer, Westby, for the second best brood mare for general purposes, 2*l*.—eleven competitors for Nos. 8 and 9.

10.—Mr. William Warbreck, Lytham, for the best three-years-old colt or filly, for general purposes, 2*l*. 10s.—eight competitors.

11.—Mr. John Cartmell, Westby, for the best two-years-old colt or filly, for general purposes, 2*l*.—nine competitors.

12.—Mr. William Fayer, Westby, for the best yearling colt or filly, for general purposes, 2*l*.—eight competitors.

13.—Mr. William Dewhurst, Moss Hall, Lytham, for the best foal or filly, for general purposes, 1*l*. 1s.—ten competitors.

3.—Sheep.

14.—Mr. Lauder, Salwick Hall, for the best ram, of the Leicester breed, 1*l*. 1s.—four competitors.

15.—Mr. Henry Porter, Clifton, for the best three ewes, 1*l*. 1s., four competitors.

4.—Pigs.

16.—Mr. Henry Porter, Clifton, for the best boar, age not exceeding 3 years, 2*l*.—seven competitors.

17.—Mr. John Barnes, Clifton, for the best breeding sow, 2*l*.—six competitors.

18.—Mr. Henry Porter, Clifton, for the best pig, under twelve months old, 1*l*.—four competitors.

19.—Mr. Francis Anderton, for the best pig, not less than six months old, the property of a cottager, whose annual rent does not exceed eight pounds, 3*l*.

20.—Mr. John Gillett, for the second best pig, under six months old, 2*l*.

21.—Mr. George Harrison, for the third best pig, under six months old, 1*l*.—seven competitors for Nos. 19, 20, and 21.

Extra Premiums.

1.—Robert Gillett, Westby, for the cottage and garden, in the occupation of an agricultural labourer, and of less annual value than 8*l*., exhibiting the greatest degree of order and neatness, the effect of the industry and attentiveness of the occupier, 3*l*.

2.—Francis Nixon, Westby, for the second degree of neatness and order, 2*l*.

3.—John Cottam, Westby, for the third degree of neatness and order, 1*l*.—thirteen competitors for Nos. 1, 2, and 3.

4.—W. Newsham, Westby, 15s. 5.—C. Nixon, Westby, 10s. 6.—T. Eccles, Westby, 5s. Others, 2s. 6d. each.

7.—For the agricultural implement, of any description, the most perfectly adapted to its particular use. Mr. T. H. Lewis, 2*l*., for steaming apparatus and other agricultural implements. Mr. J. Whitehead, 2*l*., for portable hand flour-mill and other agricultural implements. Mr. George Curwen, 2*l*., for improved farm gate and agricultural implements. Mr. Lauder, 2*l*., for the best collection of agricultural implements.

8.—For forest trees, planted for the purpose of affording shelter, and fenced and protected in the best manner, the greatest number, 5*l*.—not awarded.

9.—For the remaining greatest number, 3*l*.—not awarded.

10.—Messrs. R. and R. Cookson, Layton Hawes, for the next remaining greatest number, 2*l*.—single entry.

Nos. 8, 9, and 10 premiums are offered by T. Clifton, Esq.

Gratuities.

To the occupiers of cottages in Lytham village, for having preserved neatness and good order in their cottages and gardens:—James Crookall, 10s.; John Wolfe, 10s.; Jonathan Fell, 10s.; John Topping, 10s.; George Gillett, 10s.; William Smith, 5s.; Thomas Whiteside, 5s.

LIST OF SWEEPSTAKES.

Cattle.

1.—Thomas Clifton, Esq., Lytham Hall, short-horned bull, 15s.—three competitors.

2.—Mr. Thomas Crookall, Greenhalgh, bull calf, 10s.—two competitors.

3.—Mr. John Hall, Westby, cow, in calf or milk, 15s.—three competitors.

4.—Thomas Clifton, Esq., heifer, under three years old, 10s.—two competitors.

5.—Mr. Henry Fisher, Carleton, heifer, under two years old, 1*l*. 5s.—five competitors.

6.—Mrs. Taylor, Lodge Hall, Warton, heifer calf, 15s.—three competitors.

Horses.

7.—Thomas Clifton, Esq., brood mare, 1*l*. 5s.—five competitors.

8.—Mr. W. Warbreck, Lytham, colt or filly, under four years old, 1*l*. 10s.—six competitors.

9.—Mr. John Cartmell, Westby, colt or filly, under three years old, 1*l.* 5s.—five competitors.

10.—Mr. William Taylor, Westby, colt or filly, under two years old, 1*l.*—four competitors.

11.—Mr. Thomas Wolfe, Little Marton, foal or filly, 15s.—three competitors.

12.—Mr. Lauder, Salwick Hall, pair of horses for agricultural purposes, 10s.—two competitors.

SHEEP.

13.—Mr. Lauder, Salwick Hall, Leicester ram, 15s.—three competitors.

14.—Mr. Henry Porter, Clifton, tup lamb, 10s.—two competitors.

15.—Thomas Clifton, Esq., ewe lamb, 10s.—two competitors.

16.—Mr. Henry Porter, Clifton, three ewes, 10s.—two competitors.

PIGS.

17.—Mr. Henry Porter, boar, 1*l.* 5s.—five competitors.

18.—Mr. Vantini, Fleetwood, breeding sow, 1*l.* 5s.—five competitors.

19.—Mr. Henry Porter, Clifton, pig of any description, 1*l.*—four competitors.

GRAIN.

20.—Mr. John Cartmell, Westby, wheat (red), sample ¼ imp. bushel, 7s. 6d.—three competitors.

21.—Mr. William Ashcroft, wheat (white), sample ¼ imp. bushel, 12s. 6d.—five competitors.

22.—Barley (chevalier), sample ¼ imp. bushel—no entry.

23.—Barley (common), sample ¼ imp. bushel—no entry.

ROOTS.

24.—Mr. William Ascroft, mangel wurtzel, three roots, 7s. 6d.—three competitors.

25.—Mr. Johnston, Clifton Lodge, turnips (Swede), three roots, 17s. 6d.—seven competitors.

26.—Mr. Johnston, Clifton Lodge, turnips (common yellow), three roots, 17s. 6d.—seven competitors.

27.—Mr. Johnston, Clifton Lodge, turnips (white globe), three roots, 5s.—two competitors.

PRIVATE SWEEPSTAKES.

1.—Mr. Lauder, for the best brood mare for agricultural purposes, 2*l.*—two competitors.

2.—Mr. Henry Porter, Clifton, for the best of three breeding sows, 1*l.* 10s.

Some enquiry having been made respecting the draining, Mr. BEESLEY said the total length of the draining, on the estates of Mr. Clifton, was 182,615 yards, nearly equal to 103 miles. *(Loud cheers.)*

The CHAIRMAN rose to propose, as the next toast, the health of the judges. They were much indebted to the judges; indeed, without them they could not get on. If they had to judge themselves they would be so biassed in favour of their own stock, that they could not decide fairly. It was of essential importance to have impartial judges, and these could be best got from a distance—persons who were well acquainted with stock, and who would not be influenced by feelings of a private nature. They had been particularly fortunate in their choice of judges on the present occasion. They had one of the Council of the Royal Agricultural Society of England, and than whom no more proper person could have been selected—he meant Mr. Fisher Hobbs. They had also Mr. Statter, of Knowsley, who had peculiar advantages of making himself acquainted with the value of stock; Mr. Bezbie, who had come from a part of the country proverbial for good farming, one of the Lothians, in Scotland; Mr. Hunt, from a county scarcely less celebrated, Northumberland; Mr. Nightingale, of Gisburn, whose merits as a breeder and judge of stock were known far and wide. They had also, for judges of seeds, Mr. Skirving, of Walton-on-the-Hill, a celebrated agriculturist; and Mr. Whinnerah, of Burne Hall, certainly a neighbour, but one so well known and so well qualified for his task, that his judgment might be relied upon by all. He complimented them upon the manner in which they had performed their duties, and would be glad if Mr. Fisher Hobbs would take that opportunity of giving his opinion of the show. *(Cheers.)*

Mr. FISHER HOBBS, on behalf of his colleagues and himself, thanked the chairman for the complimentary manner in which the toast had been proposed, and the kind way in which it had been received. He had come amongst them a perfect stranger, and he trusted the remarks he should make would be received in a liberal spirit. He had enjoyed opportunities of seeing first-rate stock from his official connection with the Royal Agricultural Society, and more frequently from his attendance at agricultural meetings in the south of England. He did not expect seeing in this district anything really excellent, but he had been agreeably surprised. He had found the stock very creditable to the society, and competition had been greater than he had ever before found in the exhibition of a local society. With respect to the cattle, he did not find the male animals so good; he would recommend them to pay more attention to their bulls, and they would then find the young stock grow up better than the present stock on their farms. It was evident that there was amongst them a desire to improve, as shown by the fine bull, "Glendale," belonging to the society, which was a credit to them, and had done so much towards improving their stock. He should have liked more prizes to have been offered for sheep; more sheep should be kept by the farmers of the neighbourhood, as no animals did the land more good in proportion to what they consumed than sheep. There were many animals shown which were much larger than what he approved—those which came early to maturity, and fattened soon, were the best for farmers. *(Hear, hear.)* If smaller animals were obtained, not diminutive ones, but certainly not that extremely large size he had seen that day, he thought they would find it advantageous. In the short visit he had made to this neighbourhood, he had had but little chance of observing, but in what he had seen he saw there were great opportunities as well as room for improvement. He hoped the tenants would take advantage of the chances which they had—chances which were so seldom offered by landowners. Mr. Clifton gave his tenantry great privileges. He gave them tiles for draining, and more than this, he gave his tenants a long and liberal lease. (*Hear, hear.*) He was sorry some landowners would not do this. They saw what advantages the Scotch farmers derived from leases. When he had a lease, the tenant had an interest in his land—it was his interest to improve it. Associations such as the one whose annual meeting they were then holding were of great benefit. As far as he had been connected with the Royal Agricultural Society of England, he was glad to

find that it had done good. As a practical farmer, he had joined it when first established, and he should not have done so had he not thought it would have been of benefit to himself and other farmers in the country. Those who had seen the exhibitions of the society in different parts of the country would say that the society was worthy of the support of every man. Those gentlemen who were members of it, and had inspected the seeds, the implements, the cattle, &c., at its annual meetings, would say their annual subscription of a sovereign was well laid out. They would say, too, on reading the essays in the Society's Quarterly Journal, that there was much valuable reading, and that their subscriptions could scarcely be better spent. Mr. Hobbs concluded by again thanking the company for the way in which their services had been received, and their healths drunk.

Mr. BEESLEY read the

REPORT OF THE INSPECTORS OF THE LYTHAM AGRICULTURAL SOCIETY.

"Messrs. Fisher and Walker, the inspectors of the Lytham Agricultural Society, beg briefly to lay before the committee and the society a few remarks, which, under inspection, have been presented to their notice. The chief heads under which their attention has been called are, farm culture, draining, and turnip growing, under which heads the entry list has been very satisfactory, and the competition of a character highly creditable to the parties engaged therein. And, whilst they tender their meed of praise to the successful candidates for their efforts and system, they cannot omit the same to the unsuccessful ones, for their close and near alliance in merit to their more successful neighbours. It would be considered a repetition on their part, to dwell on the necessity and utility of draining; and the very extensive way in which it has been prosecuted, both in character and extent, seem to render it unnecessary on their part to do so; but they beg respectfully to urge, that where any thing like perfection in husbandry is sought to be attained, and also the preservation of the farmer's tillages and labour, draining ought to be the preliminary operation to effect it. On the farm culture they feel an interest in having to record very considerable extension of well cultivated green crops in their various departments, and which, after draining, they consider as one of the essential means of raising estates to a higher degree of cultivation, an object so desirable to be effected. They particularly and respectfully invite the attention of proprietor and farmer to this matter; for although much has been done and much is in progress, they feel a confidence on their part, that it ought to be still further extended. The turnip system seems to be progressing very considerably; lots, from five to upwards of thirty acres, they find on one farm, not, as formerly, in small measured lots in part of a field, but whole closes, regularly drained and cultivated with this root.

"It may not here be out of place to make a few remarks that have occurred to them, on guano, which has been extensively used on the estate. They almost invariably find the crops sown down with this manure of luxuriant growth, and, in general, where it has been used on the alluvial and clayey soils, good in the root; but where it has been used on lighter soils, and on land lately taken from grass, it seems to have prompted the growth of the top and neck of the turnip more than that of the root. They are inclined to think also, that in many cases too much of the guano has been used, and that the crops have not been thinned sufficiently; but they are quite convinced that it will form a most valuable and cheap auxiliary in the growth of this root.

"For the cottage and garden premiums there has been very ample competition, not only in Lytham, but in the parts of the district more particularly agricultural. Of the former, in Lytham, they scarcely can express in suitable terms the neatness of the cottages and the small garden fronts attached to them; these, added to the neat allotment closes, newly fenced in, and in which are great varieties of useful produce and ornamental plants, are in the most clean and orderly condition. The same may be said of the agricultural labourers in various parts of the district; their attention and care in enclosing portions of land, and rendering other portions more useful and valuable, also in planting quicks, railing and properly preserving them, are objects well worthy the imitation of others. For themselves, and in behalf of the society, they pay a willing tribute of praise to this class of competitors for the society's premiums.

"It would interfere with the time and space allotted them, were they to dilate upon the merits of the different competitors for the premiums given by the society for fencing, marling, sanding on strong and moss soils, &c., and laying down land to grass. On the last-mentioned subject, however, they would wish to say a few words:—Doing this matter well is the beginning of good husbandry, and the best and only preparation for corn. For this end they recommend that land be sown with grass seeds after a green crop, with a fallow in the spring, made perfectly clean, and deeply and thoroughly pulverized; these, added to a tillage suited to the circumstances of the case, will answer every expectation which may be formed of it, both in corn and grass.

"On sowing beans in drills, the competition has not been so numerous as in former years. The inspectors advocate the principle on account of the superior condition the land is left in under the drill system in this crop, over the broadcast; and also, that it will serve to do away with the necessity of so much naked fallow, which almost invariably succeeds beans in broadcast. The above is their opinion on the subject, and they practically put it in execution; and, with deference to the opinion of others, they consider that the system may with profit be very generally adopted. They repeat that it is on account of having greater facilities for cleaning the land, and obtaining a greater quantity of corn along with the straw, that they adopt it, and are further of opinion that a watchful eye ought to be kept to this matter. Nothing, they presume, is so likely to effect it as keeping the land dry, perfectly clean, and under the green crop system."

The CHAIRMAN said, when he spoke of the intimate connection there was between agriculture and manufactures, he did not doubt but such would be readily acknowledged; for where, if not in this county, would the desirableness of such a connection be appreciated. There were many persons present connected with both pursuits. Many gentlemen from the neighbouring important town of Preston had visited the show that day, and he thought the best way in which they could

show their appreciation of their kindness, was by drinking "Prosperity to the Town and Trade of Preston." There was a gentleman (Mr. Paley) on the left hand of the vice chairman, whose name he would connect with the toast. *(Cheers.)* The manner in which the suggestion had been received shewed that he had done right. He asked them to join him in three cheers in drinking "Prosperity to the Town and Trade of Preston."

Mr. FAIR, with the permission of the chair, would propose the health of one of the judges, who had perhaps, more than any gentleman in the county, laboured to improve agriculture — he meant Mr. Skirving. He would take that opportunity of informing them, that he had a paper in his hands relative to the powers of various manures, from which he would state some results of experiments, tried on land at Lytham. The crop was turnips: thirty or forty acres had been sown under the direction of Mr. Beesley, and of his (Mr. F.'s) own pupils, to whom he had given strict injunctions to be particular in measuring the different breadths, and weighing the crops. Upon two statute perches, tilled with farm-yard manure, he had obtained 55 stones of turnips and 15 stones of tops; the same quantity of land, where guano had been used, produced 47½ stones of roots and 20 stones 6 lbs. of tops. He wished to call their attention to this fact, as regarded the difference between farm-yard manure and guano. Farm-yard manure produced more roots—the most valuable part, but guano more tops; with gallaxoide, he had 51 stones 3lbs. of roots, and 19 stones 8lbs. of tops; nitrate of soda, 39 stones 7lbs., and 20 stones of tops. With compost, a mixture in which moss copping formed a part, he had 49 stones 7lbs. of roots, and 42 stones of tops. He must admit that the turnips had been sown too thick, so as in some degree to interfere with the value of the experiment. He was of opinion that farm-yard manure was the best: though Mr. Skirving had shown large roots grown from guano, he had his misgivings of its efficacy.

In answer to Mr. TOWNLEY PARKER,

Mr. FAIR said he was not prepared to state the relative cost of all these manures. He concluded by proposing the health of Mr. Skirving, and that gentleman in replying would probably favour the company with his opinion.

Mr. SKIRVING said he had been taken by surprise by Mr. Fair. Mr. F. had given them the result of his experiments with the manures, but he had not given a more essential point—the cost of each. Farm-yard manure, he admitted, was the best manure they could have, but there was not enough of it, not half enough, scarcely a tenth part of the quantity that ought to be used. Guano was the next most valuable. He considered the use of guano as the most important discovery in agriculture in modern times. They could take it to the tops of the highest hills where they had sheep pasture, where they could not cart farm-yard manure. Persons had told him of having made artificial manures equal, yea, some said even superior to guano. He had tried them, and they had failed. He considered farm-yard manure the best, guano next to farm-yard manure as the most valuable, and then bone-dust. He would ask persons who talked of making manures equal to guano, if they could manufacture bird-dung, why did they not make horse or cow-dung. His friend Mr. Fair had sown his turnips too thick; they had not had room to grow. If they manured highly they must give plenty of space. If the turnips had been thinner, there would have been ten tons more to the acre. He (Mr. S.) had sown his seed with his own hand, and they had that day seen some of the produce. His were manured with guano. Gallaxoide might be good, but it was too dear. Comparisons as to the produce of the different sorts of manures would be quite fallacious, unless they were accompanied with the cost. He considered guano as the best and cheapest manure.

Mr. FAIR thanked them for their kindness. During the time he had filled his situation, his anxious desire was to perform his duty to both landlord and tenant. Mr. Fisher Hobbs had told them that he had been pleased with the stock shown that day, excepting the bulls. He was himself sensible of the deficiency in that respect early in the day. There could be no greater mistake to fall into than to neglect the bull or cow. Some had failed to obtain the use of their fine bull, "Glendale," when they were at some distance from Lytham, and in some instances had gone to an inferior animal. The time had arrived when "Glendale's" heifers should be crossed by some other bull. He had been authorised by Mr. Clifton to purchase from Mr. Benn, Lord Lonsdale's agent, who had distinguished himself as a breeder of short-horns, a fine young bull. It was as easy to rear a good one as a bad one, and he hoped in future the tenants would pay particular attention to their breed of cattle, and make use of this fine animal. Mr. Fair then alluded to the sale on the following day, at which he said there would be a number of horses brought together that would be a credit to the district. He would say, that within the last six or seven years it had been the object of the farmers to improve the breed of horses. Formerly, from disinclination or necessity, which he would not venture to say, if a farmer had a good foal he sold it, and kept his bad animals to breed from, so that there was sure to be poor stock. Now they were alive to the importance of the subject, they selected the better kinds of mares and put them to the best bred horse within reach. He thought only two sorts of horses should be bred, a good field horse and a team horse: coach horses were a drug. If gentlemen would remain until the following day they would see as many nice young horses brought before them as any part of the county could produce. Mr. Fair again expressed his obligations, and said that anything that he could do to promote the prosperity of the tenantry he should at all times be ready to do.

The CHAIRMAN gave the "Successful Candidates," and hoped that Mr. Cookson, who obtained the premium for the best cultivated farm, Mr. Scott, who had obtained a prize for the best crop of common turnips in drills, and Mr. Ward the prize for beans, would give their opinion of the best modes of improving. As to manures, for himself, he would say they should try them all, and then they would see which was the best.

Mr. COOKSON rose to thank them as one of the successful competitors for prizes. He would say a few words on the best system of culture on sandy land, which was the sort of soil on the farm he occupied. Such land, in its natural state, was the worst kind of soil. They must apply other substances to it before they could make it produce much. First, they should marl it; but the land to the west of Lytham, and which was principally

sandy, was so far from the marl-pit that they could only, with one cart, go seven or eight times a day to the pit, which made the cost great—8*l.* or 10*l.* an acre. The next step was under-draining. When the land was under-drained the rain percolated through the soil into the drains, and water ran off as clear as through a filter, and washed away none of the soil. (*Hear.*) The next was the drill system; then apply guano or other manure, and horse or hand-hoe it. Then weed it; the weeds drew from the land what should support the crops. (*Hear.*) Mr. Fisher Hobbs had alluded to the scarcity of sheep in the district, but some parts of the estate would not do for the keeping of sheep. They could not be kept long: they must be sold off, or they would die of the rot. As to artificial manures, he thought there was a deal of quackery in them; as much as there used to be in pills. (*Laughter and cheers.*) After draining and marling, and manuring with bone-dust, he and his brother had grown turnips on land where they could not have done before. Mr. Fisher Hobbs must remember that cheese-making was a favourite pursuit of the farmer in that district, as sheep-breeding was in the south. He (Mr. C.) had been in the south, and had noticed that the land was much drier, which would render it more suitable for sheep. Mr. Cookson concluded his speech by thanking all the company for including his name in connection with the last toast.

Mr. WARD, having been called upon, rose to tender his thanks for the toast. He said the foundation of all good farming was draining. (*Hear.*) He had a field that was a short time ago something like a wilderness, but now, after being drained and sown with beans, was like a wood, so excellent a crop was there. The land being carr or moss land, and more porous than some, did not require the drains to be so near together. He had cut his drains 36 inches deep and 20 yards apart. His course of crops was—1st, oats; 2nd, beans; 3rd, oats; 4th, grass. Some thought that when the large new drain was cut they would not need under-drains, but they must have under-drains if they wanted good crops.

PRESTON AGRICULTURAL SOCIETY.

The annual meeting of this society was held on Saturday, Oct. 14th. The stock shown was of first-rate quality, and the greater part quite equal to what had been exhibited at the late Liverpool meeting. There were some capital bulls on the ground—animals that might be equalled, but could not be excelled, by the best breeds of the country; and the cows also were especially worthy of notice, and attracted very considerable attention. The show of pigs was excellent, both as to quantity and quality, and could not be beaten even by those exhibited at the Lytham shows, and that is saying no little in their praise. There were some good horses, but the number altogether on the ground was very limited; and, with one of the judges, we may express our surprise that it was not greater: the farmers in this neighbourhood might have taken out a leaf from the book of the Lytham tenantry, who at the late sale of stock there (the day after the meeting) obtained such prices for their horses as we are quite sure will be an inducement for them to proceed in the way in which they have begun, and breed horses of a superior description for the road and field. The show of roots, and also of agricultural implements, were also very good; the latter included the best selections from the stocks of Mr. Whitehead and Mr. Lewis, many of them exciting the curiosity of the persons on the field. We have very much pleasure in congratulating the esteemed honorary secretary to the society, Mr. A. Bannerman, on his exertions to get up a good meeting having been crowned with the most complete success, for we believe we shall not be wrong in stating that it was the largest and best meeting of the society that has ever taken place. The judges having very carefully gone over the stock, &c., awarded the various prizes. The business of the show-yard being ended, the next adjournment was to

THE DINNER,

which took place in the large room at the Bull Hotel, where a party of some seventy gentlemen were collected. We heard it suggested by an old friend to agriculture, who had noticed the very meagre attendance of farmers, that it would be a good plan that each landowner should bring, at least, one of his tenants (which he intended to do next year, and pay for him too), that he might have the benefit of the suggestions thrown out at the meeting, and who would be enabled to communicate those suggestions to his neighbours. We think the hint is a good one, and worth imitating. The chair was occupied by R. Townley Parker, Esq., the President of the Society, he having on his left T. R. Wilson Ffrance, Esq., the Rev. Gardnor Baldwin and Son, — Rothwell, Esq., and W. A. Cross, Esq.; and on his right T. B. Addison, Esq., G. Jacson, Esq., Hugh Hornby, Esq., and T. Birchall, Esq. The Vice-chairmen were W. Taylor, Esq., and J. Paley, Esq., supported by J. Blanchard, Esq., and other gentlemen.

After the dinner was concluded, a very handsome dessert was placed on the table.

The usual loyal toasts having been proposed and drank,

The CHAIRMAN gave "Prosperity to the Preston Agricultural Society," and although he could have wished to have seen the tables better filled, yet he had been informed by those who had had opportunities of judging, that the display afforded to the public was a most gratifying one, and that at no former exhibition had there been witnessed a more credible stock, nor one which evinced greater interest on the part of the various members of the society, and that in point of merit Preston was a formidable rival to the more important society at Liverpool. Whether the last report might or might not be exaggerated, those who had attended both exhibitions would best determine, but certainly the exertions of those connected with the Preston association had elevated it to a position of which all might be proud. He had lately presided at an agricultural society's meeting in the neighbourhood, at which there was a great number of the actual occupiers of land present, and he would have rejoiced to have seen the example more fully followed at Preston, but still he beheld around him a number of gentlemen more engaged in other pursuits than that of agricultural, and this was a proof to him of the general spread of interest in the subject. They had enlisted also in the cause of agriculture the services of gentlemen who best understood the

science of chemistry, and with all these promising appearances, and the anxiety so many were displaying, he trusted that their county would very shortly rank amongst those more highly favoured by nature, and which had long preceded them in attention to agriculture. Speaking of the connection of chemistry with agriculture, he could not fail to notice a subject which attracted much consideration—artificial manures. He would not repeat the observations he made on that branch of agriculture at the late meeting in Leyland. No doubt great merit was due to artificial manures, and they must be strong assistants to farm-yard manure; and though idle farmers might think that with a small degree of expenditure they could, with little labour, force an extraordinary productive crop, he believed that farm-yard manure, if properly attended to, would be found to be ultimately preferable. In some parts the application of guano had failed, in others had been used with astonishing success, but he thought gentlemen should be cautious in resorting to the extravagant use of those manures with the nature of which, and their effect upon the land, they were not sufficiently acquainted; and he was induced to press this caution from the circumstance that bone-dust, in itself highly productive, had recently excited great attention in the neighbouring county of Chester, and its effects had appeared wonderful; but it was observed at a late meeting that the result of its application had, in one very important point of view, been neither satisfactory nor pleasant, for in South Cheshire the taste of the cheese, for superiority in which the county had long been famous, had been affected to such a degree, that unless some means were speedily taken to counteract this effect, the farmers of some county in which bone-dust had not been so extensively applied, would step in and take from the South Cheshire farmers the boast they had long made of the excellence of their cheese. A friend of his had applied to a cheese factor in Manchester, who was supplied from a South Cheshire farmer, from whose dairy his friend had for many years obtained a stock of cheese, and after tasting several, he remarked to the cheese-factor that they did not possess the peculiar flavour they once had; the answer was that the farmer had applied bone-dust in large quantities to his land, and the taste of the cheese was much changed, and there was about it something strange and unpleasant to the palate. Seeing, then, the results of the application of bone-dust in South Cheshire, he wished the farmers of Lancashire to use all caution before they applied to the unlimited extent which had been recommended any manure with the nature of which they were not thoroughly acquainted, and which might be as detrimental as bone-dust had shown itself to be. If indeed the application of bone-dust has generally affected the taste and qualities of the Cheshire cheese, it occurred to him that this effect might be explained in not an unnatural manner, which was this:—They knew that stall-feeding milch cows was a system much recommended, and it was allowed on all hands that the produce of cows so kept was as great as when they were permitted to go at large, but that the quality of the milk was inferior, and this effect would, he thought, be explained by saying that it was necessary not only to give the proper degree of nutriment to the animal, but that this ought to be accompanied with a proper degree of exercise, and that keeping these animals up might affect the taste and quality of the milk, although not the quantity; so of bone-dust. In the neighbouring county the pastures are small, and are made exceedingly productive from the application of a large amount of bone-dust; the consequence of which would be, that the cow can obtain sufficient food with little or no exercise, and they saw the effect of want of exercise in the system of stall-feeding; and besides that, as the peculiar nature of one kind of manure produces only one kind of grass, and a variety of manures produces a variety of grasses, so it appeared to him that by using several manures—such as guano, bone-dust, galaxoide, and compost—they would obtain a variety of grasses, and by that means would induce the cows to take that exercise which nature intended they should have; and it behoved gentlemen to consider whether, though by applying a very particular description of manure they might raise an abundant quantity of herbage, they were not in point of fact doing themselves an injury rather than a good; whereas, if they would vary their manures, and carefully note the effects produced, they would be enabled to give much information at meetings like the one at which they were then present, which would greatly benefit their friends, and the communication would advantage themselves. He would take an opportunity of calling on a gentleman, his friend on his left (Mr. Wilson Ffrance), to explain his method of draining, and he no doubt would say that without a scientific system of draining all their manures would be thrown away, and that the root of real good farming was founded on draining, and he trusted his friend would give the results of his experience to those not so scientific as himself. There was another gentleman to whom he would apply for information relative to liquid manure; and to the judges of stock and crops he would apply for information on those points. The chairman concluded by repeating his toast, "Prosperity to the Preston Agricultural Society:—

The CHAIRMAN then requested their honorary secretary, Mr. Bannerman, to declare the names of the successful competitors, and that gentleman read the following

PREMIUMS.

