

reged to germinate in more abundance, and at no loss whatever. We have a piece of land at the present time, thus cultivated after one of our early crops, so completely covered with seedling weeds of all descriptions—the progeny of many years' sowings, no doubt—that we are ashamed our brother-farmers should look upon it; but we ourselves regard it as a beautiful crop; and, anomalous as it may appear, this very piece of land, we flatter ourselves, will prove the cleanest of our wheat crops, feeling assured that no other piece would have paid us so well, and effected so good a cure or destructive for the weeds, it may be for many years to come; whereas if the land had been repeatedly ploughed at great expense till the present time, and the wheat sown now early, as it should be, most of the weeds would then have lain dormant, and not have germinated till now, with the wheat, or in the spring, and the crop must have been inevitably smothered, and attended with much labour and expense and loss; in fact, no human art could then have devised means to eradicate them from the corn, not even with considerable expense—an amount of manual toil which cannot now in these times of low prices be afforded. All must, then, “have grown together until the harvest,” as the tares (weeds?) are represented to have done in the parable of our Lord. Hence arises the chief motive farmers in general have for adhering to thick sowing, “to choke the weeds,” at the expense of not much more, very often, than half crops of corn. If turnips are to be taken as a stolen crop, as they may be with profit on fallows and stubbles, they should be sown at the time of the last operations of harrowing and rolling, whether for pot-boiling or for sheep-feeding, and hoed out timely to uniform distances, whether somewhat thick for sheep or thin for marketing. The weed crop may be left to flourish till the middle of September, or later, if they do not begin to ripen their seeds. If they should show signs of this in some of the quick-growing kinds, when the summer holds out till October, and when the land was ploughed and tilled early by fallowing, they should be at once ploughed in, with a skim coulter attached to the plough to bury the weeds more effectually, and to prevent their being sort of transplanted between the furrows, and the wheat sown immediately (if it was not first regularly sown broadcast and ploughed in, which, by-the-by, is a good plan) as singly as possible, at not more than one bushel, or at most five pecks, per acre, which is half-a-pint for each square-rod; common sense, however, dictates that even this is unnecessary; but some people will sow double that quantity! Imagine one pint (which is equal to $2\frac{1}{2}$ bushels per acre) to be sprinkled equally over one rod of ground, what folly would present itself for sowing so thick! It is, however, sometimes argued—“But we must grow weeds as well as corn, and we must sow thicker than is needful, to smother them, and do what you will, and say what you may about it, Nature has so provided it, and the Scriptural prophets have foretold that they *will* and *shall* for ever spring out of the earth.” Yes, yes! but should we not rather grow them and foster them between the times of gathering and sowing our crops, rather than

amongst our main summer crops of corn, when they are at full liberty to ripen and shed their seeds in perfection, often in many cases before the corn itself is ripe? To grow weeds with turnips, especially with those intended for sheep-feed, is no matter, but wise foresight, as they will not seed themselves then, and there is plenty of moisture in the land then, in autumn, to feed them and the turnips too, *all* to be returned to the land from whence they came in the shape of vegetable manures, either by the droppings of sheep or the decayed plants themselves.

HARDY AND SON,

Maldon, Essex, Oct. 4th.

Seed-growers, &c.

SONG OF THE HARVESTERS.

BY JOHN HODGESS.

Darkness has fled, with joyous tread

Comes in the harvest day,

And all things fair its joy to share

Are making round our way.

The king of light in garment bright

Robes grove and stream and plain,

As with glad song we haste along,

To cut the golden grain—

A cheerful band of harvesters

To cut the golden grain.

The great of earth, of kingly birth,

To fame and titles born,

With all their powers, more joy is ours

On this bright harvest morn!

While despots bind their fellow-kind,

And tyrants forge the chain,

With horny hands and well made bands

We'll bind the golden grain—

With hearts the while all free from guile,

We'll bind the golden grain.

Our boast is not of treasures bought

From blood of toiling slaves,

The crowns we spend no coffins send

To fill up paupers' graves.

We boast not halls with pictured walls,

Nor ships that plough the main;

Our pride is health, our seas of wealth

Are seas of rich ripe grain,

And all the earth must own our worth

In seas of rich ripe grain.