To Mr. Wm. Sansom, Chorley, for the best cultivated farm, £5.

To Mr. John Ward, Westby Hall, for draining the greatest quantity of land, in proportion to the size of his farm, £5.

To Mr. James Cartmel, Little Marton, for laying down the greatest quantity of land in the best manner, with well selected permanent grass seeds, £3.

Mr. Wm. Farnworth, Worden Old Hall, for the best crop of Swedish turnips, £3.

To Mr. John Ward, Westby Hall, for the best crop of drilled beans, £2.

To Mr. Richard Ball, Rossall Grange, for the best crop of common turnips, £1.

To Mr. Edward Sykes, Carr House, Thornton, for the best and most useful general farming stock, £5.

To Mr. Alexander Bannerman, South Cottage, Chorley, for the best bull above nine months and not exceeding five years old, £6.

To Mr. Hugh Spencer, Samlesbury, for second-best do., £4.

To Mr. Birchall, Ribbleton Hall, for the best cow, £3.

To Mr. Birchall, for best heifer under three years old, £2.

To Mr. Henry Porter, Clifton, for the best heifer under two years old, £2.

To Mr. Alex. Bannerman, South Cottage, Chorley, for best heifer calf, £1.

To Mr. Henry Porter, Clifton, for the best boar under three years old, £2.

To Mr. H. Swift, Samlesbury, for the best sow, £2.

To Mr. Wm. Dewhurst, Moss Hall, Lytham, for the best brood mare, £3.

To Mrs. Ann Croasdale, Livesey, for the best three-year-old cart colt, £2.

SWEEPSTAKES.

To Mr. Alex. Bannerman, South Cottage, Chorley, for the best bull of any breed, £2 12s. 6d.

To Mr. Joseph Noblett, Myerscough, for the best bull calf, 10s. 6d.

To Mr. Birchall, Ribbleton Hall, for best cow in-calf or milk, £1 11s. 6d.

To do., for the best heifer under three years old, £1 11s. 6d.

To do., for the best heifer under two years old, 10s. 6d.

To Mr. Alex. Bannerman, South Cottage, Chorley, for the best heifer calf, 10s. 6d.

To Mr. Wm. Dewhurst, Moss Hall, Lytham, for the best brood mare, £1 1s.

To James Blanchard, Esq., Grimsargh House, for the best three-year-old colt, 10s. 6d.

To Mr. Hugh Ashcroft, Tarleton, for the best two-year-old colt, £2 2s.

To Thos. Wade, Preston, for the best one-year-old colt or filly, £1 1s.

To Mr. Geo. Singleton, Broughton, for the best foal, 10s. 6d.

To Mr. Henry Porter, Clifton, for the best boar, £2 2s.

To Mr. Hugh Swift, Samlesbury, for best sow, £1 11s. 6d.

To S. Horrocks, Esq., Preston, for the best fat pig, 10s. 6d.

To Mr. H. Unsworth, Huyton, for the best fat cow, £1 1s.

To Mr. William Nightingale, Lune-street, Preston, for the best four roots of Swedish turnips, £1 10s.

To Mr. Geo. Jackson, Preston, for the best four roots of mangel-wurzel, 10s.

Mr. Hugh Unsworth, of Huyton, Blackrod, kindly returned to the society's fund the sum of £6, being the amount of a premium awarded to him last year.

The CHAIRMAN distributed the several premiums for last year to the candidates, and as he closed he said, that the report read must have given the greatest possible satisfaction to the society, and they were at the same time much indebted to those gentlemen who had enabled them to make their selection of the most meritorious, and he therefore proposed the healths of the Judges of Stock, and the Inspectors of Farms. The former were Mr. Wm. Dale, of Catterick, Yorkshire; Mr. Fryer, of Catterick-bridge, Yorkshire; and Mr. Wm. Hunt, of Dilston, near Hexham, Northumberland; and the latter were Mr. Henry Fisher, of Carleton, and Mr. Robert Walker, of Thistleton. He believed Mr. Dale, one of the judges, could inform them on a question to which he had just alluded, namely, the application of liquid manure; and it would be equally desirable that those gentlemen whose attention had been more particularly directed to the point, should state what in their opinion was the best course of husbandry to be pursued by a tenant, and, which was still more important, what was the duty the landlord ought to perform. "The Judges of Stock and the Inspectors of Farms," and, as the only return they could make, with all due honours.

Mr. DALE regretted that he was incompetent to give any information on liquid manure, for in his district it was never applied. As regarded artificial manures—bone dust had been used with great effect in their neighbourhood; rape-dust had also been used, sown at the same time with the wheat, and the experiment had been successful; guano had been tried to a small extent, and had answered well for the first year, but not so in the second or third year; he considered it had acted as a stimulant, but ought not to be adopted as a manure. As to the stock shown, their expectations had been exceeded, and perhaps they would excuse him for pressing upon their notice the advantage of procuring as perfect a bull as could be obtained, without looking to the expense in the first instance. With regard to the stock of horses, he was sorry to see so small a show; there were good animals shown, but the number was very limited. He had never attended an agricultural meeting at which the stock of pigs they had that day inspected could be surpassed; and from the specimen of turnips shown it was evident they had the power of excelling in their short-horned cattle. The show of sheep was like that of the horses, much smaller than he could have wished, and he regretted this, for sheep would be found a profitable part in the farmer's stock. He returned his best thanks for the honour paid to the judges, and wished every success to the Preston Society.

Mr. WALKER begged to offer a few remarks which had occurred during their inspection. First, they could have desired greater competition for the premium offered for the best regulated farm, though in those they had examined they found everything deserving praise; middings in good order, draining thoroughly performed, and manuring carried on to a great extent. The gentleman to whom the premium had been awarded had opportunities of making more improvements than could be effected by ordinary farmers; but since his farm was in the best order he was entitled to the premium, and they gave him much credit for his management. There had been two competitors for the reward for draining, by one of whom a considerable extent had been completed; but generally speaking this was not sufficiently attended to, and he wished all young farmers to commence in good earnest with drains of 18 feet distance, through the fields on what was called the longitudinal system, or draining *down* the fall. It might not be in the power of some farmers to do this to the extent wished, but he begged every attention might be given to the subject, and that the farmer should strain all efforts to raise his land into good cultivation; and he trusted that the assistance of the landlords would not be withheld. Mr. Ward, of Westby Hall, had drained with tile and turf 17,520 yards, on the principle they recommended—the longitudinal draining. The next thing which came under their notice were the Swede turnips, and though not many competitors the crops were good. For the common turnips there was only one competitor, and he thought the farmers were neglecting a most profitable article, and one which left a field in better order than any other crop. He would only detain them with a remark on the stocks of cattle seen on the farms, which impressed upon him most strongly the necessity of obtaining a first-rate bull for the district.

In reply to a question from the Chairman as to the cost of draining,

Mr. WARD said the draining done at Westby Hall had cost for the labour 3d. a rood of 8 yards, cut 28 inches deep, and he had not perceived any difference in the cost of the labour of draining either with turf or tile. He cut his drains 18 feet apart, but could not speak to the cost of the materials: had found the greatest benefit from draining in car lands, where he laid his drains 20 feet apart, and had grown fine crops of beans and oats upon car land so drained.

Mr. WALKER thought drains 18 feet apart would answer best on strong lands; on car lands the drains might be 18, or 21, or 24 feet apart.

The CHAIRMAN requested Mr. Bannerman to explain the mode of draining used by Mr. Crosse, and the expense.

Mr. BANNERMAN said the drains were made on Mr. Smith's (of Deanston) system, 30 inches deep, 15 inches wide at the top, and 4 inches at the bottom; the cuttings were partially filled with broken stones, and on the tops they placed a sod, over which was the soil; the drains were laid five or six yards apart, and conducted into the main drain cut at the head land, and which was generally cut two or three inches deeper than the others. The expense of cutting was about 4½d. per rood of 8 yards, and the filling about ½d. per rood. The expense of materials and carting he was not prepared to detail. The whole expense would be about 1s. 9d. per rood, which covered all the items. He was making smaller drains at 6 yards apart, and filling them with gravel, which saved the expense of getting and breaking stones: he could speak to the very beneficial effects of draining. Last autumn, two meadows, which had previously grown little beside rushes, were drained, and this season had returned an excellent crop of hay. He believed Mr. Crosse's system was applicable to almost every description of land; in wet, sandy soil, perhaps, it might not be so applicable. The cost of 3s. per rood would include the charge for horse labour, &c.

The VICE-CHAIRMAN requested Mr. P. Park to speak to the cost of some draining in which he had been concerned.

Mr. PARK had adopted Mr. Smith's longitudinal system. The description of the land was a thick soil with clay underneath, and he could state the exact expense, for the work had been done by contracts, and the entire cost had been 1s. per rood of seven yards. The quarry was situate upon the estate, and so the cost of carting stones would be but trifling. He had drained 30 miles on this system, and both himself and the tenants were decidedly in favour of it. At the late Blackburn agricultural meeting the society's medal had been awarded for the draining.

Mr. THRELFALL, of Hollowforth, was desired by the Chairman to give his opinion on the advantages of spade husbandry, when Mr. T. said that being fully satisfied in his own mind with the result of the experiments made twelve months ago, he was continuing the plan. Last October he had a field dug with the intention of sowing it with wheat; the field was in a condition in which he could not, under the usual course of culture, have expected a moderate crop. In November he sowed it with wheat, which he cut this season, and the yield was 14 or 15 windles to the customary acre. He dug another field which he sowed with wheat in February, and with oats in March last. The wheat had succeeded, but the oats had failed, in consequence of a disease called the wire-worm, and he thought it would be well for the society to investigate the nature of that disease, and endeavour to find some means of preventing it. He had 1½ acres of land cultivated by the spade, part sown with oats, and the remainder with carrots, and the oats had been one of his best crops. He had an acre of land sowed with turnips last season but one, and the present year with wheat, which had done remarkably well. These were the effects of his experiments in spade husbandry, and he left the public to make their own conclusions; he had not had a plough in his land for twelve months, and he thought that where farms were of a moderate magnitude—40 or 50 acres—it would serve the farmer, who, generally speaking, kept three or four horses, to part with two of them, and to do the work by manual labour. His land had been drained eight or ten years ago with a common sod drain, and there was not a surface drain about his farm; the water was taken off by under draining. His drains were from seven to twelve yards apart, and he had about fifteen inches of soil before he came to the clay. His land was capable of being cultivated by the plough, if desirable.

The CHAIRMAN proposed they should drink "The health of his friend Mr. Wilson Ffrance," whom he could not better describe than as the great promoter of agriculture in North Lancashire, and let the toast be attended with the marks of respect the name merited, in the hope that as they cheered him he would in proportion inform them to their benefit *(loud cheers)*.

Mr. WILSON FFRANCE was much gratified by the peculiarly kind manner in which his health had been proposed and received; and to the chairman and the meeting he returned his best thanks. He had turned his attention to draining for the last eleven years, and in his situation the materials with which he had to work were of a peculiar nature, for he had been obliged to adopt turf drains, and from something which had happened at a meeting at which he mentioned his system of draining with turf, he had been applied to for explanations from numerous parts of Lancashire; and in order to obviate the inconvenience of continually answering applications, he had issued a circular, giving full descriptions and engravings of his spades and all connected with the system. He had been charged with having said that turf draining was the only effectual mode of draining; this he had not done, but he would quote in support of his opinions the testimony of Sir James Graham, who recommended them to attend to local circumstances. If they found they could drain cheapest and best by tiles, then adopt tiles; if circumstances varied, and others could drain cheapest and best by stones, then adopt stones; and if again they could drain cheapest and best by turves, then adopt turves. For himself, his lands lay close to an immense turbary, which made excellent turves for draining; and he could adduce no better proof of that than by stating that he had in an adjoining room a turf which he could show by the statement of a living witness was taken from a drain made 56 years since on the Rawcliffe estate, and by examining it they would agree with him that it was perfectly firm, and as good as if put in six months ago; and amongst the advantages attending turf draining, the cheapness (2s. 9d. per 1000), and the facility of conveyance—for with two horses he could cart 1000, one horse would take 700—ought not to be overlooked. By adopting the turf drain, supposing by the application of the subsoil

plough, an inch of the turf should be cut off, the drain would not be broken into; but if a tile drain was once touched, considerable injury would be effected. The size of his drains were 30 inches in depth, 11 inches wide at the top, and 2 inches at the bottom. He did not wish to remove more soil than was necessary, and that would account for the seeming narrowness of the drain. The right mode of draining was down the fall, and the general distance of the drains about six yards apart; and then by making three or four drains from those into the ditch the water would be prevented from running back into the drains. He then referred them to the last part of the Royal Agricultural Society's Reports, where would be found an article on draining by Mr. Copinger Hill, whose drains appeared to correspond with those made in Rawcliffe; and he added that after having cut the drain he removed the clay to the marl pit, and threw the earth only on the drain. The turf swells out by moisture, and thus becomes a fixture, and is very durable; and Mr. Hill adds that in peat draining, when they come to stony or gravelly spots, two pieces of peat are placed side by side, or the sides of the drain built up with turf as well as the top. Sir Humphrey Davy observes that peaty matter will remain exposed for years without undergoing any change, and Mr. Hill by adopting turf draining in Suffolk, though he labours under many disadvantages, both from the difficulty of obtaining his material, and the increased price, shows very clearly the high opinion he entertains of the system. He brought these matters forward with the view of showing how draining could be done cheaply and permanently. Its cheapness he had evidenced, and as to the permanency he was unable to perceive why if a drain remained uninjured for 56 years, it should not remain for 560 years; and the total cost of draining amounted to no more than £2 18s. per statute acre, and the effects were wonderful. Fields that formerly only grew rushes now produced magnificent crops. He had sown a field this year with potato oats, red clover, and rye dust. The oats would be 7½ or 8 loads of meal to the acre, and the clover and rye looked very promising, and would no doubt be an excellent crop. They would always find the land extremely grateful, and that it would return double or treble that which it received. Mr. Ffrance then entered at great length into the subject of the advantage the farmer would receive from having straight fences, and also into the most advisable mode of dividing the farm lands. Mr. Ffrance concluded by stating his readiness to afford any further information, and that if any gentleman would call on him to inspect the improvements, he should receive every attention, and might then see his system in practical operation. He thanked them for the honour they had done him, and resumed his seat amidst great cheering.

Mr. Addison was warmly cheered on rising, and felt obliged by the kindness with which they were prepared to hear him, though this might be owing to their anxiety to learn on what subject he was about to edify them; and certainly if his remarks on agriculture were to be supported by his experience, there would be some risk whether the company would not doubt the propriety of the decisions come to by Mr. Bannerman and the judges, and consider that he was entitled to two of the premiums, namely, as showing the best bull and greatest calf. It had recently been his lot to be occasionally in company with scientific gentlemen, who were, under the direction of government, making enquiries into the sanatory state of towns; and in promoting this, the object they aimed at was the reverse of that desired by agriculturists, for the one was endeavouring to rid the neighbourhood of all liquid manure, whilst the other was wishful to obtain as much as possible. The gentlemen forming this commission entered into the most minute calculations on the subject, and brought forward points of information which ought to receive the best attention from individuals in Preston and other large towns, and their statements showed that the value of the manure would fully repay all disbursements in the laying drains, &c., for conveying it to a distance from the town. He had named this, for he thought it in accordance with the view taken by their president, who objected to artificial manures, because they disturbed the economy of nature, and therefore he conceived, if they would allow manure to be employed of nature's own providing, the result would be to their satisfaction. The accounts published by Liebig, the great chemist, proved that manure was most efficient when applied in a diluted state, and so if the refuse collected in large towns could be carried away through an efficient system of drainage, that would be the manure best calculated for the purpose of agriculture. He trusted the subject might receive every attention, for it was one of great importance, and especially in large towns situated like Preston, on an elevation, and surrounded by agricultural districts on a lower level. As to the promotion of agriculture, the most effectual mode seemed to be the intercourse of gentlemen with practical farmers, and by each showing himself willing to impart and receive information; and none could do this to a greater degree than their chairman, whose health he proposed with all the honours.

The Chairman acknowledged the toast, and expressed the pleasure he had in meeting them. The subject alluded to by Mr. Addison had not escaped the notice of foreign countries; for some years since he was in Florence, a town situated in about the most central part of Italy, and he remarked that the whole of the refuse was carefully collected and removed away by night in large casks, not indeed to be applied to the benefit of the public, but for the purpose of rendering more productive the farm of the Grand Duke; and whether the people disliked the appropriation, or were glad of an opportunity of indulging their natural satire, he knew not, but he remembered they applied to these barrels the very significant appellation of "the Grand Duke's snuff-boxes."

The Chairman gave "the healths of the Successful Candidates."

The Chairman considered that moment a favourable one for proposing his next toast, since he had as his vice-chairman the chief officer of the corporation of Preston, and to the town and trade he wished prosperity. Some might think that the town and trade of Preston were in no way connected with agriculture, but from this opinion he differed, and considered that as Preston flourished so would the agriculture of the neighbourhood; and when a member of that corporation had claimed one of their prizes, he should be extremely glad to make his toast "the health of the Mayor, and prosperity to the town and trade of Preston."

Mr. Taylor returned thanks for the compliment

paid to him and the corporation of Preston. He had no great pretensions to agricultural knowledge, though they had amongst them persons well acquainted with the subject, amongst whom he might mention one of their officers, Mr. Park; and although he himself was more particularly connected with manufactures, and had never possessed an acre of land, he had been for 30 years an agriculturist in theory; and if one so inexperienced might venture an opinion, he must confess that there did not appear to him to have been sufficient attention paid to the analysing the soils, which was surely the ground they ought to begin with, for would not a physician be held a quack who administered the same medicine to every patient? At present farmers applied manures indiscriminately, and without any regard to the nature of the soil; if, instead of so doing, they first ascertained by analysation what the soil really required, they would, he thought, be enabled to proceed far more satisfactorily for themselves, and with greater certainty of success. There needed but little experience and trouble to enable a person to analyse the nature of soils; a few wine-glasses and an accurate pair of scales and weights, furnished the principal apparatus. He merely gave these suggestions as hints, and if at some future period he should become a member of their society he should probably give further attention to the subject.

Mr. Allen adduced an instance of the great benefits resulting from draining, and stated that he had expended, within two years, in improving a farm, 228*l.*, on which sum the tenant had agreed to pay interest at the rate of 5*l.* per cent. He drained on the longitudinal system, which he found acted much more efficiently than the lateral method, or draining across the fall, formerly in use. The longitudinal system answered equally well on lands of a considerable declivity.

The Chairman said he was not quite sure whether there might be in the company any gentleman who was a member of the Lytham Society, but whether or not he should feel the greatest possible pleasure in giving that toast to the meeting, for he could not half express his high approbation of its honourable founder, who had done so much for the neighbourhood in which he resided. Both the Preston and the Lytham societies had opportunities enough of exercising their influence, and he hoped that there might be a rivalry, but he was sure there would be no jealousy between the two. Each had their separate locality, and each was employing the same means to come to the same end; he would therefore give "Prosperity to the Lytham Agricultural Association," and couple with it "Mr. Clifton's good health," which was cordially drank with three times three.

The Vice-president rose to say, that as they were met on an occasion when agriculture was the chief subject of discussion, he would give an agricultural friend of his, whose name had several times, in the course of the evening, been before the meeting, and that was "Mr. Smith of Deanston."

— Rothwell, Esq., had been permitted to propose the next toast to the meeting, which was one that he was sure would be received with the greatest enthusiasm, and that was "the health of the President for the next year, Mr. Wilson Patten." After some further remarks, Mr. R. continued that they were all perfectly aware of the changes that had taken place in agriculture, and of the new systems that had been adopted; but it appeared to him that farming, like every other trade, required that a man should serve an apprenticeship to it (and even then he had continually to learn), for very few would attempt to commence the business of a tailor or a shoemaker without first having served an apprenticeship; and surely to become a good farmer required as much knowledge as did either of these. Mr. R. then made some very apposite remarks on draining, and said he would resume his seat, after giving the health of the President elect, which was drank with three times three hearty cheers, and one cheer more.

The Chairman said he had to draw their attention to the next toast, which for importance was not exceeded by any that had been previously given—that was "the health of Mr. Bannerman, their honorary secretary," without whose assistance and most active exertions the meeting of this day would not have presented the very favourable appearance that it had, for he had restored it from a weak and sickly state to the flourishing condition in which they now saw it; and be it remembered his services are gratuitous, so that the meeting would indeed be ungrateful were they not to receive this toast heartily, and honour it with three times three; and not only because he merited their acknowledgments for the activity displayed as the secretary of the Preston Agricultural Society, but also as that of a land agent, by acting most conscientiously both to the landlord and the tenant, whose interest he considered as one. The health of Mr. Bannerman was then cordially drank.

Mr. Bannerman shortly returned thanks, and said that any services he had rendered to the society were always given with the greatest pleasure, and that his future endeavours would be used to enable it to continue in the favourable position which it had that day presented.

Some other toasts were given, and the meeting broke up after the enjoyment of a most social and agreeable evening.

ON LEASES AND LOW RENTS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

Sir,—The subject of leases having been adverted to so pointedly by Sir Robert Peel in his speech, delivered at the meeting of the Farmers' Club at Tamworth, induces me to offer a few remarks upon the subject; and I shall commence by first stating a few of the leading objections that have been taken against them, and for which it is my intention to suggest a remedy.

The principal objection urged by landlords against leases is that they are binding only upon one party; for should the tenants' property be depreciated by any means to an extent so as to render him unable to meet his engagement, the landlord would have the lease thrown back upon his hands, and receive his farm probably in a worn-out and dilapidated state; whilst, on the other hand, should the bargain prove an advantageous one, the tenant would hold it on until the end of the term, to his own benefit, and probably to the prejudice of the landlord.

Other objections are also urged, such as that landlords refuse to give leases because they may then lose control over their tenants politically; but

as I presume the political opinions of each will be known to the other at the commencement of the term, it is fair to presume that, under a well defined lease, the tenant would not seek opportunities of differing with his landlord upon political matters; and that it is only when rents become oppressive, by a change of circumstances, that the tenant finds it impossible to obtain a remittance of rent, that he then, if ever, endeavours to annoy his landlord, by venting his spleen, should occasion offer to enable him to do so.

I consider that all this may be remedied by a well-adjusted lease; and as the rent of land should be always proportionate to the amount of produce realised from the farm, a corn-rent of all others appears the most equitable mode of adjustment that can be resorted to. But, at the same time, it is requisite that seasons and local casualties should be guarded against, so as not to press too severely at one time; but that the sudden changes in the value of produce may be met by being extended over a longer period than a year, and thus counteract one of the principal objections raised against corn-rents by tenants—that they may from circumstances rise beyond the average in seasons when the amount realised from the farm is far below the average; for instance, as it has happened in several districts of this county during the last year, the wheat in some was a total failure, whilst in others it was unusually good; but circumstances, arising entirely from the nature of the soil and seasons combined, have reversed it in the present year; so that, whilst the tenant of the one is rendered less able, the other is better enabled to pay, and *vice versâ*.

Now, if the average of the past two or even three years were taken to govern the rent of one—upon the tithe commutation principle—this difficulty would be overcome without prejudice to either, inasmuch as the tenant would pay exactly the same amount in his term, with this difference only, that he would not pay the increased rent all in one year, but upon the average of two or three, as the agreement might be made. For instance:—A tenant is desirous of taking a lease of a farm, upon which a considerable outlay must be made, and consequently a considerable risk would necessarily follow the investment, from the uncertainty as to how far the corn-laws may operate for or against him during the term. He hesitates, but observes—If the landlord would ensure him 50s. per qr. for the wheat and 32s. for the barley, peas, and beans, he would take a lease, and invest his capital with confidence. The landlord undertakes to ensure this by converting the present rent, as agreed upon, into one portion of wheat, one of barley, and one of peas and beans, at the above prices, or at whatever might be the average prices at which such corn should at that time be quoted, either at the nearest market where the averages are deduced, or by the general average of the past year as made up for the tithe commutation. Another objection is taken by the tenant. He may have bad crops; prices may consequently rise; and, as he will have to raise a higher amount in money to be deduced from quantity, he again hesitates; but the objection is again met by agreeing after the first year to take the averages of any two or three consecutive years, so long as the lease extends. The averages may be deduced quarterly, or upon the whole year, and the rents may be finally adjusted at the end of every year.

In several instances where I have been entrusted by principals in fixing corn-rents, it has been done upon wheat alone; and in some others upon wheat, barley, oats, beans, and peas. Thus a corn-farm, cultivated upon the four-course shift of husbandry, would have the payment made up from one-fourth in wheat, one-fourth in barley and oats, one-eighth in peas and beans, the remainder of the farm being a fallow clover and grasses. If the rent was agreed at £220, and wheat was at 50s., barley 32s., oats 20s., and peas and beans 28s. per qr., it would stand thus:—

	£.	s.
50 quarters wheat, at 50s.	125	0
25 quarters barley, at 32s.	42	10
25 quarters oats, at 20s.	25	0
12½ quarters peas and beans, at 28s.	27	10
	£220	0

And this is the rent actually fixed upon a farm at the last Michaelmas, and upon which basis the tenant had occupied it the preceding term. In many instances the rent is fixed upon wheat only; but I think it should always be fixed upon the staple produce of the farm, consisting of two descriptions of grain at least; but in some districts, where wheat and barley are principally grown, and the quantity of oats produced is so small that they are principally consumed by the teams, it is then immaterial taking them into account.

Upon this basis, running leases for seven, fourteen, twenty-one, and twenty-eight years, determinable at the option of either party at those periods, might be entered into; but with this exception, that the notice of determination shall always be given some years previous to its taking place.

By this arrangement, another and hitherto insurmountable difficulty connected with the improvement of estates would be overcome. By the present system of fourteen years' term upon leases, the first seven is occupied by the tenant in making improvements and investment of capital; and in the next seven years in again withdrawing it; as it frequently happens that he cannot, until the last year of his term, enter into proposals for another lease with his landlord, who also hesitates until he has ascertained what may be the probable amount of produce at the commencement of the next term; and thus the farm is improved and impoverished alternately during every seven years, without ever advancing a single step towards that perfection which a well-arranged lease would ensure.

As rent should always bear a relative proportion to produce, that mode must be best that ensures it to both parties making the contract. A lease that may be fairly adjusted to-day, may, from sudden changes in the value of produce at a subsequent period, become ruinous to the tenant; and whenever such is the case, the landlord may be unwilling to remit any portion of the rent, feeling that he has entered into a contract that is equally binding upon both parties. The tenant is rendered unable to meet his payments; and therefore, by lessening his expences, gradually withdraws his capital, year by year, until the farm is completely exhausted, himself ruined, and the landlord obliged to take the farm again into his own hands, until, by great outlay of capital, he makes it again worth the attention of another tenant, who has capital to manage it; but who, taking precaution from the ill-success of his predecessor, hires it at a rate far below the value for the next term. The landlord afterwards finds he has been receiving less than a

fair compensation for his farm during this term, and resolves to give no more leases; but all this may be remedied, as I hope I have shown, by a well-adjusted lease upon a corn-rent.

It is upon this account that I think all payments as rent should be reduced to money-payments, and the absurd, and what appears to me unfair mode of tasking the tenant, by his finding poultry, straw-cartage, insurance, and other matters of like nature, for the landlord, should be abolished; but if they must be retained, they ought in the first instance to be calculated at their value, and not imposed in addition to the rent. Another great drawback upon farms is the encouragement of game beyond a limited extent. I have been connected with a parish where it was considered the damage annually done by the game was equivalent to the sum levied by way of poor-rates; and, perhaps, if not to that extent, still to one nearly approaching it. The encouragement of timber in hedgerows is also exceedingly injurious to the tenant, especially if the enclosures are made by throwing down fences and increasing the size of the enclosures, and reducing the timber to proper limits, an additional rental might be obtained, twofold in degree to the loss of timber incurred by the landlord, as I have hardly known an instance where I would not undertake to find the timber for the ordinary reparations of the farm, homestalls, &c., upon condition of being allowed to cut the timber from the hedgerows: so much timber as is necessary for ornament should be preserved, and this might be effected without any, or but little loss to the tenant. But when hedgerows are so thickly populated with elm, oak, or ash trees, as during the summer to be almost impervious to light and air, the damage to the tenant from the exhaustion of the moisture and quality of the soil for a considerable distance, by the roots, as well as by the branches shading the crops, added to the difficulty of getting the corn into carting order in wet weather during harvest, does, in my estimation, reduce the annual value of the land from 15 to 20 per cent.

Homestalls adequate to the occupation are essentially important to the tenant: it is useless for him to produce excellent crops of turnips and esculent roots unless he has proper conveniences for expending them beneficially; and above all, the buildings should be furnished with cast iron, or other water troughs, with underground drains to convey away all water that would otherwise fall from the roofs of the buildings into the yards; the benefit to be obtained from the consequent outlay in this respect is immense, and it is surprising that it has hitherto been so much neglected; for, from the situations of farm yards being frequently upon side elevations, the water falling from the larger buildings completely saturates the manure, and the neighbouring pools and ditches for a considerable distance bear evidence of the extraction and waste; and it is not too much to assert that one-third of the whole manure is thus frequently wasted.

I have extended my letter beyond the limits I proposed; but as I proceeded, the different points to which I have adverted arose in succession; and if I have not so fully explained and carried them out as may be desired, or have not sufficiently explained other parts, I shall be most ready to answer any enquiries that may be made through the medium of your paper. I am, sir,

Your most obedient servant,

Writtle, Nov. 9, 1843. ROBERT BAKER.

REVIEW.

ON THE LAW OF CORONER.

BY RICHARD C. SEWELL, BARRISTER-AT-LAW, London: Owen Richards.

Although this elaborate treatise was chiefly intended by its author for professional readers, to whom it will be a valuable vade mecum, yet he has so managed his valuable materials that it will, we are quite sure, be an agreeable as well as instructive volume to those magistrates and other country gentlemen, who either assist in the administration of justice, or who are interested in the practice or history of this highly honourable and ancient office. We take, as a specimen of the work, its author's opening chapter, in which he treats of the office of a Coroner in general.

"Coroners are very ancient officers at common law so called, because they deal principally with the pleas of the crown*; and in former days were the principal conservators of the peace within their counties, and may now bind to the peace any person who makes an affray in their presence†.

"Coroners are of three kinds:—

"I. *By virtue of their office.* The Lord Chief Justice of the Queen's Bench is, by virtue of his office, principal Coroner of England, and may, if he pleases, exercise the jurisdiction of Coroner in any part of the realm‡.

"II. *By charter or commission.* Coroners, *virtute cartæ sive commissionis*, ordinarily were made by grant or commission, without election; such are the Coroners of particular lords of liberties or franchises, who by charter have power to create their own Coroners, or to be Coroners themselves. Thus the Mayor of London is by charter of 18 Ed. 4. Coroner of London; the Bishop of Ely also hath power to make Coroners in the Isle of Ely by the charter of H. 7. Queen Catherine had the hundred of Colridge granted to her by the king, 35 H. 8., with power to nominate Coroners.

"So the Cinque Ports have their own Coroner. The Dean and Chapter of Westminster have their own Coroner, who, by their appointment, is Coroner for the city and liberties of Westminster; of the Stannaries in Cornwall the Wardens are Coroners. The Master of the Crown Office, or Clerk of the Crown, is Coroner of the King's Bench, and has jurisdiction over matters arising within the prison of that court and the Marshalsea. He holds his office by letters patent under the great seal. In addition to which there are many exclusive jurisdictions and corporations for which Coroners are appointed.

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* 4 Inst. 271. Or the name may be derived from the manner of holding the inquest, *in coronâ populi. See* History of Commonwealth by Sir T. Smith, p. 96, cited arguendo Garnett *v.* Ferrand, 6 B. & C. 621.

† 2 Hawk. P. C. c. 28. s. 5.; 4 Inst. 271. The office of Coroner is by some supposed to be more ancient than that of Sheriff: but this is doubted by others, and as it seems, with reason, notwithstanding the great authority to the contrary; for, according to Sir Edward Coke, the Sheriff was more ancient than the division of England into counties by king Alfred, and existed in the time of the Romans in this country as an officer of the Consul, at which period we find no allusion to any officer whose duties correspond with those of the Coroner. But, whatever may have been the commencement of the office, it is evident that Coroners existed in the time of Alfred, for that king punished with death a judge who sentenced a party to suffer death upon the Coroner's record, without allowing the delinquent to traverse. This office is also mentioned by Athelstan in his charter to Beverley. Jervis on Coroners, 2. *See* Bacon on Gov. 16.; Co. Litt. 168.; Vin. Abr. 6. 242.; Dugdale's Mon. 171.

‡ The other Judges of that Court are also Sovereign Coroners. 4 Inst. 173

In each of the twelve shires, in Wales and Cheshire, &c., there are only two Coroners, which are settled by stat. 33 H. 8. c. 13. and 34 H. 8. c. 26.

But the two principal jurisdictions over which, by the king's grant, Coroners may be appointed, are those of the Admiralty and the Verge.

At common law if any felonies or treasons were committed within any creek or arm of the sea which was in the body of the county, the common law courts only had jurisdiction; but by stat. 15 Rich. 2. c. 3. it was provided, that in "case of the death of a man or mayhem, done on great ships hovering in the main stream of great rivers only beneath bridges nigh to the sea, the admiral shall have cognisance of the same rivers."

It is said that his jurisdiction extends only to rivers that are arms of the sea, namely, that flow, and reflow, and bear great ships.*

When the haven, &c., is within the body of the county, the common law tribunals have a concurrent jurisdiction, and the Coroner of the County, as well as of the Admiralty, may take inquisition of deaths, &c., happening there.†

Therefore, where a man-of-war was *infra corpus comitatûs*, the land Coroner was holden to have jurisdiction; and if the captain refuse the Coroner admission on board, the Court will grant an information.

Again the Admiralty jurisdiction extends only to such deaths, &c., as happen in great ships, and not to such as occur in small vessels.

When the jurisdiction of the County and of the Admiralty is concurrent, the Coroner who first seizes the body is entitled to take the inquisition; and if he proceed to do so, the authority of the other is determined.

The other great jurisdiction is the Coroner of the King's House, usually called the Coroner of the Verge, who it seems anciently was appointed by the King's letters patent, but by stat. 33 H. 8. c. 12. the granting thereof is settled in perpetuity in the Lord Steward, or Lord Great Master of the King's house for the time being.‡

Anciently the Coroner of the Verge had power to do all things within the Verge belonging to the office of the Coroner, to the exclusion of the Coroner of the County; but because the King's court was moveable often, by stat. of *Articuli super Cartas*, c. 3., it is ordained, that on the death of a man the Coroner of the County shall join in inquisition to be taken thereof, with the Coroner of the King's house; and if it happen it cannot be determined before the Steward, process and proceeding shall be thereupon had at common law.

But yet in the case of death within the Verge, the Coroner of the County cannot take an inquisition without the Coroner of the Verge; and if he doth, it is void; but if one person be Coroner of the County, and also of the Verge, the inquisition before him is as good as if the offices had been in several persons and taken by both. And though the court remove, yet he may proceed upon that inquisition as Coroner of the County.

But if a murder or a manslaughter be done within the precincts of the King's palace limited by the stat. 33 H. 8, c. 12., then by the statute the inquisition shall be taken by the Coroner of the Household, without the adjoining or assisting of any Coroner of any County, by twelve or more of the yeomen officers of the King's household: and this is enacted to be as sufficient as if taken by the Coroner of the County, and the method of the return and proceeding upon those inquisitions before the Lord Steward, is therein declared and enacted as follows:—

"All inquisitions upon the view of persons slain within any of the King's palaces or houses, or any other house or houses, at such time as his majesty shall be there demurrant, or abiding, in his royal person, shall be taken by the Coroner for the time being of the king's household, without any adjoining or assisting of another Coroner of any shire within this realm, by the oath of twelve or more of the Yeomen officers of the King's household returned by the two Clerks Controllers, the Clerks of the Check, and the Clerks Marshals, or one of them, for the time being, of the said household, to whom the said Coroner of the said household shall direct his precept: which Coroner shall be from time to time appointed by the Lord Great Master, or Lord Steward for the time being; and that the said Coroner shall certify under his seal, and the seals of such persons as shall be sworn before him, all such inquisitions before the said Lord Master, or Lord Steward."

III. *Coroners by election.* In addition to the Coroners before enumerated, there are particular Coroners for each county, who hold their offices *virtute electionis*, in pursuance of the statute 3 Ed. 1. (West. 1) c. 10, which enacts, "That in all shires a sufficient number of men shall be chosen to act as Coroners." This statute does not define the precise number, which varies in different counties, according to usage, there being in some six, in some four, and in others two, and in some instances but one only. But as no number is limited by the statute, it is competent for the Lord Chancellor, if he thinks fit, to issue a writ for the election of one or more additional Coroners, upon a petition of the freeholders of the county, and the approbation of the justices, certified at the general quarter sessions of the peace holden for the county.

The degree of knighthood is now no longer an essential qualification for the office of Coroner, yet candidates for that office must, it is said, have land sufficient to take upon themselves that degree, whether they be really knighted or not.* They must be possessed of an estate in fee, within the county over which, it elected, their jurisdiction will extend. The statute 14 Ed. 3. st. i. c. 8. enacts "That no Coroner be chosen unless he have land in fee sufficient in the same county, whereof he may answer to all manner of people." No precise amount of estate is defined by this statute, but the Coroner ought to have sufficient property to maintain the dignity of his office, and to answer any fine that may be set upon him for his misbehaviour. But if having an estate in fee within the county, it be insufficient to answer his fines, that will not operate as a disqualification, or be a ground for his removal, if he be of sufficient estate to execute his office; for the county, upon his default, will be liable to the fine, as a punishment for having elected an insufficient officer.

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* Hale's P. C. 16. It should seem, however, that the flow and reflow of the tide is not absolutely necessary to give the Admiralty jurisdiction. Upon an indictment for larceny out of a vessel lying in a river at Wampoa, in China, the prosecutor gave no evidence as to the tide flowing or otherwise where the vessel lay, but the judges held that the admiralty had jurisdiction, it being a place where great ships go. Rex *v.* Thomas Allen, 1 Moody, C. C. 494.

† 8 Ed. 2. Coron. 399. Rex *v.* Bruce, Russ. and Ry. C. C. 243. Lord Coke's opinion on this point in 3 Inst. 113, and that of the judges in 4 Inst. 134 135. were considered erroneous. See also Prynne on the 4th Inst. 86—93.

‡ 2 Hale's P. C. 54. The Verge or Virge (*Virgata*) is the compass of the King's court, which bounds the jurisdiction of the Lord Steward of the Household, and seems to have been twelve miles about. 13 R. 2. c. 3.; Britt. 68.; F. N. B. 24.; Tomlin's Law Dic. *in verb.*

* See 23 Assis. 7.; 4 Inst. 271; Reg. 177; F. N. B. 164; 2 Hawk. P. C. c. 9. s. 3. By stat. 3 Ed. 1. c. 10, it was provided, that "through all shires sufficient men shall be chosen to be Coroners of the most loyal and most wise knights, which know well and may best attend upon such offices, and which lawfully shall attend and present pleas of the crown." This statute never has been repealed, though it has fallen into disuse.

WHITFIELD FARM.

(From the Journal of the Highland Agricultural Society of Scotland.)

In Mr. Trimmer's very able paper on agriculture and political economy in last number of this Journal, p. 20, that gentleman gives a very interesting acount of the improvements of Whitfield farm, belonging to Lord Ducie, under the direction of the well-known Mr. Morton, than whom there is not a more talented agriculturist in the kingdom. From the description of the farm before the improvements were commenced, it appears to have been rather a portion of an ancient forest than a regularly cleared and enclosed farm; it was chiefly old pasture, with an inconsiderable portion of badly-managed arable land; it had been let as a dairy farm at a rent of 200*l.* per annum, the tithe and parochial taxes 65*l.*, the annual expenses of cultivation 170*l.*, and the returns for wheat, cheese, &c., 463*l.*, which, when all charges were deducted, left the tenant little more than 28*l.* for his time, skill, and capital! The farm was taken into hand by his Lord ship, to be managed by Mr. Morton, junior, as an example farm, for the purpose of introducing an improved system of farming among the tenantry in the neighbourhood.

The improvements were planned and carried out on a most expensive and magnificent scale. The timber felled amounted to and sold for above 3,000*l.*; grubbing up old hedges, planting new, draining, subsoil-ploughing, levelling, making new roads and bridges, together with new buildings of every description, cost altogether not much less than 8000*l.*; and notwithstanding this formidable outlay on so small a portion of Lord Ducie's estate, there is well-founded expectations that, from the great additional produce and increased numbers of profitable live stock which that produce will continue to support, an ample return will ultimately accrue to both landlord and tenant. This is a most encouraging result to all capitalists who may be inclined to speculate in the improvement of waste, unproductive, or mismanaged land; for, though much of the success of the improvements in the present ease may be attributable to the judicious measures pursued by the able and experienced conductor, yet there can be no doubt but that, wherever there is land of similar character, and requiring similar expedients of amelioration, such as draining, trenching, or trench-ploughing, liming, &c., similar results will certainly follow.

I have said land of similar character, namely, ancient forest land; because no portion of waste or non-arable land is half so well adapted for the growth of cereals or other agricultural plants as old pasture and woodland. Indeed, it may safely be asserted that, if Mr. Morton had chosen an equal portion of the estate which had been for ages under the plough, and had bestowed upon it every operation executed at Whitfield, he would not have been more successful nor brought out such astonishing results as were realized at the last named place in the space of only three years; for it must be considered that the surface was everywhere clothed with a thick turf, enriched, for centuries perhaps, not only with the droppings from all sorts of cattle, but by the annual fall of leaves from trees, and from the decayed roots and branches of the same. It had not been exhausted of that humus or of those peculiar qualities so necessary for the luxuriant growth of corn, clover, and other green crops or roots; and the store of vegetable food being excited by the dressing of lime, all combined to render the first crops on the fresh compounded soil pre-eminently exuberant. This clearly appears from Mr. Morton's report of two ten acre fields, which averaged five quarters one bushel, and five quarters six bushels, respectively; and some of the land would have been more productive, but for the great burden of straw, equal to 1000 sheaves per acre, thirty inches in circumference and four feet long. Now this, together with the other abundant crops of roots, &c., may naturally be attributed to the very perfect and expensive style in which the improvements were executed, and, no doubt, much must depend on the efficiency of the drainage, depth of the ploughing, and complete disintegration of the old surface; but I humbly apprehend, as I already hinted, that the accumulated store of previously existing vegetable food, resident in and under the old turf, was the chief agent in exciting and maturing the fine crops that followed.

The same consequences are often experienced on new enclosures, if the ground has been properly pared and burnt, if necessary, deeply ploughed, levelled, drained, if requisite, the divisions formed rectangularly with reference to the slopes of the surface, and the ditches or main drains occupying the hollows which have free outlets. All such labours executed on old heaths or commons, of tractable soils of middling or even inferior quality, soon become highly productive, especially for the first eight or ten years after they are brought under the plough, and merely because the soil, of whatever description it may be, is fresh to the seeds sown upon it.

When the gardener wishes to form a compost for his plants of the purest and most salubrious soil he can obtain, he does not go to the rich quarters of his kitchen garden, but repairs to a green common or old pasture, and there choosing the top spit, which he knows contains that nameless quality which is so exciting and nutritious to vegetation, readily obtains what he wants.

In newly peopled colonies, when the settler finds that his first cultivated grant begins to fail in its amount of produce, he immediately removes to a new station to enjoy a repetition of the success consequent upon the first breaking up of virgin soil.

These circumstances are mentioned to show that, however carefully and skilfully the works on Whitfield farm were executed, a considerable share of the subsequent success is ascribable to the latent store of nutritive matter set at liberty by the operations of the plough, &c., and it is not only a proof of the practicability of such improvements, but it is one of the most useful agricultural experiments ever made; and, as an example, is particularly seasonable, now that there is such a general demand for an extension of British agriculture. For any capitalist who has or may have such description of land as Lord Ducie's, or even such land as may be seen on many barren commons, it is equally capable of improvement, and at far less expense than was required at Whitfield. The grand objection to reclaiming waste land is the idea that it will never repay the expense of bringing it into cultivation. The result of what has been done at Whitfield is enough to banish this idea, provided the character of the soil be similar. It is true there are some kinds of land which would perhaps never repay the cost of reclaiming, such as deep moist tenacious clays, full of large stones and sunk rocks; or, which

is equally difficult, flowing sands, that can neither be ploughed nor can even a ditch be dug to receive or carry off the water with which the soil is saturated to a great depth. Here draining is impracticable, there being no natural outlet, nor can such land be laid dry except by an absorbing artesian well. A thick luxuriant turf is in time formed upon such sands, and which serves as a pasture for light horned stock.

But Whitfield is an example for the proprietors of what are called the inferior corn land of Britain. Some of these are loamy or sandy gravels, subject to burn in summer, owing to their want of depth of staple; in such case the subsoil and trenching ploughs might be profitably employed. Others are thin moor earth, or gravels upon the chalk formation, and these would also be greatly improved by the same implements. In short, there is no description of these inferior soils but may be made doubly valuable by applying some of the expedients practised by Mr. Morton on the before-mentioned farm.

It has been said that British agriculture may be so much more improved by additional skill and well-directed labour, that twice the quantity of corn may be produced than there now is. Now, if such a circumstance comes within the bounds of possibility, it must be by the adoption and performance of such measures as were advised and executed by Mr. Morton at Whitfield. There are many thousands of acres of such unproductive land, and capital is only wanted to realize the views of the sanguine friends of British agriculture. If we had five thousand Lord Ducies in this kingdom, and as many Mr. Mortons in full employment, a great change would soon be apparent, not only in the system but in the profits of husbandry.

Mr. Trimmer is of opinion that "there is in this country abundance of surplus capital, both for the improvement of our own soil and the reclaiming the waste lands of our colonies. The more emigrants the greater demand will there be for our manufactures, as the custom-house returns of exports to the colonies incontestibly prove; and the greater the demand for our manufactures, the greater will be the demand for the products of the soil, and the larger the number of our population that can be employed in its cultivation." M.

Size of Trees.—Our native woods often contain noble specimens of which the bulk is ten or twelve feet in diameter, a width greater by three feet than the carriage-way at Fetter-lane, near Temple-bar; and oaks might be named on the block of which two men could thresh without one incommoding the other. The famous Greendole oak is pierced by a road, over which it forms a triumphal arch, higher by several inches than the poet's postern at Westminster Abbey. The celebrated table in Dudley Castle, which is formed of a single oaken plank, is longer than the wooden bridge that crosses the lake in the Regent's Park, and the roof of the great hall of Westminster, which is spoken of with admiration on account of its vast span, being unsupported by a single pillar, is little more than one-third the width of the noble canopy of waving branches that are upheld by the Worksop oak. The massive rafters of the spacious roof rest on strong walls, but the branches of the tree spring from one common centre. Architects can alone estimate the excessive purchase which boughs of at least 189 feet must have on the trunk into which they are inserted. Those of the oak of Ellerslie cover a Scotch acre of ground; and in the Three-shire oak its branches drip over an extent of 707 square yards. The tree itself grows in a nook that is formed by the junction of the three counties of York, Nottingham, and Derby.—*Ruins and Old Trees.*

THE REV. W. L. RHAM.

[Having had the pleasure of the personal acquaintance of the late Mr. Rham, we give our most sincere and hearty concurrence to the subjoined remarks of our cotemporaries in commendation of this worthy and lamented labourer in the field of agricultural improvement.—Ed. F.M.]

With the most sincere regret we announce the death of the Rev. William Lewis Rham, M.A., a Member of the Council of the Royal Agricultural Society, and one of the best agricultural writers of our day. We need only point to his excellent articles in our columns under the signature "M." and to his many valuable contributions to the "Penny Cyclopædia," and the "Journal of the Agricultural Society," to show what a serious loss the science of agriculture has sustained in this kind, good, and amiable man, who died at his living of Winkfield, in Berkshire, on the 31st ult., in the 64th year of his age.—*Gardener's Chronicle.*

REV. W. L. RHAM.

We regret having to record the death of a literary friend, remarkable and highly esteemed in the large and respectable body to which, as a man of practical science, he belonged, though less known to the public generally—the Rev. W. L. Rham. Mr. Rham had, for a period of between thirty and forty years, been rector of Fersfield, Norfolk, and vicar of Winkfield, near Windsor; in the latter of which incumbencies he resided, enjoying the respect and affection of his parishioners as an able, active, and benevolent clergyman. It was, however, chiefly in the exercise of his favourite pursuit—as a scientific farmer—that he entitled himself to public notice, and in some degree to public gratitude. A good practical chemist—versed also in mechanical science—more completely informed, perhaps, than any of his contemporaries of whatever has been written on agriculture—and thoroughly acquainted with the practice of that important science in all its departments, and in every country in Europe—our valued friend was both fully entitled to the familiar intercourse in which he lived with the great patrons of the "agricultural interest," and capable and disposed to be beneficial to his humbler parishioners and rural neighbours in the capacity of an intelligent and disinterested adviser. He was a member of the Royal and several local agricultural societies (one of them instituted, we believe, by himself, in his own parish of Winkfield); was the author of the numerous excellent articles relative to agriculture printed in the *Penny Cyclopædia*; and contributed regularly to the pages of the *Gardener's Journal*, and similar periodicals. He was also (if we are correctly informed) proprietor of at least one patent for improved agricultural machinery; and among the benefits confirmed by him on his Berkshire parish, we must not omit a school, on an excellent plan, uniting practical industry in farm-labour, with the usual routine of instruction. Mr. Rham was born in Switzerland, but descended from a family originally German: some of his relations are conspicuous in the mercantile world, particularly in the United States of America. His destiny as an English clergyman was probably fixed in consequence of a connexion between his family and that of the late Bishop Douglas. His social qualities included gentlemanliness and intelligence of a high order: a favourable opportunity of judging of this was enjoyed by such of his acquaintance in town as were occasionally admitted to the little friendly meetings of the French Protestant Ecclesiastical Committee, of which he was president.—*Literary Gazette.*

SWANSEA FARMERS' CLUB.

At a monthly meeting of the above society, held at the Victoria Rooms some time since, amongst those present were—L. W. Dillwyn, T. Edw. Thomas, J. D. Llewelyn, R. Franklen, J. D. Berrington, J. J. Strick, R. L. Thomas, Howel Gwyn, M. Moggridge, C. Morgan, Esqs., Revs. S. Davies and James, and several farmers. The chair was occupied by the President, J. D. Llewelyn, Esq.

The CHAIRMAN read over the names of several new members, who had been proposed at the last meeting. The Chairman observed, that the subject agreed upon for discussion at this meeting was "Draining," but, as Mr. N. E. Vaughan, who proposed the subject, was absent, it would be necessary to proceed with some other subject. The next proposition in rotation, was "Hay-making," which had been proposed by Mr. Iltid Thomas, who was also absent, but had left, with the secretary, a paper upon the subject.

Mr. EDMOND, the Secretary, then read the paper upon "Hay-making," which was a very interesting one—detailing the best method of growing, the best time for mowing, and the best way of making hay, and of "getting it in" in good condition.

After the paper was read, a discussion took place upon the subject.

Mr. DILLWYN thought, as there were different kinds of grasses, that some of the suggestions in the paper would not apply to all, as some kinds ripened later than others.

Mr. BERRINGTON stated, there were seedsmen in London who would supply an assortment of seed, to grow ready for harvest at the same time.

The Rev. S. DAVIES made some observations respecting the best method of treating hay after it had been mowed. He thought it would be desirable if, instead of rakes, as in this country, that the use of forks could be introduced as in England.

Mr. BERRINGTON observed, that it was the practice in this country to delay getting in the hay until the bottom grass should grow, which was very injurious, as a great portion of the quality of the hay was thereby lost.

Mr. FRANKLEN stated, that he experienced great advantage in mixing clover-hay, when fresh, with layers of barley or oat-straw, which greatly increased the quantity of fodder. By adopting that method with clover, it might be carried in before it was dry. The straw received a certain portion of sap from the hay, and the consequence was, that the layers of straw became nutritious, and as acceptable to cattle as the hay itself. He (Mr. Franklen) would recommend farmers to adopt the same method.

Mr. T. EDW. THOMAS confirmed Mr. Franklen's statement. He had seen Mr. Bradley mix layers of straw with grass newly cut. Very slight fermentation took place, and Mr. Bradley's own horses devoured the straw so mixed with much greater avidity than the hay.

The CHAIRMAN observed, that the method was never adopted in this part of the country. It would be desirable were it introduced.

Mr. FRANKLEN stated, it would contribute greatly towards shortening the hay-making season. He (Mr. Franklen) also found great advantage in wet weather, in sprinkling the hay with a small quantity of salt.

The CHAIRMAN asked, if any gentleman present had any additional suggestions to offer upon the subject.

Mr. T. EDW. THOMAS observed that, at the last meeting, the chairman had promised to read a paper. He was confident that the meeting would be highly delighted with any opinions emanating from such good authority.