The gay may join around their wine,

And full libations pour,

Who sigh for fame may seek a name

On fields of crimson gore;

We ask not wine, nor will we join

In strife on gory plain,

But with kind words and scythes for swords

We'll battle with the grain—

On earth to increase sweet love and peace

We'll battle with the grain.

Then let's again another strain

Send on the breeze away,

Earth's voices sweet ring out to greet

The joyous harvest day.

The bright sun smiles through leafy wilds

And o'er the meadows green,

The whispering breeze among the trees

Displays their silvery sheen,

And on the plain the waving grain

Awaits our sickles keen.

THE HARVEST OF 1859.

I have been so long honoured with space in your valuable magazine for the effusions of my pen, that I at times shrink from my privilege as a contributor, lest I should be found to mislead my readers, or fail to contribute aught worth their reading. It has been my custom for several years past to give my views of the harvest, either in prospect or subsequently to its collection. I regret that from various causes my report should have been so long delayed; however, it has enabled me to arrive at a more definite conclusion as to the real facts, upon which it will be my duty and pleasure to report. I shall therefore give a summary of what is so far reported of the crops and produce, taking them collectively, and in order throughout the country, and, if my report does not extend to an unreasonable length, will endeavour to include both Scotland and Ireland.

Taking the harvest generally it has been one of the most expensive ever known, owing to a most abundant crop of straw, a simultaneous ripening, and consequent extraordinary demand for labourers. The hot, parching weather in July having brought on a premature ripening, all farm work became crowded, men were not to be had, and prices therefore rose immoderately high, particularly in the midland counties. This simultaneous ripening had also the effect of preventing the harvestmen of the earlier districts migrating to the more backward ones, so that the prices in these backward districts, for cutting and stooking only, ranged from 12s. to 30s. per acre. One fact is worth recording here. A farmer had to give 25s. per acre for the reaping of his crop, which, on thrashing, was found to yield two quarters of inferior wheat per acre, which he sold at 32s. per quarter. Many similar cases might be related. In the Fens much of the grain was shed on the ground, owing to the impossibility to procure hands. The wheat crops, however, were so very bulky in straw and thin in grain, that the loss was comparatively light. The oats and beans suffered severely. Nor was this confined to the Fens; many districts suffered great losses.

I shall endeavour to take the counties in their order of latitude, beginning with the southern counties. I find from various reports that much unsettled weather, heavy thunderstorms, and continuous rains occurred during the latter part of the harvest, and led to much wheat being harvested in bad condition. The quality of the grain is fair upon the average, but much thin and blighted corn is found upon thrashing, and the produce is said to be from two to three sacks below the last year's crop. This is important, as it was generally thought the crops in the southern counties, *i. e.*, Cornwall, Devon, Dorset, Hants, Sussex, and Kent, were remarkably good. It is an unquestionable fact, that when premature ripening takes place it always causes a great amount of the grain to be thin and shrivelled; such was the case this season. The barley crops are all reported as being inferior, and under an average. The oat crops are still worse spoken

of, except in Kent, where they are good. I therefore do not gather anything very encouraging from the reports of the southern parts of the kingdom. In the south-west absence of rain in the summer has been much felt.

I will now take another line across the kingdom, and shall include the counties of Essex, Middlesex, Oxford, Berks, Wilts, and Somerset. In the latter county much of the wheat has been got together in fair condition; but a good deal has been seriously injured by heavy rains and taking wet in the stack. The same report is given, of thin and blighted grain being found on thrashing, and two or three sacks per acre short of last year. The barley is much sprouted and stained, but the crop is large; as is also the oat crop. Beans irregular, and under an average. These remarks will apply equally to Wilts, Berks, and Middlesex; but Oxford and Essex are better spoken of, and the crops there were heavy: however, they were much beaten down, and do not prove well. Barley has suffered severely from rains, and the winter beans are improving. I do not, therefore, gather much encouragement from my second district, but on the contrary, I believe it will also prove an unprofitable harvest to the occupiers of these counties.