The CHAIRMAN then read the following highly interesting paper:—

"At the last farmers' club, I promised to communicate to the present meeting the results (as far as they can be yet ascertained) of the various experiments in agricultural chemistry, which I am carrying on; and I have accordingly arranged a few notes, which may give some information regarding the various fertilizers which have been lately offered to the attention of the farmer. In making these experiments, we are, in fact, asking questions of Nature; and where they are conducted with careful exactness, and watched with perseverance and attention, the answers will be full and explicit. Time, however, is sometimes requisite, and it is always desirable not to be hasty in arriving at conclusions. Some knowledge, also, of the constitution of vegetables, and of the composition of the manure you use, should guide the choice and arrangement of your experiments. Now, it is well known to us all, that plants require for their successful cultivation, food of several different kinds. There are nine elements necessary for the crops which are ordinarily grown in this country, all of which must be either naturally present in the soil, or artificially added to it, before the plant can thrive, and it is for this reason that nitrate of soda, and other simple salts, containing only a portion of the required food, have in many cases failed, whereas guano, which (like farm-yard manure) contains all that is necessary to the growth of the crop, has, where properly applied, been universally productive of the best effects. Theory would therefore teach us, that nitrate of soda would be more profitably employed in conjunction with other substances, than by itself alone; and with this view I mixed it with sulphate of ammonia, and applying it to a small plot of lawn, at the rate of two cwt., and at a cost of about 2*l.* per acre, obtained a most marked difference in the colour of the grass in one week, while an addition of an equal quantity of each of the salts singly, produced no visible effect in a like space of time. In twenty days the plot was mowed, and yielded more than double of the natural produce. In this case, a double decomposition takes place, and instead of adding two substances to the soil, I give it four, without any addition of trouble or expense. On the same principle, I have also tried the addition of gypsum to nitrate of soda, and with very extraordinary effect; but this was applied too lately for me to venture upon any account of its action at present. I will, however, keep an exact register of the progress of this and other experiments, and communicate them to the club, when they are sufficiently advanced to enable me to depend upon the results. With guano, I have made a great variety of trials, upon crops of different descriptions, and in quantities varying from one to ten cwt. per acre. From three to five I believe to be the most profitable application for the average soils of this part of the country; and this I have found, in all cases, to equal the effect of a full dressing of farm-yard or stable manure. But where the soil is poorest, or most exhausted, the greatest quantity of manure will of course be required. As general rules for the use of guano, you should carefully avoid suffering it to come into contact with

lime, and always thoroughly mix it, previous to use, with five or six times its own bulk of ashes—lime having the property of dissipating the most valuable part of the guano, while ashes have the contrary power of collecting them, and keeping them stored up for the use of the plant. I believe, again, that we should do wisely (instead of sowing the manure with the seed) to follow the custom of the Peruvians, who apply it, at three different times, to the growing crop—first, when the plant appears; secondly, when in flower; and, thirdly, at the formation of its seed. Such a course might, perhaps, involve too large an expense; but I would at all events recommend a trial of manuring the young crop when first in leaf, in place of the seed. How long guano may remain in the ground is an important question, on which there is still some doubt, and most of the experiments in the country are of too recent a date to answer it with certainty. The only observation I have yet been able to make, which bears upon this point, is, as far as it goes, highly satisfactory. I measured the grass cut from an experimental part of my lawn, and found a plot, which had been guanized last year, gave double the natural produce; another plot, of similar size, guanized this year, gave four times; while a third, manured with guano both last and this year, yielded six times of the ordinary quantity of grass—thus marking a continued and progressive improvement. I should, however, mention, that the guano, in 1842, was applied in a very large quantity, at a rate of about eight cwt. per acre. For my own part, however, when I see myself surrounded on all sides by a creation teeming with innumerable evidences of useful contrivance and all-wise beneficence, I am tempted to think, that wherever a sterile soil occurs, the remedy for its sterility is also within reach, and open to the ingenuity and industry of man; and I therefore feel greater interest in investigating the arrangement and admixture of those substances which we have around us, and would recommend you to look for fertilizers in Gower and Llangafelach, before you send to the distant shores of Chili or Peru. With this object in view, I am engaged in an extensive series of experiments with burned clay and peat—substances that can be procured in this county in any quantity, and at a very cheap rate, and substances which will, I believe, form most valuable bases for the formation of compost heaps. Of their specific value, as used alone, I cannot at present speak; but to those who may be disposed to follow me in my trials, I would recommend the addition of small quantities of lime and salt. Lime, slaked with salt water, would probably answer the purpose, and be convenient for those whose farms lie contiguous to the sea-shore. Such persons should also make trial of the mud which is left, and forms bars across the mouths of our larger rivers; this would be accessible at low water, and where the length of carriage does not preclude its use, would probably be a very profitable application. But, above all these, the drainage of our great towns is what I am most desirous of calling your serious attention towards, for we may find in them an inexhaustible store of the most valuable manure which at present—worse than wasted—poisons the atmosphere with pestiferous vapours, the fertile source of epidemic disease, but which may readily be deprived of its offensive and unwholesome smell, and made available to the growth of corn, instead of fever. It is estimated by Professor Johnstone, that in a town of 15,000 inhabitants (about half the size of Swansea), 270 tons of manure, of an equal value with a like quantity of guano, and worth at its present price 2,700*l*., are annually carried away, through the town sewers, into the sea. This, properly used, would thoroughly manure 1,500 acres, while every village and every farm-house might contribute its quota to the manure of the country. Looking, then, at the question thus, the means of cultivation will increase with increasing population, and as bread is wanted, the power of supplying it will arise. The practicability of this is proved by the example of the Chinese, who exclusively employ manure of this description, and are thus enabled to provide food for their enormous population. The system again of agriculture in Flanders and Belgium, which gives to the whole country the appearance of a vast garden, is another instance of a district brought to the highest state of fertility, by means of substances which we improvidently disregard. I am happy to observe, however, that farmers throughout England are arousing themselves now, at last, from their blind inattention, and seeking the aid of rational science, so that I confidently look upon 1843 as the commencement of a new era in British agriculture—an era which shall quadruple the produce of the country, which shall improve the condition of the farmer, and which shall give employment to the thousands who are now compelled to beg for work—and, alas! too often to beg in vain. That we may participate in these great advantages, and not fall behind in the race of improvement, is the object of our farmers' club; and with so great an object in view, who will not be willing and anxious to put his shoulder to the wheel? That we should continue to stand where we now are, is impossible. To compete with others who follow improved systems, we must ourselves improve; and if we do not advance, we shall inevitably go back. For my part, I will spare no exertion to secure to this county a fair trial of those improvements which are found to give profitable returns elsewhere; and am ready to undertake any course of experiments that may be recommended by the committee, which was appointed at our last meeting, with a view of suggesting to us such improved systems of husbandry as should seem to them most adapted to the general circumstances of our soil and county." (*Long-continued applause*).

Mr. BERRINGTON, after addressing the chairman in very complimentary terms upon the paper just read, observed, that such instructive and interesting observations could not fail to fertilize any ground, however barren; and as such excellent suggestions should by no means be confined to the few in that room, he would propose that the paper be published and circulated amongst the members and others.

Mr. T. EDW. THOMAS seconded the proposition. He agreed with the sentiments expressed by Mr. Berrington, and hoped the paper would be printed, both in English and Welsh.

It was then unanimously agreed, that the papers should be published.

Mr. BERRINGTON rose to bring forward the suggestions of the committee appointed at the last meeting, to draw up "a good, appropriate, and approved system of draining, summer fallowing, sowing clover, sainfoin, flax, hemp, rape, and turnip seeds, to be distributed through these hundreds." He (Mr. B.) thought that in bringing forward those suggestions, the committee had en-

deavoured to tender their best advice to the farmers of the district, and had rendered their suggestions as simple as they possibly could, which was proved by their occupying but a single sheet of paper. It had also been their aim to confine their attention principally to the cultivation of those crops which were of the greatest importance to this part of the country, as well as to those crops, the growing of which (though best adapted for the district) had been most neglected. He congratulated the society on their prospects. A few weeks only had elapsed since its formation, when it could hardly be expected that the spirit of philanthropy, which had urged them to the formation of the society, had had sufficient time to water the ground—it had filled a pond. He felt convinced that the public spirit, the good sense, the desire of encouraging industry and an improved system of agriculture, which led to the formation of the society, would not permit them to relax their efforts. He was sure, those who had put their hands to the plough would not draw back. Mr. Babbage had declared that the manufacturers were continually throwing away last year's implements for the purpose of introducing improved ones. He hoped the day was not far distant when the agriculturists would do the same. The result would be good. They would contribute something towards staying the floods of distress which pervaded the country. Mr. Berrington then read the following suggestions to farmers, as drawn up by the committee :—

Draining.—In clay and firm ground dig two or three spades deep with a broad spade, excavating the bottom with a narrow one—the top earth is driven down as a wedge. Cattle and horses, and sometimes moles, have stopped this sort of drain, but it is a cheap and frequently an effectual method. Another excellent plan is placing a flat tile at the bottom, covered by another arched tile, and filled up with stones. Where large stones may be had to form the bottom, they may save the expense of tiles, and stones abound in this part of the country. The main drain had better be three feet deep, the small ones two and a-half. This last is the most permanent drain, and the society is desirous of having such tiles made in the neighbourhood at the cheapest rate possible.

Fallowing.—It has been decided, that where land has been subject to a succession of cabbage and turnip crops, fallow has been considered desirable at distant intervals, and on wet clays it has been proved to be absolutely necessary; on wet land every fifth year, but on all land except clay every seventh or eighth year will do. The plan adopted in East Lothian and Berwickshire is a deep ploughing in autumn, called the winter furrow, the old ridges gathered up and kept dry through winter; as soon as spring seed time is over, the land to be ploughed five times before the wheat is sowed, besides the harrowings. The fallow ridge should be wide if clover is sown with the wheat, otherwise the narrow ridge does as well. There is no method better adapted to improve worn out land than by a clean fallow limed and dunged, and sown down in grass with the first crop, and grazed for three, four, or five years. All the crops of course depend upon the condition of the fallow, and in this part of the country, where the soil has been impoverished by successive grain crops, and where the coltsfoot and couch grass rob the farmer of half his crop, the condition of it is of the highest importan ce.

Clover does not thrive as well where the land has been much ploughed. Fallow wheat has been preferred in this county for the growth of this seed, though barley is usually considered the best to sow with grass. The second cutting of clover has been stretched with alternate layers of straw with great advantage. There is, and has been, an unaccountable failure in the clover crop, which has puzzled practical men, and this failure has been observed more on cultivated farms than where it is seldom sown.

Turnips.—Turnips and clover are the main pillars of British farming. Turnips grow on all dry soils, which should be drilled so as to admit of horse-hoeing. Lay up the ground in ridgelets, twenty-seven or thirty inches wide, with twelve, fifteen, or indeed up to thirty tons of well rotted dung per acre, the dung placed in each ridge, and the seed sown as near to it as possible. Never let the dung lie on the field uncovered. Swedes should be sown in May, and are preferred; Globe in June—two pounds and a half to the acre. As soon as the plants are in rough leaf a week, put in the horse-hoe, and the hand-hoe immediately afterwards; leave the plants nine inches apart. Thirty tons is a good crop per acre. To be carted home.

Sainfoin is grown in many parts of England on very shallow soil, but it must have dry ground. When made into hay, it is an excellent food for sheep. If protected the first year, it will continue to furnish a good crop for ten or twelve years with one dressing. It is usually sown with oats, and flourishes well under a dressing of peat ashes. Sown in March or April—four bushels to the acre.

Flax and Hemp are grown in East Lothian on land of second quality. They are cultivated by cottagers in Ireland, but the kiln-drying is so ill managed, that it does not equal the foreign flax. In a national point of view the general culture of these crops is of great value, and they are known to succeed in a climate resembling ours with a humid atmosphere.

Rape is grown as excellent food for sheep on land not adapted for turnips. There is scarcely an instance of wheat being mildewed soon after a crop of rape eaten off by sheep.

It was then agreed that the above suggestions should be translated into Welsh, printed in English and Welsh, and circulated amongst the members of the society and farmers generally.

A conversation then ensued between the chairman, the Rev. S. Davies, and Mr. Dillwynn, respecting guano, during which Mr. Dillwynn stated that his farm-bailiff would show the results of experiments tried with guano and four or five other manures, to any person calling at Sketty Hall farm. It was necessary to be very cautious in procuring guano of the best quality. The land manured with guano imported by Mr. Edmond, their secretary, had produced four times the quantity of grass as land which had been manured with that procured at some other places.

Mr. Franklen asked if there were any simple method of testing the quality of guano which could be adopted by a person unacquainted with chemistry?

The Chairman replied, that the only method was to ascertain the proportion of ammonia contained in it, as the fructifying quality of guano entirely depended upon that.

Mr. Franklen said that could be ascertained only by chemical analization.

Mr. Moggridge introduced a conversation respecting the growing of rape, which he thought had

been much neglected in this part of the country. Still there were small portions of land in Gower and other places sown with rape which thrived well. That furnished a proof that it might be grown with success.

Mr. T. Edw. Thomas detailed some experiments made by him in growing rape after red potatoes, sown earlier than usual.

The Rev. S. Davies recommended "paring and burning" (though in some degree exploded), as well adapted to some soils, particularly poor mountain lands. Mr. Davies entered into various details relative to the succession of crops best suited to different kinds of land, which, together with many useful suggestions by different gentlemen present, we are compelled to omit, owing to our limited space and press of matter.

In a conversation respecting manures, Mr. Franklen stated that he had made experiments in applying guano in a liquid state to carrots and other plants, and amongst other things he applied some to rhubarb, and the result was, that a stick of that to which the guano had been applied weighed 29½ ounces, whilst the rest averaged no more than 13 ounces.

Mr. Berrington said that some grass, to which he had applied guano, was about six inches longer than the rest, and the difference in verdure, &c., could be seen from half a mile distant.

The Chairman stated that the ten guineas which he had left at the disposal of the committee for prizes had been divided as follows:—Five guineas for the best three acres of turnips (Swedes), three guineas for the best two acres, and two guineas for the best one acre of the same crop.

Mr. Gross observed that it would be advisable to give a prize to persons producing the greatest quantity of green crops, in proportion to the size of their farms.

Mr. Franklen said that in that case the natural quality of the land ought also to be taken into consideration; and as science was not sufficiently advanced to test that with precision, Mr. Gross's suggestion would be impracticable.

Mr. Gross said that in the absence of a test the only method would be to appoint competent persons judges of the quality of the farms of the various competitors for prizes.

The meeting then entered into a long desultory conversation, at the conclusion of which it separated.

LANCASTER AGRICULTURAL SOCIETY.

The annual meeting of this society took place on Tuesday, October 10. The stock exhibited, though not perhaps so numerically great as in former years, was of first-rate quality, and was considered by practical agriculturists to be the best they had ever seen. The prize for the best yearling bull was awarded to Mr. John Pritt, whose celebrated sow, victorious at the Ashton show the day preceding, also bore off the premium at this. A very superior shorthorned cow, the property of Jonathan Dunn, Esq., our worthy mayor, was greatly admired by the judges. This beautiful animal, which had obtained the first premium at Ashton, was equally fortunate on the present occasion. The premium for the best boar was awarded to Mr. W. Ellison, of Sizergh; that for the best bull of any age to Mr. Nutter. The inspectors were Messrs. Welsh, Barratt, and Bateson. Messrs. Wiley, Forrest, and Buckley, were the judges of the stock. A very handsome dessert was provided in the Town Hall, under the superintendence of Mr. Braithwaite, of the Royal Oak, the principal part of the fruit being a present from T. F. Brockholes, Esq., of Claughton House. John Wilson Patten, Esq., M.P., occupied the chair. Among the company present were Thomas Greene, Esq., M.P., George Marton, Esq., M.P., W. Garnett, Esq., (high sheriff of the county), Jonathan Dunn, Esq., W. Lamb, Esq., W. Robinson, Esq., Mr. W. Ellison, of Sizergh, and Mr. Jackson, of Borwick Hall.

"The Queen," "The Queen Dowager," "Prince Albert," "Albert, Prince of Wales, and the other members of the Royal Family,"—having been given,

The President gave "The High Sheriff of the County, Wm. Garnett, Esq."

The High Sheriff responded to the compliment.

The President then gave "The Lord Lieutenant of the County, and better health to him."

The President said that, although it was not intended to go through the usual routine, he begged to propose "Success to the Lancaster Agricultural Society." It was only for the transaction of the business of the society, and not for conviviality. He was happy to congratulate them on the state of the society generally. The judges would give them a statement respecting the cattle, and the inspectors would speak as to the crops. Within his personal remembrance they had not had so excellent a show for many years past. With regard to land, there had been more competition than they had ever had before. (*Hear, hear.*) The inspectors of farms had under-rated their task, and found it more onerous than they had anticipated when they accepted it. He had been particularly gratified by one incident in the course of that day's proceedings. The farmers appeared to be in better spirits by many degrees than they had been last year, and he hoped this improvment would go on gradually and surely. He had been in many parts of the county recently, where he had observed great improvements in agriculture; and he thought it would be a wise plan if some of the farmers in this district, and the landlords too, would make a small tour to look at these improvements. (*Hear, hear.*) Let them pay a visit to the Fylde district, and they would not lose either their time or money. In that district there had been changes which would be perceptible to any persons who went with their eyes about them. Draining had been carried on in it in various ways, in some instances by the landlords singly, in others conjointly with their tenants. Mutual confidence existed between landlord and tenant, and this had led to improvements. (*Hear, hear.*) Some were for long leases, and so was he; but he was not for granting them indiscriminately. If a long lease was granted to a tenant who had not the spirit to avail himself of improvements, it would only be giving a premium to bad farming. (*Hear, hear.*) He thought improvements might be accomplished by an annual take, though not so readily; but even this had been done in the Fylde country. In that district improvements of every kind were going on, and it would be worth the while of any gentleman, as he had already stated, to go and look at them. He had also been in other parts of this county, and his friend the High She-

riff would bear him out that there was an interest shown by both farmers and landlords to improve their condition, which could not but be productive of great good. If this spirit were generally manifested throughout the kingdom, both landlords and tenants would soon stand in a different position as agriculturists. *(Hear, hear.)* Even in the south of this county the change had been so surprising, that the Americans had remarked it. When observing a fine turnip crop, they said it was more like a flower garden than a turnip crop. He would not detain them longer than to express a hope that every one present, landlord or tenant, would contrive to keep up the interest attaching to agricultural improvements. He had never seen a better show of stock than the one that day, and he had never seen the farmers in better spirits when talking of agricultural matters. *(Hear, hear.)* Hoping that agricultural improvement would be strenuously encouraged by every member of this society, he begged to propose "Prosperity to the Lancaster Agricultural Association."

The PRESIDENT, before calling on Mr. Binns to read the report, would propose a toast. He felt sure the meeting would join him in drinking "The Borough Members for Lancaster."

Mr. GREENE returned thanks.

Mr. MARTON, in returning thanks, said he was an agriculturist on a small scale himself, and he had hoped to obtain information respecting guano and other things, but perhaps it would do another year. He was not going to trouble them with a long-winded speech, but he could not help calling their attention to what the Prime Minister had said the other day, as to the necessity of reciprocal confidence between landlord and tenant. He could not say whether they were in that blissful state at present, but he hoped the time would soon arrive.

The PRESIDENT here called upon Mr. Binns, the Secretary, to read the report and the list of premiums.

CLASS I.

1. To the tenant and occupier of a farm, not less than forty statute acres, who shall have made the greatest improvement thereon within the last five years, or who shall have made the greatest progress towards bringing the same to the best state of cultivation, according to the nature and quality of the land, and in the neatest and most exact order as to fences, water-courses, roads, gates, stiles, farm-yard, &c., and the land laid down and drained in the best manner, and cleanest from weeds. A silver cup, or five sovereigns. Mr. John Pritt.

2. To the person who shall keep, during the summer season, in yards or houses, night and day, not fewer than six cattle of two years old or upwards, on green cut food, and without their being at any time allowed to pasture. A silver cup, or five sovereigns. No entries.

3. To the person who shall raise the best crop of turnips, to be wholly consumed on the premises, according to the nature and quality of the land, and size of the farm, to be thoroughly cleaned from weeds, and equally thinned; the quantity not to be less than two statute acres; all the turnips on the farm are to be shown to the inspectors, from which they must form their decision. A silver cup, or three sovereigns. Thomas Clifton, Esq., Lytham Hall.

4. To the person who shall produce to the inspectors at the autumn survey the best general stock of store cattle, including horses, cows, sheep, pigs, &c., according to the extent and quality of the farm, not less than forty statute acres. A silver cup, or five sovereigns. Wm. Ellison, Sizergh.

5. To the cottager, whose rent does not exceed £6, who shall have his cottage and garden in the best and neatest order. One sovereign. William Moss, Borwick.

6. To the second best. Thirteen shillings. Edw. Parker, Galgate.

7. To the third best. Nine shillings. John Wittingham, Scorton.

8. A premium of five sovereigns is offered by the Right Hon. the Earl of Derby to the tenant farmer who shall have made the greatest improvement on his farm, as in premium 1, having no other occupation by which he gains a livelihood, and whose rent does not exceed £150. Mr. Wm. Corbishby, Thurnham.

CLASS II.

9. For the best bull of any breed or age, being either the property of the owner, or hired by him, the age of the bull to be taken into consideration. A piece of plate, or five sovereigns. John Nutter, Ireby Hall.

10. For the best yearling bull (the winner of premium 9 to be excluded), a premium of one sovereign, added to a subscription of five shillings each. John Pritt.

11. For the best cow, in milk or calf, or a heifer upwards of three years old, in calf, not fed for the butcher. The competitors being allowed to show any number not exceeding three, the inspectors to select the best. A piece of plate, or three sovereigns. John Dunn.

12. For the best two years old heifer, of any breed. The competitors being allowed to show any number not exceeding three. A piece of plate, or two sovereigns. J. Stewart, Esq., Clapham.

13. For the best short-horned yearling heifer. A premium of one sovereign, added to a subscription of five shillings each. A. R. Ford, Esq., Ellel Hall.

14. For the best ram, which shall either have been kept during the past season, or shall be kept during the succeeding season in this district, for the use of the same. Two sovereigns. Thomas Pedder, Scale Hall.

15. For the best tup lamb. One sovereign. Thomas Pedder.

16. For the best three shearling ewes. Two sovereigns. Thomas Pedder.

17. For the best pen of three ewe lambs. One sovereign. Thomas Pedder.

Tup lamb and ewe lambs, gained by Thomas Pedder, but in consequence of not being able, according to the rules, to claim more than 2 premiums, they were awarded to George Presow, his being the second best.

18. For the best brood mare with her foal, adapted for harness and husbandry. John Helme, Galgate.

19. For the best boar of any age. One sovereign, added to a subscription of five shillings each. William Ellison, Sizergh.

20. For the best breeding sow, under two years old, having had a litter within three months, or being with young at the time of show. One sovereign, added to a subscription of five shillings each. John Pritt.

Mr. Pritt having gained 3 premiums, and not being able to claim more than 2, he gave up the premium for the sow, which was awarded to John Bland, of Leak, his being the second best.

21. For the best short-horned cow, in milk or calf, not fed for the butcher, the property of the farmer showing, who gains his living solely by farming (others being excluded), and who shall be at the time a member of the society, and whose rental does not exceed 100*l*. Three sovereigns. Richard Willison, Underbarrow.

22. For the best short-horned heifer, in milk or calf, on the same conditions as in premium 20. Two sovereigns. No competition.

Class III.

23. For the best stallion for the road or field. Two sovereigns. No competition.

24. For the best stallion, for coach or carriage, and for husbandry, combining activity with muscular power. Two sovereigns. No competition.

Next followed the sweepstakes, for which we have not space.

The President said that from the circumstance of one of the prizes being awarded to Lytham, some idea might be formed of the onerous duties of the Inspectors of crops and farms. He therefore begged to propose the healths of Messrs. Welsh, Barrett, and Bateson, and thanks to them for their services. *(Applause.)*

Mr. Barratt rose to return thanks. He and his colleagues had had an arduous task to fulfil, for there had been a very strong competition. In the first place, from what they could observe to the contrary, the farms in general appeared in a better state of cultivation than on former occasions. *(Hear, hear.)* As to stocks, they were exceedingly good, and the Inspectors had very great difficulty in deciding. He had assisted in viewing stock, two years ago, at Kirkby Lonsdale, and observed a great improvement on the present occasion. As to turnips, they had generally been beaten by Westmoreland, but the Lancashire farmers had gone resolutely to work till they had at last raised turnips as large as the head of a cabbage, and three times the size of any grown in Westmoreland. *(Cheers.)* They had seen some very excellent crops at Lytham. They were very large, and had perhaps better tillage than could be given by a common tenant. They had at first thought Mr. Pritt's crop of turnips the best in the county, but they suffered by comparison with Mr. Clifton's. *(Hear, hear.)*

The President had no doubt it was very gratifying to all present to hear so favourable a report of Lancashire farming. He had told them there was a great improvement, but he did not think it had been so good. There was only one present who would not like to hear it, his friend Mr. Ellison. *(A laugh.)* He would perhaps be jealous at being outdone, but he trusted they would keep him out some time longer, as he (the President) hoped to have a crop next year to show against him. *(Great laughter in which Mr. Ellison heartily joined.)* He had to propose "The health of Messrs. Wiley, Forrest, and Buckley, the Judges of stock, and thanks to them for their valuable services." *(Applause).* One of these gentlemen had a large farm, and it would do any one good to go and view his stock.

Mr. Wiley returned thanks. With regard to the show of stock, he could not give an opinion as to its increase or decrease, as the present was the first time he had attended this meeting. They had, however, met with many good animals. The bulls, cows, and heifers, were very good—(*hear, hear*),—and in some classes the competition was remarkably keen. As to the sheep, some of them were tolerably good, but still capable of great improvement. They wanted a little more of the pure Leicester blood. The pigs were excellent: the horses nothing to boast of. Mr. Binns had taken him to look at the drills and other implements of husbandry, but they were only few in number. This led him to ask Mr. Binns whether the society gave a premium for the best implements of this description, and the answer was in the negative. Now in Yorkshire and other parts of the kingdom there was a sum set apart to remunerate persons for bringing such implements to the show ground, for it was scarcely to be expected that they would bring them without being paid for their trouble; and he thought it very desirable that something of the kind should be done here. The sum set apart might be 5*l*. or 10*l*.; the implements to be inspected by two farmers chosen for that purpose, and such as were deemed by them of sufficient merit to be rewarded.

The Chairman and several other gentlemen agreed in thinking that this suggestion ought to be carried into effect.

Mr. Wiley resumed—There had been a great deal said about draining. In some cases it had been done by the landlord, in others by the tenants, and in some they mutually joined; but let it be done by whom it might, they should see that it was done effectually. *(Hear, hear.)* His method was to cut his drains from 28 to 30 inches deep, put flats at the bottom, then the tile on the flats, and after that put in nine or ten inches of broken stones where the land was a strong clay subsoil. *(Hear, hear.)* He (Mr. Wiley) had obtained permission from the chair to propose the health of a nobleman who was instrumental in forming the Royal Agricultural Society, and likewise the Yorkshire Agricultural Society, and who always gave his attendance and assistance when required—"Earl Spencer." *(Cheers.)* Drunk in a bumper.

Mr. Marton had heard a great deal of want of improvement, but there was at least one thing in which no improvement was wanted—the President of this society. *(Cheers.)* This toast met with a most enthusiastic reception.

The President thanked them for the kind manner in which they had received the last toast.

The President proposed "the health of the highest officer in the borough, and who had that day obtained one of the premiums—his worship the Mayor of Lancaster." He had supported every public institution in the town, and especially the Lancaster Agricultural Society, and therefore he proposed his health.

Mr. Dunn acknowledged the toast.

The President enquired of Mr. Binns if he had any information to give the meeting respecting the culture of flax.

Mr. Binns could not give a positive opinion as to the soil best adapted for its growth, but thought it might succeed on moss land as a rotation crop, and that was the only way in which it could be grown. In Ireland flax had been very advantageously grown on moss land similar to that in the Fylde country.

The President wished to know whether it was not a very impoverishing crop?

Mr. Binns said not so much so as people believed. It did not return much manure to the land when allowed to run to seed. It was about on a

par with guano in that respect. Still it was a very valuable crop, and yielded a good return.

The PRESIDENT asked Mr. Wiley if he knew anything respecting flax.

Mr. WILEY replied that he was not much acquainted with it. It was common in Norfolk to crush linseed in the proportion of 20lbs. to be ground with 60lbs. of barley meal, to be given to cattle.

Mr. ELLISON had grown an acre of flax last year, for which he had obtained 18*l*. As to exhausting the soil, he did not care a fig about that, if he only obtained a heavy crop. That would pay for it. It was an easy matter to enrich the soil again. His linseed was sown for the purpose of grinding it to give to cattle, and he held that every farmer, instead of giving his money to foreigners, ought to grow a little for his own consumption. They must look to themselves first, and then to their neighbours.

The PRESIDENT.—Was the flax sown on low heavy land?

Mr. ELLISON said it had been sown on clean land.

The PRESIDENT, after paying a handsome compliment to Mr. Binns, the secretary, for his valuable services during his long official connection with the society, proposed his health.

Mr. BINNS returned thanks. He said—I have felt extremely obliged to you for the very kind manner in which you have noticed me, and the indulgence which you have bestowed upon me. It has always been a pleasure, as well as a duty which I ought to perform, to do all in my power for the promotion of agriculture, for I believe it to be the most important of all the arts and sciences. Without it this kingdom would be nothing; with it, carried out in the way that it ought to be, the country would be raised to a height of prosperity far beyond the imagination of most persons. I am aware of the importance of commerce and manufactures, and that they must all be equally encouraged, and go hand in hand; but agriculture, after all, is the main source of our wealth and stability. I have sometimes been misunderstood when I have stated my conviction—a conviction that has been ratified by nearly forty years' experience—that this country may produce three times as much food as it does at present. When I say so, I do not mean that the produce of an acre of wheat can be trebled. Suppose that poor land produces three quarters to an acre, good land four quarters, and superior wheat land six quarters; I know that whatever manure may be applied you cannot materially increase this produce. On the contrary, if you apply more manure it injures the crop; but it is in the increase of grass and green crops, and by an economical use of the clover and grass that is grown, and the unlimited increase of manure, that the benefit is to arise. In place of allowing cattle to nip every blade of grass as it springs, if that grass were of a suitable kind, and allowed to grow up to imbibe the nutrition from the atmosphere, which it is well known vegetables do that have plenty of leaf, a much greater weight of grass would be produced, and would go three times as far if given to cattle in the yard. I have mentioned my sentiments on these subjects, and on drilling, to keep the land clean like a garden, over and over again, and I will continue to mention them so long as I am privileged to express an opinion here, because I believe they are subjects of the first importance. We have offered a premium for soiling or keeping cattle in the yards in summer, and it has not been claimed; but I would double it, and if that would not induce competition I would double it again, for I believe it to be of more consequence than many of the others put together. I may mention an instance of increased produce which was stated to me by Mr. Skirving, of Liverpool, where poor land that grew little grass, supporting only about a dozen cows, was broken up, well cleared, manured with guano, and sown with Italian rye-grass, after which it produced several cuttings of grass in eleven months after sowing, and supported fifty cows in place of twelve as previously. The various cuttings of grass measured together thirteen feet in length, when ordinary grass land will not produce more than three or four feet. This is the sort of improvement that the land of this country is capable of, and which I should like to see carried into general practice. I congratulate the society on the show today. It was the best I have ever seen at Lancaster, and exhibits the progress of agricultural improvement, and the beneficial effects of this society. I hope and believe it will continue. So long as I have anything to do with the society, I shall endeavour to do all I can for its interest, believing that I am at the same time endeavouring to do my part for the good of the country at large. I assure you I feel grateful for the kind consideration I have always received at your hands. (*Loud cheers*)

Mr. ELLISON said that guano for some crops answered remarkably well. He did not think that it would answer for wheat, but thought it would for oats and turnips. In the month of April he laid down 14 acres of oats, and in the May following had 4 cwt. of guano sown with clover, timothy, and rye-grass, and when they sprung up, they were of darker green than where guano had not been sown. He had three drills of turnips sown with guano, mixed with peat moss: they did not look well for the first two or three weeks. It had the effect of killing the seed for a time, but the turnips were better than any other in the field. Guano would not answer on limestone, but with its chemical qualities it could not fail to answer for oats. A remark had been made that Lancashire was going to instruct Westmorland, and it was hoped that he would not feel annoyed at it. On the contrary, he had the honour to be chairman of the Board of Guardians in Kendal, and was a strenuous advocate for having the people educated, and would have able and proper schoolmasters appointed for them. It was therefore gratifying to him in the highest degree to find that the Lancashire farmers, who acknowledged themselves to have been the pupils of Westmorland, had surpassed their teachers; and he should not go home the less cheerfully on that account. (*Loud applause.*) As for the cow shown by Mr. Dunn, which had got the premium that day, it was as nice a cow as ever hands were laid upon. A great deal had been said about their improved prospects, but he felt deeply for the poor Irishman who was selling his pig at 2s. a stone less than before the tariff passed; and all in consequence of our shipping victualling with foreign provisions.

The CHAIRMAN, after having proposed "The health of his Grace the Duke of Hamilton," gave to their "next merry meeting;" and then with his friends retired, amidst the loud cheers of the company.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A monthly Council was held at the Society's House, Hanover Square, on Wednesday, the 1st of November, present—the Right Hon. Earl Spencer, President, in the chair, Colonel Austen, Thomas Raymond Barker, Esq., Samuel Bennett, Esq., J. French Burke, Esq., Colonel Challoner, Henry Handley, Esq., W. Goodenough Hayter, Esq., M.P., W. Fisher Hobbs, Esq., John Kinder, Esq., William Miles, Esq., M.P., William Shaw, Esq., and John Villiers Shelley, Esq.

Finances.

Mr. Raymond Barker, Chairman of the Finance Committee, laid before the Council the Report of the Committee on the receipts and expenditure of the Society since the former meeting, with a statement of the current cash balance of 764*l.* in the hands of bankers, and an amount of 7,700*l.* capital in the public funds at that date.

Derby Prizes.

The President reported on the part of the Stewards of the Yard at the Derby Meeting the explanation they had given to the entire satisfaction of the party who had protested against the prize being awarded to Mr. Forrest for his Bull, and the transmission they had authorized to Mr. Forrest, of the cheque drawn in August last for that prize; also, the complaint made to them on the subject of the real breeder of one of the animals of Mr. Jeffries which gained a prize at the Derby meeting. The Council decided that Mr. Jeffries was entitled to the Prize in question, and ordered the cheque to be transmitted to him accordingly.

Consulting Engineer.

Mr. J. Parkes, civil engineer, of Great College Street, Westminster, was unanimously elected the "consulting engineer" of the society; and an order made by the Council, that his services to the Society in that capacity should be remunerated according to the usual scale of professional charge.

Seed Wheat.

Mr. Pusey, M.P., transmitted to the Council his report on the trial of the Seed Wheat of 1842, selected at the Bristol Meeting, and cultivated by him, with other local varieties, during the past season.

Agricultural Labourers.

Mr. Shaw called the attention of the Council to that important object included within the sphere of the Society's labours, originally contemplated at the first formation of the Society, and enumerated in the Royal Charter as one of the leading objects of its incorporation, namely, "to promote the comfort and welfare of labourers, and to encourage the improved management of their cottages and gardens:" and gave notice that he should move at the next monthly Council that a committee be appointed to consider in what manner that object can be carried out. Mr. Fisher Hobbs concurred with Mr. Shaw in the important bearings of that question, and signified his intention of seconding the motion when brought before the Council.

Epidemic among Cattle.

On the motion of Mr. Fisher Hobbs, the Council resolved, "That the Veterinary Committee be requested to favour the Council with a Report on the former and present Epidemic among Cattle."

December Meeting.

The Council decided that the General Meeting should be held on Saturday, the 9th of December, at 12 o'clock; and the rooms of the Society thrown open as usual, for the accommodation of Members, on the Wednesday, Thursday, and Friday evenings of that week, from 6 to 10 o'clock.

Numerous communications and presents were received and laid before the Council. The Council then adjourned for a fortnight to the 15th of November.

SPECIAL COUNCIL.

A Special Council having been summoned by the President's order, for the purpose of taking into consideration the arrangements which it might be necessary or expedient to make in reference to the Southampton Meeting in the month of July, 1844, assembled at the Society's House in Hanover Square, on Thursday last, the 2nd of November, present—the Right Hon. Earl Spencer, President, in the chair, Lord Hatherton, Hon. Captain Spencer, Samuel Bennett, Esq., Harry Blanshard, Esq., Colonel Challoner, Humphrey Gibbs, Esq., G. W. Goodenough Hayter, Esq., M.P., W. Fisher Hobbs, Esq., W. H. Hyett, Esq., John Kinder, Esq., Fielder King, Esq., William Miles, Esq., M.P., Philip Pusey, Esq., M.P., E. A. Sandford, Esq., Professor Sewell, William Shaw, Esq., J. Villiers Shelley, Esq., and Colonel Wood, M.P.

Local Arrangements.

The President reported to the Council the favourable result of the communications that had been made with the Mayor of Southampton (Edward Mayes, Esq.), in reference to the accommodations for the Meeting. The following resolution had been carried unanimously at a public meeting of the inhabitants of the town and neighbourhood of Southampton, held in the Guildhall, on the 29th of September last, Captain Ward, R. N., being in the chair:—

"The Royal Agricultural Society of England having selected the Southampton Common as the most eligible spot for their Show-yard, &c., the rate-payers and commoners of the Town most cheerfully and cordially co-operate with the Corporation, in sanctioning the application of any portion of the Southampton Common that may be required for the uses of the Society, in holding their great Country Meeting for 1844:"—and in communicating this resolution to the Council, the Mayor had the satisfaction of stating "that there was throughout the town and neighbourhood an anxious desire to give the Society a cordial reception, and to facilitate as much as possible their wishes and intentions in carrying out purposes so desirable and important to the country at large."

Mr. Miles, M.P., Mr. Shelley, and Mr. Gibbs, were requested by the Council to report at the next monthly meeting, as to the proper sites for the Show-yard and Pavilion.

It having been decided by the Council that the Pavilion should be built to contain a number not exceeding 1,400 persons, it was further resolved, "That all Members who apply for tickets for themselves, previously to 12 o'clock on the day of the Great Dinner, shall be supplied as usual; after which time, all tickets which shall remain undisposed of, may be sold to persons not members of the Society."

Agricultural Implements.

The Council then discussed the appropriation, into specific prizes, of the sum of 300*l.*, voted in June last as the amount of prizes in the Implement department; and agreed to the following schedule of awards to be made by the Judges, independently of the residuary money which they would also be at liberty, under the immediate direction of the Stewards, to apportion in other prizes, not distinctly specified by the Council.

For the Plough best adapted to heavy land.—10 *Sovereigns and Silver Medal.*

For the Plough best adapted to light land.—10 *Sovereigns and Silver Medal.*

For the Drill which shall possess the best method of distributing compost or other manures in a moist or dry state, quantity being especially considered.—20 *Sovereigns and Silver Medal.*

N.B.—Other qualities being equal, the preference will be given to the drill which may be best adapted to cover the manure with soil before the seed is deposited.

For the best Turnip-Drill, which shall deposit manure with the Seed.—10 *Sovereigns and Silver Medal.*

For the best Scarifier.—10 *Sovereigns and Silver Medal.*

For the best Chaff-Cutter.—10 *Sovereigns and Silver Medal.*

For the best Machine for making draining tiles or pipes for agricultural purposes; specimens of the tiles or pipes to be shown in the yard; the price at which they have been sold to be taken into consideration, and proof of the working of the machine to be given to the satisfaction of the Judges.—20 *Sovereigns and Silver Medal.*

For the best set of Harrows.—5 *Sovereigns.*

For the best Agricultural Carriage, with or without springs, for the general purposes of road and field.—15 *Sovereigns and Silver Medal.*

For the best Drill Presser.—10 *Sovereigns and Silver Medal.*

For the best Churn.—5 *Sovereigns.*

The Society wishes to call the attention of machine-makers to the improvement of apparatus for steaming roots; of small or portable corn mills; of broad shares for paring stubbles; of horse-hoes; of agricultural harness and gearing generally; for improvements in which, or in any other miscellaneous articles, prizes or medals may be awarded by the Judges if they think fit. All implements admitted into the yard will be liable to be proved by actual trial, on the recommendation of the Judges; and such implements as cannot conveniently be tried at the time of the show, may be tried at such time and place as the Judges may think fit. The Judges will especially consider the selling-price of the implements exhibited, which must be stated in the certificate; and they are instructed to withhold prizes where there shall not appear to be sufficient merit.

A weekly Council was held at the Society's House in Hanover-square, on Wednesday, the 15th of November; present—Thomas Raymond Barker, Esq., in the chair; Thomas Alcock, Esq.; Colonel Austen; Humphrey Gibbs, Esq.; Henry Price, Esq.; and Francis Pym, Esq.

Results of Dibbling.

Mr. Langston, M.P., transmitted to the Society a Report on the results obtained in the use of Mr. Newberry's new Dibbling Machine; which was referred, with the original communication of Mr. Newbury, to the Journal Committee.

Implements.

Mr. Gibbs gave notice, that at the next Monthly or Special Council, he should move the adoption of additional Regulations for the Exhibition of Implements at the Country Meetings of the Society.

Brazilian Grass.

Mr. Parkes, C.E., Consulting Engineer to the Society, communicated the following account of the Brazilian Grass:—"I send for presentation to the Society a bundle of Brazilian Grass, called 'Piassava' by the Portuguese. I am informed that it is purely an aquatic grass, growing under water, or floating on water. I do not know its proper botanic name, but it is sometimes called *Piassava Americana;* nor do I know whether its habitation is confined to tropical climates. A considerable quantity of this product is annually imported into England; and is, I am informed, solely used at present for making brushes. As a brush, it is amazingly durable, and withstands the alternations of wetness and dryness better than any known substance. It has been selected by Mr. Whitworth as the sweeping medium of his admirable 'Street-cleansing Machine;' and he has informed me that his brushes of this vegetable (made as represented in the engraving of his work, which I also send) will stand a whole year's daily rubbing on pavement and Macadamized roads, wearing down to the 'bone' without decay or relaxation of effect. It turned out to be of such importance to the success of the machine, that Mr. Whitworth sent his brother to the Brazils, to collect and import a large quantity for this special purpose. The strongest bundle is of the quality used for this machine, cut into lengths of about six inches, and fixed in wooden stocks. The bundle of slenderer grass, of which I beg the Society's acceptance, is such as is usually imported into London. Brushes are made of it chiefly for the use of butchers; no other being found which has equal endurance, or which penetrates and cleans so effectually the cracks and fissures in their blocks and slabs. The selling price in London is 14*l.* per ton. The commercial name for the article is 'boss,'—so, however, it is called by the brush-makers. Mr. Whitworth informed me, that it may be imported and sold to a fair profit at 9*l.* per ton. I regret that I am only able to communicate to the Society so lame an account of a grass, which might possibly prove of utility to the agriculturist, if it could be acclimated in England. The specimen is the *hay* of the grass, which grows 30 feet in length. Its being so dry, from its woody fibrous nature, has led to the belief in England that it is kiln-dried; but Mr. Whitworth has informed me that such is not the fact—the tropical sun is a sufficient kiln! I hope at a future time to have it in my power to supply additional information on the habits and management of this grass, as I have requested a very intelligent friend, an engineer, lately gone to the Brazils, to examine into the matter and report it to me."

Hopetoun Oat.

Mr. Alcock presented a specimen of the Hopetoun Oat grown by Mr. Shirref, on Lord Ducie's land, near Bristol, measuring 6 feet 10 inches in length, and the average of a crop of 70 acres.

Thanks were ordered for these communications, and the Council adjourned for a fortnight, to the 29th of November.

NEW MEMBERS.

The following gentlemen were elected members of the Society:—

The Earl of Leicester, of Holkham, Norfolk, was elected a Governor.

Barton, Samuel, Parvey Cottage, Sutton, Macclesfield, Cheshire
Barnston, Roger Harry, Crewe Hill, Cheshire
Baskerville, Henry, Farley Castle, Beckington, Somerset
Bastard, Thomas Horlock, jun., Charlton Marshall, Dorsetshire
Beckingham, James, Ashe, near Overton, Hampshire
Bowett, Thomas, Warsop, near Mansfield, Nottinghampshire
Burgess, John, Muston, near Blandford, Dorset
Cockeram, Thomas, Up Cerm House, near Dorchester, Dorset
Cooper, George F., Langenhoe Hall, near Colchester, Essex
Colthurst, Jonathan, Hantworth Park Farm, Bridgwater, Somerset
Curtis, Edward, Witnesham Hall, Ipswich, Suffolk
Davy, Henry, Warsop, near Mansfield, Nottinghamsh.
Donkin, R., Wyfold Court, Henley-on-Thames, Oxfordshire
Dunning, William, jun., Friar Waddon, near Dorchester, Dorset.
Gawler, Henry, Ramidge Cottage, Andover, Hants
Easton, Richard, Moortown Farm, Canham, near Wimborne, Dorset
French, Samuel, Easton Farm, Easton, Winchester, Hampshire
Fox, George C., Grove Hill, Falmouth, Cornwall
Hartley, Gilford, Rose Hill, Whitehaven, Cumberland
Hannay, William, Park Hill, Nottingham
Jackson, George, Barton Lodge, Preston, Lancashire
Jonas, William Knapp, Bishop's Waltham, Hants
Jones, William, Record-street, Ruthin, Denbighshire
Kent, George, 10, Tunbridge-place, New Road, St. Pancras, Middlesex
Kerrick, John, Geldeston Hall, Beccles, Norfolk

Lasham, R. S., Woodlands, Westmoor, Bishop's Waltham, Hampshire
Lawrence, Richard Corbett, Lecshill, Uttoxeter, Staffordshire
Long, Robert, Overton, near Marlborough
Medlycott, Sir Wm. Coles, Bart., Milborne Port, Shaftesbury, Dorset
Milner, Sir William, Bart., Nunappleton, Todcaster, Yorkshire
Morris, Henry, Gosberton, Spalding, Lincolnshire
Newton, Rowley Bradley, Brunswick-street, Macclesfield, Cheshire
Owen, Henry, Worksop, Notts
Parfitt, Edmund, Avington Farm, Winchester, Hants
Parkes, Josiah, 7, Great College-street, Westminster
Paxton, Robert, Woolaston Farm, Hethe, Bicester, Oxfordshire
Pearse, John Gilberd, Southmolton, Devon
Pester, Philip, Doles Ash, near Dorchester, Dorset
Pike, Christopher John, Theobald's Park, Enfield, Middlesex
Punnett, Patrick Simpson, Chart Sutton, Maidstone, Kent
Quick, George, Royal Hotel, Southampton
Ramsden, Robert, Carlton Hall, Worksop, Notts
Rivers, Lord, Rushmoor Lodge, Woodyates, Dorset
Robinson, Colonel, Irish Waste Land Improvement Society, 5, St. Mildred's Court, Poultry
Rogers, William, Itchen Abbas, Winchester, Hants
Smith, Richard, Upper Hall, Droitwich, Worcestersh.
Tasker, William, Waterloo Iron Works, Andover, Hampshire
Thompson, John, Ilford, Essex
Thornhill, Colonel, New Park, Lyndhurst, Hampshire
Timm, Joseph, Champion Hill, Camberwell
Tomkins, Steele, Broughton, near Stockbridge, Hants
Wild, John, Park, Nottingham
Winterbottom, James Edward, East Woodhay, near Newbury, Berkshire
Yeo, Wm. Arundell, M.D., Fremington Hall, Barnstaple, Devon.

PROBUS FARMERS' CLUB.

On Saturday, the 4th instant, two very interesting papers on "*The occasional failure of seed potatoes*," presented by Mr. Dixon, of Darlington, and Mr. C. W. Peach, of Goran, were read to the members of the club, by Mr. Karkeek. This subject had been previously brought before the club, in a paper presented by Sir C. Lemon, Bart., which excited very considerable interest at the time. Sir Charles attributed the failure to some chemical changes which frequently occurred in the substance of the potato, such as the partial conversion of the starch of the potato into sugar, &c.—which the eye could not discern, but which rendered it unfit to afford nourishment to the young plant in the first season of its growth; and this effect he believed was sometimes produced by dampness, by heating, &c., &c.

Mr. Dixon stated it as his opinion that a very common cause of failure proceeded from the sets not being planted deep enough, and recommended, particularly in dry seasons, that the sets should not only be planted deep, but that the manure should be laid upon the sets, instead of under, as was greatly practised. The most extensive failures he attributed to the evaporation of the juice of the potato when cut for planting, in consequence of being, in many cases, too long exposed to the sun and air in a dry atmosphere previous to being planted, whereby the juice or life-blood of the potato becomes so far exhausted, that it has not sufficient strength left to produce a natural vegetation. He adduced several examples to prove this position, and recommended, in order to ensure success, that the land should be properly drained and cleaned, the sets planted whole at the bottom of the rows, and the manure laid upon the sets. He also particularly recommended the planting of whole potatoes, having a great dread of failure in the crop by cut potatoes "bleeding to death."

Mr. Peach's paper went to show that the most common causes of failure were, 1st, Digging seed potatoes before being sufficiently ripe; 2nd, Housing seed potatoes in wet weather, and in large heaps; 3rd, Allowing them to shoot out to too great a length before being planted, and thereby exhausting their strength; 4th, Continuing to use the same seed for several years on the same soil; 5th, Cutting the seed too long before being planted.

Each of these heads was very ably maintained, and the author particularly recommended that all potatoes intended for seed should be planted early, in order that they might become sufficiently ripened, and have time to be sufficiently exposed to the air that they might become green before planted. In all cases where the potatoes are cut for seed, he recommended that they be covered with quick-lime, by which plan the sets would be kept perfectly dry externally, and all the juice which is so necessary to vitality would be preserved. The lime also, he imagined, would prevent grubs and worms from eating the sets before the shoots are strong enough to do without it.

In the discussion which ensued on the reading of these papers, the views of Messrs. Dixon and Peach were considered at great length, and the general opinion of the club was, that neither of those gentlemen had, as yet, solved the question as to the cause of the frequent failure of the potato plant. That the drawing of potatoes in wet weather, and then being stowed away without being properly dried in large heaps—the cutting of the seed a long while before being planted, and the exposure of them to the sun and to the wind—were without doubt causes that would tend to produce a disorganization in the structure of the potato, and prove sometimes a source of failure; but as failures had occured in numerous instances where none of these causes had been present, and on the contrary there had been complete success where many of those supposed causes of failure had actually existed, for numerous instances were cited at the meeting, it was impossible to come to any decided resolution on this part of the subject, although it was one that was highly deserving of investigation and further inquiry. The only resolution to which the club could well come, at this stage of the enquiry, was respecting the varieties of the potato which were most liable to failure. These were chiefly of the kind used most commonly for the table, and consequently of the most valuable variety; whilst, on the contrary, the coarse common potatoes, such as were used for cattle and pigs, were easily grown and rarely known to fail. This hint respecting the varieties of potatoes properly followed up, will, we believe, be very likely to lead to some useful and practical results; for it appeared in the course of the debate that the per centage of starch varies very considerably in different varieties—the best kinds yielding 21 per cent, while the common kinds yielded only from ten to twelve per cent. It was also stated that the per centage of starch in the same seed was considerably influenced by the state of ripeness to which it had attained—according to Körte from eight to sixteen per cent., according to the ripe-

ness; and the argument attempted to be drawn from these circumstances was, that potatoes intended for seed were very frequently allowed to become too ripe, for whatever increased the per centage of starch, increased also the risk of failure. This opinion was in some measure supported by a letter of Mr. Stirrat's, of Paisley, on this subject, from which it appears that potatoes raised on land that had been constantly cropped, yielded a much more considerable quantity of starch than the same seed on old lay ground; and that it had been the common practice of the farmers residing in the lowlands for the last twelve years, to obtain their seed potatoes from the land that had been but lately or newly brought into cultivation. "Such potatoes," he adds, "are not so good for the table, being mostly very soft." From this he contends that the vegetative principle is weakened, in consequence of being grown on lands that have been a long time subjected to cropping, and that whatever increases the farinacious principle, weakens the vegetative principle.

We have given the report of the club on the "Potato Failure," at rather unusual length; but it is an interesting and important subject to the Cornish farmer, and we believe that the hints given will prove of some practical benefit hereafter. As to whether the relative proportions of starch are to be considered as the cause of the greater or less amount of failure, it is impossible at present to decide; the evidence adduced evidently argued much in its favour. Professor Johnstone appears also to coincide in this opinion, for he says, "that with the increase of starch, it is probable that both the albumen and gluten—the nitrogenized principle of the potato will be in some degree diminished, and both of them are necessary to the fruitfulness of the potato, when used for seed."

At the conclusion of the meeting, votes of thanks were given to Messrs. Dixon and Peach.—The next meeting of the club will be held on the 2nd day of December.

DRAINING AND SUB-SOIL PLOUGHING.—I would also say, that the effects of the draining and subsoil ploughing are dependent on each other; the one is comparatively worthless without the other: the ploughing would be thrown away without the previous draining, and the draining is a poor improvement compared to the *combined* effect with the subsoil-ploughing. The various views of the advantages might be multiplied to any extent, but a concise statement of them seems to be, that the most obdurate and intractable soils assume a friable and mellow character, and at the same time are rendered permanently most productive. A system which is applicable to 10 acres is equally so in its principle to 10,000 or 100,000 acres, and consequently the system becomes a most important national consideration. My decided impression is, that capital judiciously applied in the execution of this system may yield a return varying from 10 to 40 or 50 per cent., according to the various circumstances attending the infinite variety of cases in which the system may be carried into effect. Every thing depends on the mode and perfection of execution; if any one thinks of limiting the expense of complete execution, he may rest assured that the recompense will be still more restricted, and that it is more judicious to improve one acre well than to deceive himself by a superficial operation on a more extended surface.—*Evidence of T. F. Kennedy, Esq., formerly M P. for the Ayr Burghs, before the Committee on Agriculture in* 1836.

TO WILLIAM SHAW, ESQ.

(FROM THE MARK LANE EXPRESS.)

SIR,—Allow me through the columns of this paper to express my opinions, upon the subject touched upon in Mr. Hillyard's letter of last week. As you did me the honour, at our first meeting on the opening of our Club-house, to propose my health in connection with Farmers' Clubs, I am emboldened to enter upon the subject with greater confidence; and when at the York Hotel, during the last week, I suggested the policy of having monthly meetings to some gentlemen there, for the purposes of discussion, upon the principle of minor clubs, but to embrace topics of a more general character, as it is presumed the practical men from counties far distant from each other would have an opportunity of bringing their various systems under discussion, and thus form a connecting link between the local clubs and the Royal Agricultural Society.

The advantages to be derived are so manifest, that I will not waste the time of your readers by descanting upon them. I will only suggest that the meetings should be monthly, upon the first Monday, as upon that day many agriculturists have business in town, and would avail themselves of the opportunity of selecting that day for the transaction of their ordinary business.

The Farmer's Club is now established, and a central situation obtained. The attention of the managers to the comforts of the members has not only my unqualified praise, but also that of all other members with whom I have conversed upon the subject. An excellent and spacious sitting-room, furnished with the leading papers of the day, and also with most of the leading periodicals, is always open to the subscribers, so that no preparation is necessary but to nominate the days and time of meeting, which I suggest should be at six o'clock, from September till May, and then to cease until the September following.

At the first meeting subjects of discussion for the succeeding months should be selected, always having three in advance, and to such persons who might not be disposed to become members of the club, the admittance might be one guinea annually, which should constitute them members of the club for discussion only.

I can only suggest matters of detail, the whole arrangement of which must be commenced and carried out (if adopted) by the Committee.

I think considerable advantages would be derived by the present members of the club-house, as it would doubtless produce an increase of members, and thus the extension of the one would inevitably lead to the extension of the other.

As you, Sir, have taken such an active part in the formation of the present club-house, I have taken the liberty of addressing my letter to you personally upon the subject, as I feel it due to you as the projector, that you should have the opportunity of improving upon your original plan, that we may again be enabled to express our thanks to you as tenant agriculturists, of the high estimation in which we have held, and continue to value your services.—I have the honour to remain, Sir, your most obedient servant, ROBT. BAKER.

Writtle, Nov. 7.

AGRICULTURAL QUERIES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—Being a constant reader of your valuable Magazine, and as there has been much written in that publication on the cultivation of turnips, I have long been expecting and wishing to see something said on a certain disease to which turnips are subject on certaia soils; the disease alluded to is called "fingers and toes" in this part of the country; to describe it more explicitly—after the turnips have grown vigorously for a certain time, perhaps three or four weeks after hoeing, then the leading root is destroyed, and a number of excrescences are formed, which have been termed "fingers and toes," and very soon after this takes place the plant dies; this is the case chiefly on deep soils, and where there is not much stone the loss is sometimes very serious.

I shall esteem it a favour if any of your readers who have had experience, if they will state the cause of this disease and the means of preventing it.

I find that marling with chalk stone will prevent it, but the expence is great. If any friend to agriculture is acquainted with a less expensive preventive, and will make it known through your pages, they will confer a great benefit upon many turnip growers.

I am, sir, your obedient servant,

Nov. 10*th*. A YORKSHIRE FARMER.

SIR,—I should feel obliged if some of your numerous correspondents would, through the medium of the *Farmer's Magazine*, state what are the ruling principles to be attended to in the breeding of stock, in order to obtain a stock of superior excellence? I am wishful to improve my flock of sheep, which are of the Leicester breed, to the utmost extent possible, but not being acquainted with the correct principles of breeding, I am at a loss to know how to proceed. I wish to be informed how far I may persevere in the same flock with the same blood? that is, how long I may continue a ram and his male descendants in the same flock of ewes, and their female descendants without deterioration?

I have taken your magazine regularly for the last three years, but cannot find in its numbers anything of importance on the subject of breeding stock. I think those who are practically acquainted with this subject would confer a great benefit upon their brother farmers generally, by imparting their knowledge to them through the medium of your excellent publication.

Perhaps you or some of your able correspondents would be kind enough to inform me if there is any instructive and desirable work to be met with on breeding, and if so where it can be obtained?

Trusting you will favour me by insertiug this in your next number,

I remain, sir, yours very respectfully,

A YOUNG FARMER.

SIR,—Will you allow me, through the medium of your widely-circulated journal, to request information upon the subject of spade-husbandry? Living in a neighbourhood with a redundant population, and where the poor's-rates are increasing to a fearful extent, I cannot but think it would be advisable for the farmer to employ more manual and less horse labour, as a means of lessening the same; but whether he would be likely to get an increase of produce sufficient to reimburse him for the additional expense (considering the low price at which all agricultural produce is now selling) is a question which I could wish to hear some of your intelligent correspondents discuss. I should feel much obliged to whoever will be kind enough to give me the required information, if he will enter a little into detail—namely, the expense per acre—whether the subsoil is brought to the top or not—does it require more or less manure than when ploughed?—whether its effects are more visible in a green than a corn crop—and last, although not least, whether it be profitable or not.

Yours respectfully,

A YOUNG FARMER.

Gloucestershire, Nov. 25*th*.

SEA WEED.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Being situated near the sea, where sea weed is easily procured for manure, and where but little is used as such, I am induced to apply for information through the columns of your valuable paper, "Which is the best way of rotting the weed—putting it in a heap by itself, or mixing it with other manure in a yard, and what crops it is best suited to—spring or autumn ones?" If you would insert this among your agricultural queries, and some of your correspondents would give the information required, or any more on the subject, it would greatly oblige your's, very respectfully,

AN ISLE OF WIGHT FARMER.

Nov. 16*th*, 1843.

ON LIQUID MANURE.

SIR,—We would feel obliged by your inserting the following questions in your valuable journal: first, whether liquid manure loses any or all its fertilizing properties, when applied to the purpose of slacking lime? second, whether liquid manure is most profitably applied to arable or pasture land; and the different effects produced by its application in winter or summer?

As few can be able to answer these questions satisfactorily from mere conjecture, we trust some practical reasoning from an experienced farmer or chemist will be adduced as answer, through the medium of your journal, to satisfy

IGNORANCE.

WHAT IS A GOOD SUBSTITUTE FOR STRAW?

SIR,—I am anxious to obtain, through your excellent paper, some information on the above subject. I am every year sadly at a loss for bedding for my dairy cows and young stock during the winter, which are all tied up in stalls; my farm is about 200 acres, of which 90 acres are arable, of a turnip soil, farmed on the four-course system; and though my arable land is in what may be termed good heart, yet I am in the spring always short of straw, and have frequently had to purchase, which I find "will not pay." Being located near to the Staffordshire Potteries, where so much straw is consumed for the packing of the earthenware, that article is necessarily much in demand, and generally fetches a high price. I really do not know how those farmers manage who are in the habit of selling eight or ten tons of straw a year. I feel certain that I could, with my present stock of cattle, consume half as much more straw than

I now do; and my muck-heap (*a most important consideration*) then would of course be half as large again as it now is. However, I should feel obliged to any of your kind readers who will answer this query, and inform me what their *practice is*, should there be any who are in a similar condition to myself; and believe me,

Your obedient servant,

Draycot, Oct. 27th, 1843. T. W.

P.S.—My dairy cows the other day by accident got into a field of clover-root, which was ploughed up for wheat. At first I thought they had done me serious mischief. The field is a light dry soil, and I really think now that, instead of mischief, they have done good; for wherever they have trod (generally between the furrows) they have made a firm, hard bed with their feet. What is the opinion of your correspondents relative to this circumstance?

NITRATE OF SODA.

Sir,—Could you inform me the cause of the present low price of Nitrate of Soda, as compared with former years? Does it arise from larger importations than last year?

If the quantity imported be not larger, the price must, I think, rise; as it was a valuable manure at last year's prices. In which case, we farmers ought to buy now.

If you, or your mercantile correspondents, could afford a little information on this point, would oblige Yours, A Constant Reader.

Sir,—I wish to put a few queries, through the medium of your valuable paper, to the writer of an article in it upon a new plant called "Gold of pleasure." Presuming he has had some experience in its cultivation, I would ask, Does he consider it a very EXHAUSTING crop to any succeeding corn-crop; and what corn-crop would, in his opinion, be that best suited to follow it? Further, I would ask, What is the usual price per lb. or bushel, and where the seed can be best obtained? Living in a district where I am sure I should have no sale for the seed, I would ask, Is it of sure and ready sale in London, if sent to respectable seedsmen; and also, is it possible to dispose easily of the straw and chaff for the purpose of making paper as he describes?

I shall feel much obliged by an answer to these queries; as, if satisfactorily answered, I should certainly give the plant a trial, and shall thankfully receive this or any other information your correspondent can give upon it.

I am, Sir, your obliged and constant reader,

A Suffolk Farmer.

Sir,—Having seen the recommendation of bran as a manure, in your paper and magazine, I sowed it last year in a dry state for turnips in drills, by Hornsby's drop-machine, and few or no seeds vegetated this year. I sowed it again dry, and some of it wetted, partially decomposed, and dried with lime; and the results of both years are total failures. On raising and examining the drops of bran, in which the seeds are mixed in the sowing by the machine, the seeds are seen sprouted in the cold clotted mass, and never emerge; the few that rise above the ground never grow vigorously, nor deserve the name of turnip. It appeared to me that the bran did not possess the heat necessary to stimulate vegetation, in the first place, nor strength to push it forward. The soil is a damp loam, on which all green-crops thrive well.

Probably some of your readers who have succeeded with bran will be so kind as to state the mode of application. Cultor.

Nov. 1, 1843.

Sir,—In taking my account of stock, what should be my valuation of young seeds at Michaelmas? And in making rick-stands, both oblong and round, how should I proportion the number of square yards to the number of tons of hay or corn to be put together?

An answer to these inquiries will greatly oblige

Yours, very obediently,

One desirous of Information.

Southampton, Nov. 1, 1843.

Sir,—Having noticed in travelling, excellent hedges of gorse or furze, thick and apparently impenetrable, I should be obliged to any of your correspondents who will give instructions as to the best method of raising and managing these hedges. An effectual mode of extirpating from pastures those small thistles (frequent also in some arable grounds) which increase by the root running underground, and which when pulled, even when the ground is most moist, always leave a part of the root behind, which again sends up fresh plants.

Your obedient servant,

Nov. 6. Enquirer.

Sir,—Having seen several recommendations of lime and salt as a manure, I am anxious to ascertain the best methods of mixing them, the relative proportions of each, the quantity per acre, and to what soils it is best adapted.

A friend of mine pursued the following plan:—250 bushels of lime were placed in a shed, and by the side of it 2 tons of agricultural salt. The man, in mixing these, kept throwing on a sufficient quantity of water to allay the dust which would otherwise have arisen from the lime. After three or four days the heap was turned over, and more water applied. This process was repeated several times. After it had laid about three weeks, it was taken into the field, thrown from the cart with a shovel over five acres of land, and then harrowed in.

I should like to know whether this mode is a good one, and whether the mixture thus produced in a few days by the application of water would contain the same properties as lime and salt mixed in a dry state, and left in a heap for three or four months.

If you, dear Sir, would insert this among your agricultural queries, and some of your correspondents who can afford the required information would kindly do so, it would very much oblige,

Yours, very respectfully,

A Young Farmer.

P.S. When a bushel of salt is spoken of, is it to be understood as meaning 56lbs., or what a bushel measure will contain?

Loughton, Nov. 10, 1843.

Sir,—As a farmer, desirous to obtain information on all subjects in practice as well as theory, I beg to render you my thanks for the zeal and talent with

which you advocate and aid the agricultural interest. I have long been a subscriber to your journal, though I rarely trouble you, and I venture to hope you will oblige me by inserting in your pages, at your earliest convenience, the following queries, and at the same time I must beg of some of your more experienced contributors to answer my first question; viz., what will be the best and most advantageous method of spreading 500 loads of pond mud? I have about that quantity lying a considerable distance from any light arable land, but close adjoining a large tract of poor pasture; would it be advisable to apply it to the pasture? If so at what time and manner, and in what quantity? I should add, the soil of the pasture is heavy and cold; the pond mud is of excellent quality, having received large quantities of house drainings for many years. It is now in a tolerably dry state; would any application of lime be advantageous? I venture also to request that your valued correspondent, C. Hillyard, Esq., would have the kindness to describe the particular form and mode of action of the implements he terms "miners." I have been struck with the benefits arising from their application, and think they must answer well on lands of inferior subsoils, but though I have attentively perused Mr. Hillyard's clever and useful work on "Practical Farming and Grazing," I cannot quite satisfy myself that my conception of the instrument is the correct one. If Mr. Hillyard will have the kindness more particularly to describe the size, form, &c., of this useful adjunct to the plough, he will confer a great favour on, sir, his and your obedient servant,

Nov. 22nd, 1843. AN ESSEX FARMER.

SIR,—If any of your friends will inform the writer of this, through the medium of your valuable paper, the best sort of potatoes for fattening pigs, he will very much oblige; and if he will be kind enough to state the best mixture of victuals, with their proportions, to quickly fatten them, he will still further oblige, A SUBSCRIBER.

Nov. 21st, 1843.

ANSWERS TO AGRICULTURAL QUERIES.

TO THE EDITOR OF THE FARMER'S MAGAZINE.

SIR,—In reply to your correspondent, "A Devonshire Farmer," the muddy cider should be returned to the charcoaled dropping bags to be fined, but the process I am now pursuing is to fine the cider in the cask without using dropping bags, and I hope to effect it as follows:—The cider or perry is taken from the mill to the cask—I then put into a hogshead eight unbroken good eggs and one pound of wood charcoal in lumps, keeping the bung off three or four days, and then let it be loose on for three week for the gases to escape; afterwards the bung is put on faster, but occasionally taken off a few minutes to examine the flavour of the cider; this process is to make sweet cider and perry—but to reduce the sweetness the degrees required, it is left to ferment in the cask until the taste suits the palate; then ten good eggs (unbroken) are put into it, and the charcoal, in lumps, in small portions a few days after the eggs. From the state of some perry that has been in the cask a month I hope to succeed. In that case it will be necessary to draw it off from the grounds into another cask, and then add the same quantity of eggs and charcoal to preserve it. It is the oxygen in combination with carbon, forming carbonic gas, which causes fermentation—eggs and charcoal liberate the oxygen from the carbon, and stop the fermentation which creates the acid in the liquor, and preserve the sweetness at the degree it may be required; and I am led to believe that this simple discovery will enable us progressively to improve the manufacture of wines and various other beverages; but I shall be glad to see in your useful publication the experience of others on this subject.

I am, sir, your humble servant,

Dumbleton, Nov. 8. J. R.

SIR,—In reply to your correspondent, "G. F.," I think there can be no doubt of the superiority of cultivating fair turnip-land on the four-field system, instead of pursuing the five-field course; and I will add a few of the reasons which have led me to form this conclusion.

1st. It has been proved by repeated experiments that a better crop of wheat can be raised on light soils, on ley ground, at one ploughing, than after a summer fallow—the latter leaving the ground too loose for the wheat plant. This is an important saving in horse labour, which your correspondent has overlooked in stating that more horses are required in the four-field shift; because there is evidently more labour required to plough twenty acres three times than to plough twenty-five once. It may be said that wheat might be sown at one ploughing on the two-year-old ley; but all light land soon becomes foul, which makes an insuperable objection to this plan, and renders fallowing almost a matter of necessity.

2nd. I will not positively say your correspondent is in error in stating that more sheep can be kept on the five-field rotation, though it is my firm conviction such is not the case, but rather the contrary. In the four-field shift, your correspondent would have five acres more turnips for every hundred of arable, which would certainly be an increased quantity of winter feed; consequently he could winter more sheep.

3rd. On this rotation he would have twenty-five acres of first year's clover instead of twenty, the extra five of which, taking the whole summer to October, would be fully equal to the twenty acres of second year's clover, which must be broken up in June to make a good summer fallow.

In conclusion, I have answered your correspondent "G. F's" queries to the best of my ability, but in quite a concise manner. Should he require any further explanation on the subject, I shall feel great pleasure in replying to any questions he may think proper to ask. I have taken his own statement for the kind of land—viz., fair turnip land—and supposed the situation moderately favourable to cultivation. On the high lands of this county, with a soil not too stiff for turnips, and yet which cannot be termed light, resting on the carboniferous or mountain lime-stone, I have proved that more can be produced by fallowing for wheat in the five-field rotation; but, of course, I consider your correspondent to refer to a lighter soil and more favourable climate.

I am, sir, your obedient servant,

Chepstow. VERITAS.

FARM ACCOUNTS.

TO THE EDITOR OF THE FARMERS' MAGAZINE.

SIR,—"An Old Subscriber," in your October number, asks for information as to "the best plan for a bailiff to keep a farm account." The plan I adopt is simple and effective. My bailiff keeps a diary which he delivers in at the end of each week. The following is one day's entry of this diary, by way of example:—

OCTOBER 25TH.

Work where done.	Number of Horses—and Names and Wages of day Labourers.			
Top hill.—Ploughing.	Four Horses.			
Far scars.—Carrying potatoes.	Two Horses.			
Home piece.—Liquid Manure Cart.	One Horse—Half a day.			
Top hill.—Ploughing.	John James, 2s.; John Hanks, 1s. 6d.....		3	6
Far scars.—Potato digging.	J. Nash, 1s. 6d.; W. Tombs, 1s.; J. Heath, 1s. 6d.; S. Hall, 1s.....		5	0
Home piece.—Liquid Manure Cart.	T. Sykes.....			9
Farm Yard and Dairy.	T. Sykes, 9d.; A. Hall, 1s.; J. Jukes, 1s. 6d.; J. Raikes, 2s.....		5	3
Cattle stalls.—Carpenter.	D. Dark		2	6
	Total of the day's expenditure.....		17	0

At the end of each month my bailiff gives me in his general account book and his sale book. The general account book contains on one side all the sums he has received from me during the month, and on the other all the expenditure of the month. The sale book is divided into columns like the diary, and includes heads as follows:—

Date of Sale.	Article sold.	To whom.	For what. £	s.	d.	Date of Receipt.	£	s.	Paid to Employer.	£	s.
Oct. 14th.	Devon cow.	Mr. Arkley.	14	10	0	Oct. 24.	14	10	Oct. 25.	14	10
Oct. 15th.	Hereford ox.	Mr. Jonas.	16	0	0						
,,	Leicester tup.	Mr. Careless.	4	0	0	Oct. 15.	4	0			

By the diary I can tell the amount of team and day labour at the end of each week, and making memoranda from it (so as to keep account of the cost in these items of each crop) takes me from 20 minutes to half an hour a week. The diary also, as far as day labour is concerned, checks the charges for that item in the general account book, classifying the different items of this latter (the general account book) under different heads in a private memorandum book, and examining the sales book tables, are together about one hour each month, which, with the half hour mentioned weekly, makes the expenditure of time in keeping these farm accounts three hours a month. If this be not too long a reply to your correspondents request for information, perhaps you will allow it to appear in your valuable magazine.

I am, sir, yours obediently,

Oct. 25th. SOPH.

THE FIXING OF AMMONIA.—USE OF SALT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—In your paper of the 2nd instant your correspondent "Agrestis" requests I will say on what authority I state in my letter of the 30th of January last, that common salt and carbonate of ammonia will mutually decompose each other.

It is much discredited that a double decomposition does ensue when these salts are brought together, and I attribute it to the resulting salts being both soluble and difficult to detect in the resulting compound.

To prove, however, that the action does take place, I recommend "Agrestis" to take a *saturated* solution of common salt, and about three parts fill a broad-mouthed half-pint glass bottle; add to this an ounce of the carbonate of ammonia of the shops in *lumps*, and well shake the fluid till the lumps are dissolved, and he will have a copious precipitate of white powder, which, being separated by filtration, he will find to be carbonate of soda.

By adding the ammonia in lumps, it will be seen, if not all dissolved, distinct from the precipitate, which will be in powder.

I believe the soda thus thrown down is in a state of bicarbonate, and this renders it rather less soluble than if a simple carbonate; and I suppose the precipitate of a soluble salt must be attributed to using in the first instance a *saturated* solution of common salt.

Having thus proved that the action *does* take place, I submit that I have a right to conclude that it will take place even more rapidly when assisted by the heat of a dunghill, even though the two salts may not be presented to each other in a saturated solution.

I recommend "Agrestis" to procure a small pamphlet on this subject, published in June last. It is entitled "A Treatise on Alkali as Manure," by Henry Waterton, Esq., and is published by George Phillip, South Castle-street, Liverpool; of which I beg to present you with a copy, in the hope you will call the attention of your agricultural readers to this

important and highly interesting fact — viz., that common salt *will* fix the ammonia in dunghills.

I remain, sir, very respectfully, yours,

Oct. 13th. AMMONIA.

SIR,—In reading your paper of last week, I observed a letter addressed to you by "A constant Reader," who wished for information on the best way of preserving carrots, so as to be accessible at any time. The quantity your correspondent has grown is 150 bushels. It is my opinion it would be best for him to put them in a dry house, and over every layer of carrots shake over a good layer of dry sand; or, if house-room is not plentiful with your correspondent, to store them out doors upon the same plan, beginning four feet wide at the bottom, and stack them three feet high, gradually building the sides in till they meet at top. A little straw is wanted before the earth is put on.

I remain, your most obedient servant,

AN ISLE OF WIGHT FARMER.

Oct. 31, 1843.

SIR,—In looking over your paper of last week, I noticed, under the heading "Agricultural Queries," a letter addressed to you by "A Young Farmer," stating that he had sown a piece of land to lucerne, in the way usually adopted by most people in sowing clover, viz., with his barley, which, not being likely to succeed, he requests some one of your numerous readers to inform him whether he had better plough it up again, or endeavour, by artificial means, to restore that health and vigour to the young plants which he considers necessary to ensure him a remunerating crop.

Now, as I do not pretend to any great experience in the matter, and as it is not likely that I shall have an opportunity of seeing your correspondent's field of lucerne, I shall abstain from giving him any advice as to ploughing it up or manuring it, but will content myself by explaining in as few words as possible the method which I should recommend to be adopted in sowing the said valuable grass. Your correspondent will then perhaps be able to judge for himself as to the propriety of allowing his field of lucerne to remain as it is or no.

In the first place, I should choose a piece of the kindest, deepest land in my possession (preferring the subsoil to be either a black hazel earth, deep loamy sand, or limestone gravel), if possible after potatoes or swedes, as most grasses are known to thrive well after green crops, probably on account of the superior tillage required by things of this sort. Manure it well with yard-dung mixed with earth in the fall of the year—say November; plough it in, and let it remain till the month of March; then plough the land again, and dress it down very fine; it should then lay till about the 6th of April, when it would be in capital condition to receive the seed, which should be let in in drills about fourteen inches apart by the hoe. As soon as the lucerne is well up, and the weeds begin to start, it should have a good hoeing; it well then only require to be kept clean to prove itself one of the most profitable things a farmer can cultivate.

Your correspondent will think, perhaps, that my system would be attended by too much expense and labour to be generally adopted on anything like a large scale; but the advice my father used to give me was—"If you *pretend* to do a thing, *do* it—don't *half*-do it." And, depend upon it, sir, if anybody stands in need of this advice it is the farmer, as there is not a man living, whatever his business may be, who feels to his cost the evil of *half-doing* things so much as he does. However, if your correspondent intends trying his hand again at sowing lucerne with his barley crop, I would recommend him to stretch a line across seven or eight ridges at a time, and shake the seed along it as if sown in the broadcast way. This he can do at intervals of fourteen or fifteen inches, and when the corn is cut, hoe the spaces well between the drills: this plan *may* answer as well as the other, with the advantage of having a crop of barley extra.

I am, sir, yours, &c.,

H. H.

SIR,—"A Young Farmer," in your last number, is anxious to know whether there is any impropriety in giving high heated clover to stall-feeding, or store beasts? In answer, I beg to say it may be given with advantage, with one-third of oats, barley, or wheat straw to the former; but it is an injurious thing to very lean or young cattle.

I am, sir, yours, respectfully,

Notts. AN OLD FARMER.

SIR,—In answer to some inquiries of "Ignorance," in your last week's *Express*, respecting liquid manures; it would be wrong, in a chemical point of view, to use liquid manure for the purpose of slacking lime, for many reasons, which would occupy too much space to particularize. Respecting the application of liquid manures to arable or pasture land, it may be applied with equal advantage to either, and should be used frequently to growing crops in summer. The atmospheric temperature in winter prevents vegetation from progressing, however fertile the soil; it therefore would not be judicious to apply a manure whose properties would be partially destroyed, before the return of genial weather: it might be compared to the absurdity of feeding a "sleeping dormouse." Your obedient servant,

Bideford, Nov. 22, 1843. I. I.

SIR,—Observing a letter in your valuable paper of Monday last, signed "An Isle of Wight Farmer," in which he wishes to know the best means of using sea-weed for manure, I have resided for some time in Jersey, where it is collected in large quantities for agricultural purposes. The plan adopted is as follows:—It is carted from the sea side and laid on the ground to dry, and turned in the same manner as hay; it is then put behind the wood fires in the kitchens of the houses and burnt. The ashes are spread on the land early in the year when the wheat is sown, and has a very beneficial effect. It is also successfully applied to other crops, and is likewise used in gardens. I have been told that it takes a very long time to rot, which is one of the reasons it is generally burnt before put on the land. There is a peculiar sort which is cut from the rocks in March (and I belive once besides in the year), which is put *generally* on grass land, not burnt, and in a short time will melt away, and has great effect in making the grass grow. This latter sort is highly prized by the Jersey people, and will fetch as much as ten or fourteen shillings a load. It is only allowed to be cut at the stated periods before mentioned. I am no farmer, consequently cannot give as much information on the subject as I should wish.

I remain, sir, your most obedient servant,

London, Nov. 22, 1843. P. S.

BREWERS' GRAINS.

Sir,—In answer to a correspondent's inquiries respecting the best mode of preserving brewers' grains, I beg to state, that one method is to sink pits in the earth, of any convenient size or shape, and stein or line them with rock, brick, or flint, and of course they must be kept secure from rain. The grains should be put in in small quantities, and moderately sprinkled with salt, and be well trod or pressed down. In this manner I have known grains kept for months, and when taken out were eaten more readily by pigs than those just taken from the mash vat, but whether horses or cattle are equally fond of them I cannot state. E. C.

Sir,—Your correspondent, "An Isle of Wight Farmer," wishes to know how to apply sea-weed as manure. The practice in Jersey, where its value is well-known, is to spread it on the ground to dry; house it in dry weather, and burn it in a large open fire-place in the kitchen. The ashes are carefully preserved, and applied in small quantities—say, two cwt. to the acre—in the spring. The ashes contain soda, which is a valuable manure; and if applied in the autumn, the winter rains would probably wash it away.

This is the mode they treat the sea-weed which is cast upon the shore, which they call "braick." There is another kind which they cut from the rocks at stated times, which is applied undecomposed to the land, whereon it melts and disappears. This kind is also held in such high esteem as to be the subject of laws to regulate the time for gathering. That distinguished agriculturist, Colonel Le Couteur, can tell you all about it.

Your correspondent "Ignorance" wishes to know if liquid manure loses its efficacy by being employed to slack lime. Certainly it does; the lime, whilst slacking, causes the liquid to give out its latent heat; when a decomposition takes place, the ammonia is deprived of the acid combined with it, and is quickly dissipated. If your correspondent wishes to get his liquid manure in a somewhat solid form, he had better use sulphate of lime, well burnt and ground, usually called gypsum, which will absorb a large quantity of moisture, and any decomposition which takes place will render the ammonia less volatile; or if he has clay on his farm, let him burn clay with weeds, &c., and then moisten it with his liquid manure.

Another correspondent enquires how to preserve brewers' grains, and how the London cowkeepers do it. The method they adopt is to pack them as tightly as they can ram them into large vats or brick cisterns, and when thus packed they will keep more than twelve months.

Your correspondent, "B. H.," wishes to know why his wheat fails just before harvest, though up to within a fortnight thereof his prospects are good. His soil is peat and clay. It is well-known that the straw requires silex or flint to coat it with its shining covering, and it is probable your correspondent's land does not contain enough in solution even for that purpose. I would recommend him to burn a quantity of the peat; put three bushels of the ashes, and one bushel of slacked lime fresh into a copper, contents a hundred gallons, boil half an hour, stir all the time, remove the sediment, and add half a bushel of sand, boil another half hour, and then distribute the whole sediment all over the land.

Should this be considered too troublesome, use guano, which contains, I believe—for I have not analyzed it myself, so I cannot speak positively—silicate of potash, which is what I apprehend your correspondent's land requires; and it also contains many other things, such as urate and phosphate of ammonia, which he will find very useful.

Yours, very obediently,
A London Manufacturer.

London, Nov. 22, 1843.

Sir,—Having grown about 150 bushels of carrots for some horses in the winter (chiefly Belgian), I should be much obliged if yourself or some of your intelligent correspondents would inform me what is the best mode of preserving them, so as to be readily accessible for frequent use.

I remain, your most obedient servant,
Wycombe, Oct. 19. A Constant Reader.

Sir,—In reply to the letter of "Inquirer," in your paper of 13th, I beg to say the best method of raising furze hedges is to sow the seed in the month of March; care should be taken to secure the young plants from cattle and weeds; when sufficiently high, they should be kept clipped. With respect to destroying small thistles, I have found the most effectual mode is to drop a small quantity of salt on the heart of each thistle.—Yours, obediently, A Dorsetshire Farmer.

Nov. 16th, 1843.

The Epidemic. — We invite attention to an advertisement in reference to an association about to be established for protection against losses by this disease.

East Essex Agricultural Society.—We observe that Mr. W. Fisher Hobbs won the unprecedented number of eighteen prizes at the late meeting of this Society.

We are much gratified to learn that a Farmers' Club has been established at Stewponey, to be called "The Stewponey Farmers' Club," under the auspices of that zealous friend to agricultural improvement, J. H. H. Foley, Esq., and to whom that neighbourhood is indebted for the formation of the Stewponey Agricultural Society. The first meeting of the club will take place on the 1st of January—a good beginning of the new year.

Common Inclosures.—(To the Editor of the Hereford Times).—Sir,—I have lately observed a notice of application to Parliament for the inclosure of common land in the parishes of Bleddfa, Llangunllo, and Knighton, in this county. The objects of the projectors of this measure are best known to themselves; at the same time I would ask, through your columns, why, just at this critical and unflourishing time, these expensive and notable inclosure matters are stirred up? I am informed that in the last session, Lord Worsley's General Inclosure Bill was, through unforeseen circumstances, compelled to be withdrawn, but with the understanding that it should be introduced and have the support of the practical men of all parties in the next session. By that bill, I am told, the common land in any parish or district can be enclosed at the expence of from 40*l.* to 50*l.* only, instead of 300*l.* or 400*l.*, as under the old system. Some economical and before-the-curtain people, in their simplicity think that, supposing the contemplated inclosures are all expedient, pocket-wisdom would have been best shown by waiting a few months longer, in order to see the fate of his lordship's cheap Inclosure Bill.—A Landowner.—Millenydd, Radnorshire, Nov. 11.

CALENDAR OF HORTICULTURE FOR DECEMBER.

As it is impossible to foresee with precision the character of the weather, we can only allude to operations which may and should be performed under favourable circumstances. In December, 1841, the low-land was flooded with the profuse rains of Autumn, and garden ground—even in high and well-drained districts—was converted to a swamp. In 1842-3 the winter was benign, without superfluous rain or snow, and the labour of the gardener repayed itself. Now, while we pen this article, the weather is fickle in the extreme; for on six occasions hoar frosts have been almost immediately followed by entire days and nights of rain, a circumstance not to be wondered at, considering the prolonged sunny weather which rendered September the finest month of the summer. However, from aught that appears, the probability is that the ground will be very wet, and therefore to labour it with the spade would be worse than useless.

As every alternate winter has, of late years, been subject to flooding rains, we are bound to mention one result (so it may be called), which ought to interest the gardener.

The aphis, or green fly, is the pest of the greenhouse, particularly of geraniums, calceolarias, and cinerarias. Now, it has occurred to notice, that these prolific insects have been most numerous and destructive after a rainy winter; therefore, should the floods now apprehended really come on, and prevail till Christmas, the gardener's eye should be on the alert, and every means of fumigation with tobacco in readiness. A little foresight is of great importance, and may secure a house of plants which, when once thoroughly infested, can rarely be rendered objects of future beauty. The aphis of the rose does not appear to be preceding wet weather, for the China varieties were absolutely devoured by myriads in the early fine months of the present year; and this leads to another remark. Gardeners are apt to conclude that the same aphis goes from plant to plant of different genera and habits, whereas it appears that each tribe has its own peculiar species of insect, and thus one tribe may be infested and yet leave another—though in close position with it—entirely free from molestation. This observation applies equally to the numerous varieties of coccus, or scale; so that an oleander need not be suspected of communicating its coccus to a pine-apple or a gardenia. For the scaly insects, the best remedy is washing with water and a brush; for though soft soap is repugnant to the insect, it is but too liable to act upon and injure the tissue of the plant. As to arsenic, however weak, we have killed an orange-tree in a few hours by one application over the stem and leaf-stalks.

Our directions shall commence with the

Protected Department.

Greenhouse and pits.—In all clear days, and when the air is drying without actual frost, give free access to it by opening the lights till 2 o'clock p. m.; then close every sash, and cover with bass-mats, straw-mats, and boards. Heat by fire, so long as it can be avoided, is an evil. Nothing will suffer at 35 degrees, but below that point a little artificial aid may be given. Covers protect and keep plants healthy; but during stormy winds they are of little avail, unless kept down by heavy boards.

Camellias, heaths, epacridæ, and the hard-wooded tribes stand a low degree well, provided they have abundance of air, but require a house by themselves to prosper.

Gerania and succulents like a warmer situation.

Fruit Stove.

Keep pine-apple successions warm, moist, and growing—say, at 68 to 72 degrees. The established large fruiting plants ought to be in a pine stove plunged in a bed of sand, charcoal, or some undecaying material, which can be warmed underneath. These plants, intended to come into flower and fruit early in spring, ought yet to be kept cool and quite dry, in order to check them effectually. About the shortest day the fires should be brought into action, and the heat gradually raised to 56, 60, and 70 degrees; and when the bottom heat has risen to about 75 degrees, each pot should be completely saturated with water, at the heat of the house. By this appliance of means, a house of a hundred large and stocky plants, in pots of the sizes of 8 or 6, may be expected to show the crown in pretty rapid succession, without half a dozen exceptions. In small establishments it would be better not to check, but to permit the plants to come into a fruiting condition, one after the other, according to predisposing causes; all that the gardener has to attend to, is to maintain a steady, unchecked growth, potting the plants regularly twice a year, according to the state of the roots.

Plant Stove.

Our ordinary hot-house plants do not require that high degree of temperature which the gardeners affected half a century ago with the spice trees (cinnamon, clove, &c., &c.) of the east. 60° will hurt no stove plants; but few will suffer if the night temperature be 55°. Even numbers of fashionable orchidaceæ will do well—better than in close moist stoves: a dry air and dry soil preserving them in great security. But the fires should be constantly maintained; for thus, much less coal will serve the purpose, while a steady temperature will obviate the necessity of those violent, rapid fires, which destroy the furnaces, and fuse the iron gratings.

At the end of the month, after having exposed the vines in the early house for a few weeks (the object in the main being to refresh the ground with rain-water, when the trees are planted within the erection), the house should be closed, and gentle fires lighted about Christmas, to raise the temperature from 50° to 60°, and 65°.

We like the long-rod system of Seyton, the vines crossing the house from end to end, and returning to the first end, at which another rod should be ready to take the place of the first, which may be cut entirely away when the succession rod shall have reached the opposite end; and during the course of this rod all the spurs may be cut off from the old one, so far as it has advanced during the preceding year. No spur should be allowed to extend beyond two eyes.

Vegetable Department.

If the condition of the ground permit, trench and rough dig vacant spaces.

Asparagus—force as before directed; and sea-kail for succession. Earth up the first crop of peas if above ground, and sow another; do the same with Mazagan, and long pod beans. Saw-dust and light ashes mixed are good substitutes for earth, and rather than to move clogging soil these dry materials should be laid along the roots. Ashes are also

excellent dress for artichokes, and tall broccoli, heaped around the plants and stems. This material is not good for poor, sandy soil, but it is protective to plants, and an excellent meliorater of clayey and binding soils. Celery ought to be finally earthed; bring that from covered sheds, if the ground about the trenches be swamped, as it is likely to be by the alternations of rimy frost and soaking rains. Beanhaulm laid up along the celery is a good protector from frost; but some roots should be digged and kept in sand for occasional use.

Flower Garden and Shrubberies.

Leaves fall fast, though the trees are by no means deficient in the third week of November: persons are very apt to remove these from the soil, but where is there a more neat or effectual protector than fallen leaves over ground which contains many valuable plants, not one of which it can display? From lawns, walks, &c., they ought to be carefully swept and carried to the compost ground. Disturb nothing; but prepare gentle leaf beds for frames, in order to have the means of raising annuals after turn of days. Every wise gardener now trusts to sowing in pans under glass; he gains time, saves seed, and the young plants, when up.

If the strawberry plants in pots are yet exposed, remove them either to sheds, to be covered with mats, or to holes in the ground, there to be laid on their sides and protected with litter, or finally to beds of ashes, where they should be plunged above their rims.

Soon as possible introduce a few sheep to the orchard or paddock; they will feed off the old grass, and much benefit its herbage. Tender trees should be protected by a few burze bushes, or wooden fences. Every nettle which intrudes about the roots of the trees should be grubbed up, and a little salt sprinkled in the soil whence they came; salt is understood to be very useful to the trees, but we shall never be quite certain on the subject till careful chemical analysis be made of the inorganic products of trees, shrubs, and vegetables.—Nov. 20.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

Compared with that experienced at many corresponding periods of the year, the weather, during the greater part of this month, has been seasonably fine, and, on the whole, favourable to the prosecution of most out-door farm labours; the principal of which has, of course, been the sowing of wheat. On the light soils, that important operation was rapidly proceeded with, from about the 1st to the 15th. Subsequently to the latter date, some large quantities of rain fell, and rendered the clay lands in such a heavy state, that with difficulty the seed furrow was thrown. However, we may safely venture to assert that the seed has been got in well; hence, November has proved quite as propitious to the husbandman as could reasonably be expected. There is one circumstance connected with the autumn seed-time which we much regret, viz., the comparatively small breadth of land under wheat culture; still, at this falling off no one can feel surprised, when the miserably low prices at which that description of grain has been selling in the present year are considered. The future value of the article may, likewise, be a further inducement for our agriculturists to decline producing too largely. But they should not lose sight of the fact that their own interests are immediately at stake in the question of the supply and quotations of home-grown corn. The agitation now exciting the country from one end to the other, is based solely upon what is technically termed by the Anti-Corn-Law League—those enemies of native industry—"*dear* bread." As supply, then, must ever regulate value, let the farmers of England strive to increase the production of the staff of life, though perhaps, in so doing, present and great sacrifices must be made; let them content themselves with only a small return (which we are confident they will readily do), rather than allow the clamours for free trade to prevail to their manifest injury—perhaps their ruin.

As thrashing has progressed, no little curiosity, not to say anxiety, has been manifested to learn the actual result. So far as our observations have extended—so far as the contents of our numerous correspondents' letters are concerned—we are inclined to the opinion that the yield of wheat is certainly below an average; yet—and notwithstanding the importations of foreign wheat have been considerably less than for many years past, with, of course, a decided falling off in the quantity entered for home consumption—we see little prospect of any permanent improvement in the quotations for some time hence. That they have seen their lowest range, is almost beyond a doubt; still it is self-evident that the present prices of wheat do not afford an adequate remuneration to the grower. The crop of barley is a light one; but that of oats, beans, and peas is good, both in quantity and quality.

Although nearly the whole of the stock imported from abroad, under the new tariff, has not answered the expectations of those who have thus speculated, either for immediate sale in our markets or for grazing in some of our best districts, we find that during the present month, but particularly towards its conclusion, more attention has been directed to the subject, the following arrivals having been reported into London, Southampton, and Hull:—

	Oxen.	Cows.	Sheep.	Pigs.
London	21	4	–	16
Southampton .	50	2	7	8
Hull	12	6	8	4
Totals..	83	12	15	22

The stock received at Southampton has been from Spain, that in London from Holland, and that at Hull from Germany. These importations give, as nearly as we are able to ascertain, the following totals since the tariff has been in operation:—

	Head.
Beasts	1,238
Cows.	1,040
Sheep	1,090
Pigs.....	1,100
Grand total....	4,468

It is a singular circumstance, but nevertheless true, that scarcely an instance has been known where foreign beasts have been fed in this country, whether in marshes or in stalls, in which they have failed to be infected with the so-long-complained-of epidemic. Take, for instance, those to which we alluded some months since as having been grazed in Lincolnshire; they were sold in a very miserable plight from that cause, though they did not lose much of their flesh; while those fed for a period of two months in Booth's distillery, in the neighbourhood of London, on grains and cake, were, if possible, in a much worse plight. The imports, to which we have above alluded as forming those of this month, were much of the same character as previously advised, and worth, on the average, about £16 10s. each for the beasts. Very great exertions are, we know, now making to improve the foreign stock, by importations from this country; but some time has yet to elapse ere the foreigner can arrive at our present state of perfection in breeding and rearing stock.

We are happy to be enabled to assert that the ravages of the epidemic in our grazing and flock districts, have somewhat abated in virulence; yet many severe losses are almost daily recorded.

At Mark Lane, as well as at most of the leading markets in the provinces, the corn trade has been somewhat inactive in the course of the month. Fine qualities of grain have, however, commanded quite as much money; but all other descriptions have hung heavily on hand, though we cannot notice any material abatement in their quotations.

Our Scotch letters are somewhat favourable. The heavy wheats appear to have been all sown, with the land in fine condition for the reception of the seed. We can announce, on good authority, that the present year's crops are quite an average. The various markets have been well supplied with grain, yet the demand for it has ruled steady, at mostly full prices.

Throughout Ireland all has gone on cheeringly, as regards the progress of the plough and the seed time; while the shipments of corn to England, especially oats, have been large. The grain trade has ruled dull, but at about previous currencies.

The following is our usual monthly statement of the supplies and prices of fat stock exhibited and sold in Smithfield cattle market.

In order to show the numbers exhibited in the past month, and those shown at the corresponding period in 1842, we give the following comparison:—

	Nov. 1843. No. of head.	Nov. 1842. No. of head.
Beasts	13,300	14,400
Sheep	119,220	112,212
Calves	1,830	2,140
Pigs	3,600	3,049
Totals	137,950	131,801

The above shows a falling off this month of 1,100 beasts, and 310 calves, with an increase in the numbers of sheep of 7,008, and of pigs 551. As to prices, we find their extreme range—or from the lowest to the highest—have been as under, keeping up the comparison of months:—

Per 8lbs. to sink the offal.

	Nov. 1843. s. d.	s. d.	Nov. 1842. s. d.	s. d.
Beef	2 4 to 4	0	3 0 to 4	4
Mutton	2 8 to 4	4	3 0 to 4	4
Veal	2 10 to 4	0	3 6 to 4	6
Pork	2 10 to 4	0	3 8 to 4	6

The general quality of the stock lately offered has been of a very inferior description; in fact, on several market days, the butchers experienced considerable difficulty in procuring really prime Scots and old Downs. For these descriptions, therefore, the demand may be considered steady, and their prices have been well supported. In other kinds exceedingly little has been doing at depressed rates.

The droves from Lincolnshire, Leicestershire, Northamptonshire, &c., have consisted of about 6,200 short-horns, while from the Western and Midland districts, about 3,900 of various breeds have been received; from Scotland, 320 Scots—chiefly lean; while the remainder of the bullock supplies have been drawn from the several other counties of England, if we except about 60, *via* Liverpool, from Dublin.

A STATEMENT and COMPARISON of the SUPPLIES and PRICES of FAT STOCK, exhibited and sold in SMITHFIELD CATTLE MARKET, on Monday, November 28, 1842, and Monday, November 27, 1843.

At per 8lbs. to sink the offals.

	Nov. 28, 1842. s. d.	s. d.	Nov. 27, 1843. s. d.	s. d.
Coarse & inferior Beasts	2 10 to 3	0	2 8	2 10
Second quality do.	3 2	3 6	3 0	3 2
Prime large Oxen	3 8	4 0	3 4	3 6
Prime Scots, &c.	4 2	4 4	3 8	3 10
Coarse & inferior Sheep	2 10	3 2	2 10	3 2
Second quality do.	3 4	3 6	3 4	3 6
Prime coarse woolled do.	3 10	4 0	3 8	3 10
Prime Southdown do.	4 2	4 4	4 0	4 4
Large coarse Calves	3 0	3 6	2 10	3 6
Prime small ditto	3 8	4 4	3 8	3 10
Large Hogs	3 4	3 10	3 0	3 6
Neat small Porkers	4 2	4 6	3 8	4 0

SUPPLIES.

	Nov. 28, 1842.	Nov. 27, 1843.
Beasts	3,789	3,432
Sheep	24,810	27,510
Calves	108	91
Pigs	427	413

A large quantity of slaughtered meat has been again received up to Newgate and Leadenhall Markets from Scotland and different parts of England, viz., about 1,000 carcasses of beef, 8,000 do. of mutton, 2,300 do. of veal, and 10,200 do. of pork. The trade, in consequence of this immense supply, has proved very dull, and prices have had a downward tendency; they having been as follow:—Beef, from 2s. 4d. to 3s. 4d.; mutton, 2s. 8d. to 4s.; veal, 2s. 10d. to 3s. 10d.; and pork, 2s. 8d. to 3s. 10d. per 8lbs. by the carcass. We perceive that some misunderstanding exists amongst the shippers of dead meat for the above markets, as to the value obtained for their consignments. Many of them invariably send meat of exceedingly good quality for sale, but the length of time it is frequently on its way renders it at least worth less—though it may be equal in every respect but *appearance*—by from 1d. to 2d. per lb. to that killed in London of a similar description. On the other hand, the London butchers are at a loss to know the reason that induces such large arrivals; these, however, are principally owing to the skins and wool being wanted at home—forming, as they do, the great *staple* in the manufacturing districts.

AGRICULTURAL REPORT FOR NOVEMBER.

The accounts from Ireland and Scotland have been abundantly more favourable as to the quality and comparative quantity of the grain lately har-

vested, than those which are collected from our home reporters. It is needless, however, to enlarge upon failures, or their causes, now that the evil is passed. With the Edinburgh reporter we say—after malice has done its worst—*that there is plenty, abundance for all the wants of man;* and we believe that prices —in despite of all attempts to injure by a rise the consuming millions—will continue moderate.

Future prospects must interest us at this period, when the seed-sowing of wheat has not only progressed far, but the seed has, in many instances, germinated with every appearance of health. The ground in fact, and the weather, have been in most respects favourable.

After the hot weather of September the land was very dry, and required much rain. It came, but in very great profusion; to such an extent in Norfolk, as to startle some experienced agriculturalists who gauged not less than five inches. West of London, however (and we find the same opinion pretty general), the wet has been truly seasonable, improving the turnips and mellowing the land, so that the earth has turned up a most capital furrow, and the seed was deposited in the best manner.

Farmers—many of them at least—have been taught to dread very early sowing, the gay wheat of 1843 having been so roughly handled by the severe spring frost, from the effects of which it never recovered. We know those who yet have much to sow, and wait the feeding off of many acres of turnips. Who ever contemplated injury in the Isle of Thanet from a late November or even December season? Why, then, should the plant fail in the chalky districts of Berks, Wilts, and Hants? We are quite sure that on cold clay farms, where scarcely a green blade was seen last February, the tenant has harvested a sample of wheat that, in the finest seasons, he would have blessed himself to behold even in hope. Thus human affairs are compensated.

November was, for half its course, as wet as October. There were five or six nights' frost, all of which went off in rain. Accordingly a mild, dripping winter is anticipated, contrary to the prognostic of the autumnal equinox, which augured fine clear weather, northerly winds, and consequently frost. Time will prove what is the fact.

Since we last wrote, circumstances have arisen which throw some light upon the practice of dibbling wheat. The operation is arbitrary, and could never be suitable to all lands and seasons. Thus, during the late rains, the tool for making the holes would have so indurated a heavy soil as to render the sprouting of the grain exceedingly doubtful. Therefore in such land dibbling ought never to be attempted in rainy, swampy weather. Light land, on the contrary, is consolidated by the dibble, and rendered favourable to wheat. We have heard of immense crops from dibbling barley, the plant tillering beyond calculation; it would be well tried comparatively with Talavera wheat in the ensuing spring.

But whatever may be said of dibbling, there can be little question of the great advantages derivable from spade husbandry.

A letter from Wilts, near Chippenham, is now before us, from which a few lines are extracted;—"I hope," says the writer, "and believe that spade cultivation is making rapid progress in this neighbourhood; the farmers are now observing the difference of crop between the poor man and themselves. Notwithstanding their repeated ploughings and manure, the poor man with his spade beats them; and they now begin to observe for themselves, and examine why the difference should be. One farmer has sown a field of 20 acres with wheat that has been turned with the spade; he found the experiment on a small scale answer well last year."

Our correspondent acknowledges that his own, and all the crops of grain, partake of the deterioration of the year; yet from 23 poles by the spade, he has thrashed 5½ bushels of wheat, which is a close approximation to 5¼ quarters per acre. Let the issue be tried by all.—November 22.

SOMERSETSHIRE.

If putting in our wheat in the autumn well is anything towards a good crop the following year, it will tell as much this as any year I have known; except in some situations, it is nearly completed—just the quantity of wet, and no more than was wanted. The wheat crops are by no means forward, but have come up well. The more experience obtained, the more certain is made the deficiency of the yield, particularly that which was down, 50 stittles having been known not to yield 3 bushels, and 6 to 8 stittles very common to the bushel. I have heard of only one instance of more than 30 bush. per acre; 20 to 25 will often be found where 40 was realized last year, and perhaps in some instances 26 to 27 where, from its thinness, 22 to 24 was grown last year. I believe it is now generally conceded that the average is under last year something materially—taking weight and quality into account, 5 to 6 bush. per acre—and the increased breadth will by no means make up for this. The quality and condition of the new wheats are better than was expected of that brought to market, but it is likely the worst is to come. Our supplies are now very short, our millers having used the new wheat very freely; and at present there is not near supplies for their consumption, and their stock must be lessening. Our market has been firm as regards new wheat; the best is a very ready sale at 6s. 6d.; old has not kept up its price so well, 6s. 9d. to 7s. Beans have been scarce, and are worth rather more—3s. 6d. to 4s., new, 65 to 66lbs.; old, very few on the market, 4s. to 4s. 6d. Barley comes more freely to market, 3s. 9d. to 4s. malting; grinding, 3s. 6d. to 3s. 9d. White boiling peas are very plentiful, 4s. 4d. to 4s. 9d. per bush. Oats scarce, 16s. to 22s. per qr. Potatoes have turned out a very deficient crop, more so than for many years—from 6s. to 7s. per 240lbs., reds; 5s. to 6s., whites. In consequence of the partial failure of the potato crop, poor pigs have been lower than I have known for years—two months old, fit for weaning, 3s. to 4s. each; 10s. or 12s. for others that would have cost 20s. to 25s. last year. Pork, 6s. 6d. to 7s. per score. Bacon, 5d. to 5½d. per lb. by the side. Beef, which is by no means plenty, has sold very bad, 6s. 6d. to 8s. 6d.; it has been forced out more than usual. Mutton is also very low, 4½d. to 5d. per lb. Wool has got up to 1s., at which a good deal has been sold, and the quantity on hand considered less than usual at this period. Poor sheep are also declining in price 1s. to 2s. per head, but they are still too high in proportion to fat. The crop of apples is nearly got in; apples have advanced in price, not being equal in quantity to what was estimated—2s. to 2s. 6d. per bush. Cider, £1 to £1 5s. per 63 gallons. Cheese has rather gone back in price; Somersets, from 42s. to 50s.; some choice dairies higher.—Nov. 23.

REVIEW OF THE CORN TRADE

DURING THE MONTH OF NOVEMBER.

The quality of the wheats delivered by the farmers during last month has not improved. On the contrary, the samples generally have been not only affected by the weather, but, we regret to add, some proportion of them must have been more or less injured before the reaping season commenced. We therefore fear much that the deficiency in the quantity grown last season in the home counties, and in all the corn districts in the south and west of the metropolis, cannot in any manner be made good by superiority in quality, as was generally expected at the conclusion of the last harvest. There is a great deal more straw than usual, and the natural consequence is, that the yield of wheat from the straw is short, and the weight less than was previously calculated on. The improved prospects of the agricultural interest, therefore, to which we had the greatest satisfaction to allude in the November No. of the "Farmer's Magazine," we fear much will not speedily be realized, although at the same time, certainly, confidence has gained, and is continuing to gain ground generally in the corn trade. The feeling, in all the large wheat markets, is still favourable to an improvement in the value of agricultural produce generally, although the want of fine qualities has materially reduced the average prices obtained for wheat previous to the conclusion of the month of September. The farmers, therefore, must continue to suffer in their capital for another year, at all events; and American and European agricultural produce of all descriptions must continue to press, like a night-mare, on all the industrial classes within the United Kingdom. A more unsound and more fatal policy was never adopted in any country calling itself civilized, than is the free corn trade system now partially in practice in this country. Our farmers, who pay heavy taxes, fair wages, and rents for their lands, are, by the present corn laws, called on, either to compete in our markets with foreign grain producers, who pay neither rent, wages, nor taxes, or to abandon the cultivation of their fields, and to sacrifice all the capital which they have embarked in these great national and highly important operations. It is utterly impossible to comprehend those principles, by which the labours of the fields are hereafter to be transferred from British agricultural workmen to the serfs and slaves of Europe, and to the untaxed helps of America; nor can we see the policy of reducing to poverty and distress hundreds of thousands of families, now perfectly content with their agricultural condition in the United Kingdom, for the sake of encouraging foreign agriculture, foreign land proprietors, foreign shipping, foreign agricultural labourers, and foreign seamen. To fancy any improved demand to arise for British manufactured goods on the part of foreign agricultural nations, from the repeal of the corn laws, is really more than absurd. But there is more wickedness even than absurdity in preaching these fallacies, and the members of the Anti-Corn-Law League know this fact well. The reduction of the prices of all the necessaries of life in this country is absolutely necessary to a farther reduction in the wages of their workmen; and to obtain this selfish object, they care little about the general distress which the increase of their fortunes would entail on all classes in this country. In agriculturnl operations, more than three-fourths of the inhabitants here are employed; and in this channel do the manufacturers find the most valuable markets for the consumption of their goods. Should the Anti-Corn-Law Leaguers succeed in their attempt to throw our corn markets open to foreign agricultural produce, duty free, our annual taxes of fifty millions sterling cannot afterwards be raised, and the first sufferers must be the proprietors of our large national debt themselves. The home consumption of clothing is four times larger, and five times more valuable, than are our foreign exports, those to our foreign possessions and colonies included; and the policy is indeed unintelligible, which would sacrifice the best interests of the community at large to any improvement which, by any possibility, could be effected in our foreign export trade, by the total repeal of the corn laws, or by the imposition of fixed duties on the importation of foreign grain into this county. The greater the value of our agricultural imports from Europe and America may be, the smaller must be our exports of manufactured goods to these portions of the globe; for in payment for grain and other descriptions of produce received from their inhabitants, we chiefly remit money, by which, at the expense of the British people, they are enabled to extend and to improve their own manufactures at home, and to render themselves annually more and more independent of this country for their necessary supplies of clothing. The rulers of America and of Europe act wisely in protecting internal industry, and fortunate would it be if our legislators would imitate their most excellent example. Unless, at all events, effective protection be given to agricultural produce of home growth, it is utterly impossible to prevent the speedy decay of our agricultural interest itself. No reduction in rent can enable the cultivators of our fields to compete in our markets with those of foreign nations, where rent, internal taxation, and wages for labour are nearly unknown. Even the abrogation of rent altogether would not enable our farmers to enter the lists with them. The average rent of England and Wales is only 17s. 8d. per acre. In those counties which supply the metropolis with wheat of the finest qualities, rents are already so low, that to reduce them further would be a matter of some difficulty. In Essex the average rent is 20s. 9d., in Kent 20s. 11d., Norfolk 18s. 8d., Suffolk 18s. 9d., Lincoln 21s. 1d., and Cambridge 21s. 2d. per acre. To work the fields of England and of Wales rent-free would not, therefore, make a difference of 7s. per quarter in the expences necessary to the production of wheat, and its present value is already more than that sum under the price at which it can be produced without loss to the British farmer. With the agricultural interests in the United States of America, we cannot compete in the cheapness of growing wheat. There the land proprietor is the land cultivator. In that modern republic large sums of money were some time ago also borrowed

chiefly from British capitalists. With this money, agricultural improvements of every description were prosecuted, and in many instances perfected. This is, of itself, a great advantage which the American has over the British grain grower; for our fields have never been cultivated by our tenants with borrowed, but solely with their own, capital. The Americans have, however, a still greater advantage over us; for they have repudiated their debts altogether, refusing to pay the interest, or to repay the principal; and thus have they absolutely cultivated their country at the expense of the British nation. They have formed canals, railways, and common roads, with the money of John Bull, by which they can cheaply and speedily forward their crops to the port of shipment; and now they require another favour, and indeed in part they have already, through the Canadas, obtained it—that of shipping their agricultural produce to the United Kingdom, and of having it admitted into consumption here, free of import duty. For this concession to foreign wheat growers, the Anti-Corn Law Leaguers promise us an increased foreign trade in manufactured goods; but the American and European statesmen are candid enough to admit, that the interest of internal industry requires that, in their markets for consumption of manufactures, their own manufacturers should be fully protected against those of foreign nations, and nobody can doubt the real wisdom of this resolution. The Anti-Corn Law League contains, however, only a fractional part of British manufacturers. The majority of these gentlemen entertain very different opinions respecting the real interests of the commercial classes. Experience has long since taught the respectable portion of the manufacturers, that trade, like water, must find its level. No power can much increase our commercial intercourse with foreign civilized nations, nor can any prohibitory enactments materially depress it. When foreign import duties are too high, the smuggler supplies, duty free, the usual quantities of goods consumed. Of this fact the present state of our export trade to Europe and to America furnishes proofs, which cannot be contradicted by the orators of the Anti-Corn-Law League themselves. The respectable part of the manufacturers is also perfectly alive to the vast importance of the home market for the consumption of British manufactures. These gentlemen are fully aware that the produce of our fields furnishes those means and those rates of wages which enable the British public to pay fair prices for the goods consumed by them, and they are consequently well convinced that agricultural protection is as necessary to native industry of all descriptions, as it is to the land proprietors, the tenants, and the labourer in the fields themselves. We strongly suspect also that the wandering orators of the League cannot themselves be ignorant of these facts; but then, rapid fortunes could not be acquired, if commerce were steady and legitimate. Within a few years they calculate on realising more than princely fortunes, and they care not how much distress they inflict on the industrial classes in prosecuting these most unworthy objects of their ambition. But this conspiracy against the property of the agricultural interest cannot exist, else eventually every branch of commerce and of manufactures must severely suffer by persevering in a course so exceedingly inhuman as is the attempt, now making, to deprive tens of thousands of agricultural labourers of their daily bread. The land proprietors and the proprietors of the national debt should, however, take the lead in resisting this monstrous combination against the future prosperity and greatness of the British empire, for unless it be speedily put down, great calamities must ensue, and a perfect revolution in the value of all descriptions of property, with the destruction of the national debt itself, must be the certain consequences of this association. In parliament, the friends to agricultural pursuits, if any such members actually now exist, should make a determined stand against the policy of paying mercantile losses out of agricultural property, else soon indeed must agriculture itself decay, pauperism fearfully increase, and idleness and crime be tripled in the once happy and flourishing United Kingdom. This year again closes with prospects any thing but cheering to the farming interest. The next one may perhaps be better, for a reaction in public opinion may occur before its conclusion.

From our North American possessions, and from the United States, the information received is to the middle of last month, but it is never of much consequence at this season of the year to the agricultural interest in the United Kingdom. Large shipments of flour, transformed, as it were by the wand of the magician, from the growth of the United States into that of the Canadas, had been made from Quebec and from Montreal, chiefly for Glasgow and Liverpool, where it will be admitted into competition with wheat the produce of the United Kingdom, under our Colonial Corn Bill, on the payment of only nominal duty towards the public expenses of the British Empire. We some time ago stated that this bill would not be satisfactory even to our fellow-subjects themselves in that part of America, and already have our predictions on this subject been amply confirmed, for numerous complaints were then made that in the ports of shipment the farmers in our American possessions could not compete with those of the United States, the expenses of transit to the St. Lawrence being far dearer from our distant settlements than they are from the adjacent territories of the United States. They likewise complain heavily that there is not any reciprocity in the corn trade; the legislature of the United States protecting their own farmers by the imposition of duties entirely prohibitory, on all descriptions of agricultural produce, when imported into that model republic. We cannot help admiring the wisdom exhibited by the government of the United States in thus duly protecting native industry; nor can we help the expression of our astonishment at the British Government for not imitating this highly praiseworthy and most national example. Of cured provisions from all parts of the United States we have received, during the last month, very large supplies, and monthly and yearly hereafter must these arrivals be increased, until we either want the means to pay for them, or until, what would be far better, our legislators return to good sense, and enact laws for protecting the interests of agriculture within the United Kingdom. Large ships can now pass from Lake Michigan itself to Montreal, and from thence the transit of the agricultural products of the far West States to the United Kingdom will be a matter of no difficulty and of but little expense, comparatively speaking; for the prices paid for grain and provisions to the original producers of them will be in future entirely regulated by the state of the markets in Great Britain. The Canadians also complain of the want of roads and canals, and we fear much that they must continue to make complaints on the same subject, until by loans of money from foreign nations they may be enabled to make them themselves; and after their formation they may place themselves on an equality with the American citi-

zens, by repudiation of their pecuniary engagements and by refusing to pay the annual interest on their public debts. From St. John's also, in New Brunswick, several shipments of agricultural produce had been forwarded to the United Kingdom, chiefly furnished by the States of Maine; and this will, in a year or two now, become a great port for the illegal shipment of the agricultural produce of the United States to this country. American flour, introduced under the Canadian Corn Bill, is already evidently affecting our wheat market, and is doing great injury to our agricultural interest, and to our public revenue; nor do our manufacturers reap any advantage from this circumstance, for all the markets in America are now, and have been for some time past glutted with British goods, introduced by the illicit trade across the Lakes, and through the Texas, and sent into consumption duty free. In fact, no alteration in our corn laws can improve this trade, for it never was more flourishing than it is at the present moment; nor can it be in any material degree injured, unless the American legislature should, unfortunately for the interests of our manufacturers, reduce the import duties to moderation, for then the merchants would pay some duty, whilst, as matters now are, they are relieved from the expense, and consequently gain greater profits than they possibly could do under a more legitimate system of commerce. There is a charm in using articles prohibited by law, and this feeling most evidently at present guides the conduct of our Transatlantic friends in the increasing consumption of *highly taxable* and consequently smuggled British goods. From the United States large shipments of cheese, hams, and of all descriptions of cured provisions, continued to be made to this country, for the benefit of our dairy farmers, and each succeeding year will double these supplies, forwarded here solely for the advantage of the American citizens.

The information received from the Baltic, and from all the ports of shipment in the north seas, is in due course of post; but it is not, at this season of the year, of much interest to the corn factors and corn merchants in this country. The argument used in favour of fixed duties on foreign grain, when entered here for home consumption, has latterly been, that the prices of agricultural produce would become more steady, because we would only receive foreign supplies when we actually wanted them, and at no other period. Now there is, in the north of Europe, and particularly in the Baltic and Black seas, a very powerful gentleman, called General Frost, who must be consulted before this principle can be well illustrated; and if we actually stood in need of grain at the present moment, we doubt much if he would obey the mandate even of the Anti-Corn-Law Leaguers themselves to forward grain to us, before the month of May next, at all events. At these dates, the elements had brought to a conclusion all operations in the corn trade, excepting for the immediate supply of the inhabitants residing in the neighbourhood of the various corn markets, and prices consequently were nominally quoted the same as they were in the month of October. Even at these low quotations, no speculative purchases had been made for British account; for the uncertain state of our present corn law, the chance of another alteration in it, and the everlasting changes which our legislators are annually making in our foreign commercial policy, render all calculations on the future prices of grain entirely impossible; and thus is the corn trade rendered far too dangerous for the prudent to embark their capital in it at this time of the year. The mandate of the Anti-Corn-Law Leaguers could not prevail on the elements to allow us, at present, grain from this quarter, even if we actually wanted it; nor can anything short of heavy import duties prevent our receiving from hence another million of quarters of wheat alone, during the next summer and autumnal months, whether we stand in need of it or not—whether our next wheat crop be a large one or a small one; for the existing corn law is not stringent enough to prevent foreign wheat, almost under all circumstances, from being admitted into consumption in this country. A return to the amount of duties chargeable under the act of 1827 is absolutely necessary for securing supplies of grain sufficient for our home consumption.

The supplies of barley forwarded to the different markets of consumption have not been large since our last publication, but the quality generally has been fine. The maltsters, however, have not been active purchasers, and therefore, notwithstanding the comparative smallness of the supply, prices are 2s. per quarter cheaper, for the best samples, than they were in the beginning of October last. If any prospect of increasing the consumption of unadulterated beer now existed, the circumstances of our barley cultivators would be widely different, and the health of beer consumers much better than they are at the present moment. That the quantity of beer at present consumed is not falling off, is perfectly evident; but it is not the genuine extract of hops and malt. It is in many instances drugged to perfection with highly deleterious and unwholesome ingredients; and the labouring man, who cannot afford to pay more than threepence for the quart, is thus defrauded of his hard-earned wages and injured in his constitution. If one particle of human feeling inhabited the breasts of those self-called philanthropists, the orators of the Anti-Corn-Law League, they would endeavour to direct the public attention to our excise laws, and they would attempt to remedy the numerous evils which these laws inflict on the British people. They would, in a special manner, use their oratory against the manner in which barley is taxed, and they would naturally ask why barley paid upwards of one-fifth of the national expenditure, whilst on manufactures no direct tax whatever was imposed. Here is an admirable field for the display of their benevolence towards their own workmen in particular. The reduction of the malt duty would restore to them the use of the genuine extract of malt and hops alone, and would be to the steam operatives a real blessing: it would, in some measure, remunerate them for sleeping during the night in vaults amidst foul air, and for labouring during the day in an atmosphere which is ruinous to their constitutions, and sends thousands of them into premature graves. On this subject, however, the members of the Anti-Corn-Law League are perfectly dumb, and the reason must be perfectly obvious to all who have paid proper attention to the original principles on which the Anti-Corn-Law League was formed. In the commencement of their labours in the cause of the human race, the ordinary subject of their orations was the destitution brought on the manufacturing classes by the want of increased consumption of goods abroad; and this they attributed solely to the cheaper rate at which goods of the same de-

scription could be manufactured in foreign countries. This evil, according to their dogmas, could receive no remedy unless in the reduction of the wages of manufacturing labour in this country, and the reduction in the value of provisions was necessary to the production of this, to some of them, a blessing. A free trade with foreign nations in grain was then the universal theme on which they delighted to dwell, caring little for the injury which the illustration of their principles would inflict on the agricultural interest, without conferring one solitary benefit on their own workmen. To reduce the exorbitant duties now levied on manufactured barley would militate against the frequently declared principles of this League, and hence the silence of Messrs. Cobden, Bright, and other orators, on the subject of our excise laws. To render the duties on malt moderate, would increase the consumption of barley to double its present amount; and to produce this additional consumption of barley, would call into cultivation two millions of acres of sandy lands, now perfectly useless to the British people. To cultivate this additional quantity of land would give productive employment to many thousands of families, now in a state bordering on destitution, and the wages of labour generally would thereby be very materially increased. Hence, the present orators of the human race never allude to the oppression which the excise laws inflict on the agricultural interest generally, and on by far the greatest portion of the manufacturing labourers themselves; for the reduction of the malt duty would enhance the value of wages, and thus spoil their plan of underselling foreign manufacturers in foreign markets by reducing the pay of their own workmen to those rates which may enable them to exist in the lowest grade of penury and distress. Surely the prosperity of agriculture, and the happiness and comforts of a vast majority of the productive labourers of the United Kingdom, must not be sacrificed to objects so extremely selfish as are those of a dozen or two of would-be cotton-lords; for we must do the great body of the respectable master manufacturers the justice to believe, that they entirely repudiate the doctrines of the present leaders of the Anti-Corn-Law Association. To cultivate the waste lands throughout the United Kingdom, and still further to improve those fields which are now considered to have reached a high state of cultivation, would give employment to, and supply every family in this country with abundance of all the necessaries of life; and surely this is a much more noble subject for the exertions of the patriot, than, by overworking artizans, to obtain more than princely fortunes for even hundreds of cotton lords. But it is not by the malt duty alone that the operatives in this country are oppressed; for in their constitutions they are equally injured by the high duty now imposed on spirits distilled in England. This is an evil which encourages the smuggling trade, is therefore injurious to the constitution of the people generally, and is the great corrupter of public morality. A duty of three hundred per cent. on the first cost of English spirits is a tempting bait held out by the law to the profligate portion of her Majesty's subjects, and should instantly be removed. In Scotland and in Ireland smuggled spirits are not consumed, because moderate duties render home-made spirits more wholesome, and also more palatable to the people, than either French brandies or Hollands are; whilst in England excessive duties are attended by excessive illicit importations of foreign spirits of the most deleterious qualities; by which system public morality is offended, the health of the people severely injured, and the national revenue defrauded. These evils would speedily be removed by the reduction of the duty now charged on the distillation of spirits in England to 4s. or even to 5s. per gallon. The suppression of the spirit-smuggling trade in England would create a demand for at least five hundred thousand quarters of barley in addition to the quantity at present consumed by the English distillers, and the creation of this quantity would materially increase the national wealth; it would furnish additional employment to our agricultural population, and, by increasing the wages at present paid for labour of all descriptions, it would only be injurious to the plans and wishes of the Anti-Corn-Law League, who are now attempting to gain large fortunes by reducing the wages of their workmen to an equality with those paid to labourers of the same description throughout the continent of Europe. The consumption of ardent spirits in England, as has been the case in Ireland aud in Scotland, would be also rendered less by materially reducing the duty, and the revenue would be actually increased by the same cause; the smuggler's trade would become unprofitable, and it would gradually disappear. The whole consumption, therefore, would be confined to British-made spirits of the best qualities, on which the regular duties would be paid, and the people would no longer have their morals corrupted by the illicit importation of foreign brandies and Hollands of the worst description; a large part of the expence of the coast blockade, and of the preventive service, would be saved to the state; and, except to the smuggler himself, the reduction of the duties now charged on the English distiller would be a universal good. A material alteration in the laws by which British rectifiers of the neutral spirit are now regulated, would be another national advantage. At present, British rectified spirits are not admitted into consumption until they are reduced to eighteen or twenty under proof, being scarcely the strength of Irishmen's punch. It is impossible for science in the distilling art, even of the first description, to give that degree of flavour to spirits of this strength, which is necessary to render them of the best quality. British Geneva could be made equal to any distilled in Holland, were this absurd and useless restriction removed; for so long as foreign spirits and whiskey are permitted to go into consumption amongst the inhabitants of England, at any strength which suits the palate of the consumer and the pocket of the spirit merchant, not one reasonable apology can be offered for limiting the strength of British rectified spirits. For the real interests of the barley growers in this country, for the increase of the public revenue, and for the promotion of true morality, therefore, our excise laws should be revised and improved.

With oats the chief markets of consumption have been most abundantly supplied during the last month, but the demand has been proportionally large, and an improvement of 1s. to 1s. 6d. per quarter must be noted in the average prices. The quotations, however, are still considerably under the expences of oat production in Great Britain, and we have been, therefore, principally indebted to Ireland for the abundant

manner in which we have been supplied since our last publication, the season of the year interrupting the importation from the ports in the North Sea, within and without the Baltic. Yearly now is the vast importance of Ireland, as an agricultural country, unfolding itself; and daily, therefore, is the necessity for giving due protection to agricultural pursuits throughout the United Kingdom becoming more manifest to all reflecting minds. We have many millions of acres of waste land uncultivated, and perfectly useless to the human race, but which, by labour and capital, may be converted into fields of the highest utility to the people of the United Kingdom. There is likewise not one acre of land at present within the three kingdoms, however highly cultivated it may be considered at the present time, which by agricultural improvements may not be rendered doubly productive; and with such immense sources of real wealth within ourselves, it appears to be a perfect act of insanity to propose the transfer of agricultural labour from this country to the nations of America and of Europe, merely for the purpose of gratifying the strange propensities of the Anti-Corn-Law Leaguers. In Ireland the sources of productive employment are nearly boundless, and yet at least one-half of the population is in a state of idleness and destitution. This is a strange anomaly, but not more strange than true. The men are perfectly ready for employment, but capital is wanting. The King of the Belgians proposes to cultivate the waste lands in his dominions on the public credit, and there exists no well founded reason for not applying our boundless public credit for similar purposes throughout the United Kingdom. By agricultural improvements idleness would disappear, and we could produce at home all the necessaries of life were our population even tripled.

CURRENCY PER IMP. MEASURE.

NOVEMBER 27.

WHEAT, Essex and Kent, new, red	48	54	White	53	58 60
Irish	48	53	Do.	50	54
Old, red	54	59	Do.	58	60 63
RYE, old	30	36	New	56	—
BARLEY, Grinding 30 32 Malting	34	35	Chevalier	35	36
Irish	26	28	Bere	24	26
MALT, Suffolk and Norfolk	60	62	Brown	56	58
Kingston and Ware	60	63	Chevalier	60	63
OATS, Yorksh. & Lincolnsh., feed	21	22	Potato	22	25
Youghall and Cork black	18	19	Cork, white	19	20
Dublin	18	19	Westport	19	20
Waterford, white	18	19	Black	18	19
Newry	20	21			
Galway	17	18			
Scotch feed	20	22	Potato	23	25
Clonmel	18	19	Limerick	17 19	20
Londonderry	18	19	Sligo	17	18
BEANS, Tick, new	30	34	Old, small	34	38
PEAS, Grey	32	33	Maple	31	33
White	33	36	Boilers	34	38

SEED, Rape..... 27*l.* 28*l.* Irish..22*l.* 26*l.* per last.
Linseed, Baltic....30 38 Odessa 41
English Red Clover.... — — per cwt.
White..... —
Mustard, White 7 10 brown 8 11 per bush.
Tares, old .... — — new — — per qr.
FLOUR, Town-made 48 50 Suffolk 40 42 pr sk. of 280 lbs.
Stockton and Norfolk, 40 42 Irish 42 —

FOREIGN GRAIN AND FLOUR IN BOND.

WHEAT, Dantzic	42	45			
Hamburg	40	—			
Rostock	42	44			
BARLEY	20	—			
OATS, Brew	12	16	Feed	11	15
BEANS	15	19			
PEAS	23	25			
FLOUR, American, per brl	21	23	Baltic	21	23

IMPERIAL AVERAGES.

Wek ending	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
Oct. 14th	50 8	30 1	17 10	30 0	30 4	32 1
21st	50 1	30 4	17 0	29 10	30 5	32 8
28th	50 5	30 9	17 8	30 3	31 1	32 10
Nov. 4th	51 8	31 7	18 7	29 0	31 5	33 10
11th	52 1	32 5	18 9	29 3	32 2	34 0
18th	51 7	32 4	18 11	30 5	32 4	34 0
Aggregate average of the six weeks which regulates the duty	51 1	31 3	18 2	29 9	31 4	33 3
Duties payable in London till Wednesday next inclusive, and at the Outports till the arrival of the mail of that day from London	19 0	7 0	8 0	11 6	10 6	9 6
Do. on grain from British possessions out of Europe	5 0	0 6	2 0	2 6	2 0	1 6

COMPARATIVE PRICES OF GRAIN

WEEKLY AVERAGES by the Imp. Quarter, from the Gazette, of Friday last, Nov. 24th, 1843.	s.	d.	AVERAGES from the corresponding Gazette in the last year, Friday, Nov. 26th, 1842.	s.	d.
WHEAT	51	7	WHEAT	49	6
BARLEY	32	4	BARLEY	28	1
OATS	18	11	OATS	17	9
RYE	30	5	RYE	32	2
BEANS	32	4	BEANS	31	4
PEAS	34	0	PEAS	33	7

Account shewing the Quantities of Corn, Grain, Meal, and Flour, imported into the United Kingdom, in the month ended the 10th Nov., 1843; the Quantities upon which Duties have been paid for Home Consumption during the same month, and the Quantities remaining in Warehouse at the close thereof.

Foreign Grain and Flour.	Quantity imported.	Quantity entered for consumption.	Quantity remaining in warehouse.
	qrs. bush.	qrs. bush.	qrs. bush.
Wheat, from British Possessions	983 6	983 6	426 6
Barley	—	—	—
Peas, from do.	—	816 0	388 5
Indian Corn, do.	—	—	143 7
Wheat, foreign	54846 5	2671 6	112248 2
Barley, do.	9230 6	9225 6	11597 7
Oats, do.	15893 5	1771 1	46202 1
Rye, do.	23 6	23 6	14 3
Peas, do.	5238 5	4307 5	20469 3
Beans, do.	152 2	8156 4	100357 7
Indian Corn, do.	—	19 1	2531 4
Buck Wheat, do.	—	—	—
	cwts. qrs. lbs.	cwts. qrs. lbs.	cwts. qrs. lbs.
Flour and Meal from British Possessions	41890 3 12	40783 1 10	1760 3 8
Flour & Meal, foreign	25956 0 13	1603 1 11	55002 3 16

PRICES OF SEEDS.

NOVEMBER 27.

Having a few samples of new red Cloverseed, both Foreign and English, there has been some little business passing at full prices, and the high prices of fine white, at Hambro', have been in some instances reluctantly followed; but there is very little doing in old red or Trefoil without alteration. Other sorts of seeds were held with much firmness, and prices of Mustard and Carrawayseed had rather an upward tendency.

Canaryseed was held at last Monday's rates, but the sale was far from lively.

Carraway	—	—	new	57	60
Clover English, red	46	65	white	none.	per cwt
Flemish, pale	44	52	do..	60	88
New Hamburgh	63	68	do..	60	90
Old do.	42	54	do..	50	85
French	50	70	do..	none.	
Linseed, English, sowing	50	60			
Baltic	—	—	crushing	35	37 per qr.
Mediter. & Odessa	36	38			
Coriander	15	20	per cwt.		
Mustard, brown, new	12	18	white..	10	12p. bush
Trefoil		—	old..	14 22	new 18 30s

Rapeseed, English new.. 25*l.* 26*l.* per last.
Linseed Cakes, English.. 9*l.* 10s. to 10*l.* per 1000
Do. Foreign.. 5*l.* to 6*l.* 10s. per ton.
Large, foreign.... — —
Rapeseed Cakes..... 5*l.* 5s. to 5*l.* 10s.
Hempseed..... 35 38 per qr.
Rye Grass, English..... — Scotch — —nominal
Tares, winter ..... 4s. 0d. to 4s. 6d.
Canary, new..... 60 62 fine 63 —per qr.

PRICES OF HOPS.

BOROUGH, MONDAY, Nov. 27.

The market for hops is again lively, and there is a further improvement to be noted in the prices of some qualities, as our list shows.

POCKETS, 1843.

Sussex	116s. to 124s.	Mid Kents	140s. to 180s.
Wealds	118s. to 122s.	East Kents	140s. to 210s.
Do. Choice	126s. to 130s.	Farnhams	195s. to 210s.

POTATO MARKET.

SOUTHWARK, WATERSIDE, Nov. 27.

In consequence of contrary winds the supply from the Northern countries has been small, the best samples having been eagerly bought up; and as most of the best lots from these countries are cleared, the trade will be driven to ordinary samples, which otherwise they would not take to at any price. There is also a good demand for the best descriptions of Prince Regents. The supply from Devonshire and from the Channel Islands has been more liberal; both descriptions are selling freely at our last quotations; there being a slight advance on the Jersey and Guernsey blues.

PRESENT PRICES AS ANNEXED:—

	per ton.			per ton.	
York Reds	50s. to 70s.		Kent & Essex Wh.	50s. to 55s.	
Perth do.	45s.	55s.	Do. Kidneys	55s.	60s.
Fifeshire do.	—s.	—s.	Wisbeach do.	50s.	55s.
Early Devons	60s.	—s.	Do. Blues.	—s.	—s.
Late do.	—s.	—s.	Do. Whites	50s.	—s.
Cornwall	60s.	—s.	Guernsey Blues	45s.	50s.
Jersey Blues	45s.	50s.	Do. Whites	—s.	—s.
Do. Whites	—s.	—s.	Prince Regents	50s.	60s.

WOOL MARKET.

BRITISH.

LEEDS, Nov. 24.—We have not any alteration to report in this branch of trade. There is a good and steady business doing for the season, and prices are firm.

WAKEFIELD, Nov. 24.—We have had comparatively little doing in combing Wools of all descriptions this week—stocks are not heavy, and prices remain stationary. There is a fair demand for blanket and low clothing Wools, and prices are firm.

LIVERPOOL, Nov. 25.

SCOTCH.—There continues to be a fair demand for Laid Highland Wool; our stock, however, is light, and if any movement was to take place in trade, the probability is prices would rather advance. White Highland is in fair demand at our quotations. The stock of good Crossed Wool is light, and anything offering commands full rates; bad conditioned and heavy is bad to sell. There has been less doing in Cheviots this week.

PRESENT PRICES:

	s.	d.	s.	d.
Laid Highland Wool, per 24lbs..	7	0	to 7	6
White do. do.	9	9	10	6
Laid Crossed do..unwashed..	8	3	9	9
Do. washed do.	8	9	10	3
Do. Cheviot unwashed do.	8	9	10	9
Do. washed	11	6	14	0
White do. do.	20	0	21	6

FOREIGN.—There has been more doing with us this week, and our new imports, when brought on the market, command full rates. Alpacas continue in request at late advances, both for the home and foreign (or French) market.

FOREIGN.

CITY, Nov. 27.—The imports of wool into London last week were only 130 bales, viz., 102 bales from Germany, and the rest from Spain and Algoa Bay.

The market for wool is steady, and with a fair business doing.

We have favourable accounts of the flocks from Port Philip and the Cape of Good Hope this week.

PRICES OF MANURES.

Subjoined are the present prices of several sorts of manure:—

Hunt's Bone dust, 16s. per qr.
Hunt's Half-inch Bone, 14s. per qr.
Hunt's Artificial Guano, 8*l.* per ton
Rape Dust, 6*l.* to 6*l.* 10s. per ton
Rape Cake, 6*l.* 10s. to 7*l.* per ton.
Rags, 4*l.* to 4*l.* 10s. per ton.
Graves, 6*l.* 10s. per ton.
Gypsum, at the waterside, 32s. 6d. per ton; landed and housed, 38s. to 42s. per ton, according to quantity.
Agricultural Salt, 34s. per ton.
Lance's Carbon, 12s. per qr.
Ditto Humus, 14s. per qr.
Soap Ashes, 10s. per ton.
Poittevin's Patent Disinfected Manure, 13s. 6d. per qr.
Poittevin's Highly Concentrated Manure, 30s. per qr.
Nitrate of Soda, 18s. to 18s. 6d. (duty paid) per cwt.
Nitrate Potash (saltpetre) 26s. per cwt.
Petre Salt, 4s. per cwt.
Willey Dust, 4*l.* 4s. per ton.
The Urate of the London Manure Company, 5*l.* per ton.
Chie-fou, 21s. per cwt.
Daniell's new Bristol Manure, 8s. per qr.
Hunt's new Fertilizer, 13s. 4d. per qr.
Grimwade's Preparation for Turnip Fly, 10s. 6d. per packet, sufficient for three acres.
Wolverhampton Compost (Alexander's), 12s. per qr., subject to carriage to London, or forwarded from Wolverhampton.
Guano, 10*l.* 10s. per ton, 12s. per cwt.
Potter's Artificial Guano, 15s. per cwt.
Muriate of Ammonia, 24s. per cwt.
Muriate of Lime, 12s. per cwt.
Clarke's Compost, 3*l.* 12s. 6d. per hhd., sufficient for three acres.
Wright's Alkalies, 28s. and 42s. per cwt.
Soda Ash, 14s. to 16s.
Chloride Lime, 28s. per cwt.
Sulphuric Acid, 2½d. per lb.
Sulphur for Destroying Worm on Turnips, 16s. per cwt.
Sulphate Soda, 7s. 6d. per cwt.
The Liverpool Abattoir Company's Animalised Manuring Powder, 2*l.* 10s. per ton.
Harrison's Manure Powder, 16s. per qr.

END OF VOLUME XIX.

Printed by Joseph Rogerson, 4, Norfolk-street, Strand, London.

INDEX TO THE EIGHTH VOLUME.

(NEW SERIES.)

LIST OF PLATES IN VOL. VIII.