I will now take the next line across the country, in which I include the counties of Suffolk, Cambridge, Huntingdon, Bedford, Hertford, Buckingham, Gloucester, Hereford, and South Wales. In these counties, being about the same latitude, the reports are doleful in the extreme. In Suffolk, the wheat is said to be fifteen to twenty per cent. below par. The barley is so much injured that not one-half will be fit for malting; much of it was sprouted prior to cutting. In Cambridgeshire not much better is reported; crops never varied more. The heavier the crop, the worse the produce; rains were heavy, and much carted out of condition. Beans fair. Oats good. Some good barleys were secured—the Fens wretched. In travelling westward, we find the same unfavourable report. In Gloucestershire, both wheat and barley were much laid by heavy thunder-storms and rains; so that the crops came light to hand, and the yield will be much inferior to 1858. Beans and oats fair. In Herefordshire the harvest weather was beautiful, but the crop of wheat is said to be much lighter than the past two years, and a great decrease in the quantity of acres sown. The rains having been tremendous in the summer, it has caused a thin and varied sample. In one instance, a wheelbarrow filled with stones was carried along by the flood. The midland counties of Beds, Herts, Hunts, and Bucks are rather more favourably spoken of; but the same premature ripening took place, owing to a scorching July and the same fall of heavy rains; so that I do not gather a favourable account of the prospects of these counties. Like all similar districts, the samples are only varied; but the crops being rather lighter in bulk of straw, the produce in grain is somewhat heavier. In South Wales the crop

of wheat and barley are fairly spoken of; but oats are light: rains have damaged them.

I take another line across the kingdom, and in this shall include the counties of Norfolk, Lincoln, Northampton, Rutland, Leicester, Warwick, Worcester, Stafford, Shropshire, Cheshire, &c., and North Wales; and the reports given of these counties are more discouraging than of others. Nottinghamshire is said to yield one-fourth less than an average yield of wheat, of very varied character; and barley is the worst and most varied crop known for years, and also one-fourth below an average yield. Oats fair. Peas fair. Leicestershire is rather better reported. A fair yield of wheat, but of inferior quality. Barley is inferior in colour and weight. Oats fair. Winter beans bad; spring ditto good. Lincolnshire is a large county, and bears away northward. The fens are very defective. The wheat amazingly heavy in bulk, but grain light and bad. Oats are a very rough, but good crop. Beans good. Peas fair. The higher lands are bulky in straw, but are better in grain, although very inferior to most years; certainly by no means an average crop. Barleys are heavy and coarse. Oats fair. Beans good; winter ditto bad. In the western counties in this latitude the same character of the harvest is given, but rather more favourable. The hot July and the heavy thunderstorms, however, have done them great damage. Winter beans in the west are well spoken of. In looking over the reports connected with this line across the kingdom, I have the impression left that, like all others, it will be found very defective in yield and quality as respects wheat and barley, and fair for oats, beans, and peas. In the produce of flour from wheat, it will be found full one-fourth below an average of years, but the quantity of wheat per acre will not be so low; perhaps one-sixth below an average would be near it, but bad in productive quality.

I will now take the northern counties — York, Lancashire, Westmoreland, Durham, Cumberland, and Northumberland. It is remarkable that, while the midland counties have been enjoying one of the most productive seasons ever known, the northern counties have been suffering most severely from a long and continuous drought, no rain of any consequence having fallen from April to July. The pastures are therefore burnt up. The barleys and spring crops generally were bad, and the wheat crop is the only fair one; it also is very light in straw, but is yielding fairly, and the wheat is of good quality. In Yorkshire the wheat and barley crops are well reported of. In Cumberland and Durham wheat is well spoken of, but the barleys are various in yield and quality, generally under an average, as are also oats. Beans are nearly a failure in Cumberland, while in parts of Durham they are good. In Westmoreland all the crops are deficient, and in Lancashire they are not well spoken of. From this also assumed district I gather that a fair proportion of wheat of average quality will be forthcoming, but that all the spring crops will be greatly deficient. I have taken pains to collect information relative to our country's harvest, and the result is that, as a faithful reporter,

I must say that it will be found a very defective one as regards the produce of wheat itself; and further, that this wheat will not yield the usual average of flour, but will vary in the product to from three to five pounds per bushel. The barley crop, as a whole, is one of the worst on record for the maltster; a large breadth has suffered much from sprouting and bleaching, so that a good sample of pale malt will almost be a curiosity. The produce of the crop is certainly much under an average one, and very thin in grain. This is the general report, but when the storms and heavy rains are taken into account, we do not wonder at its bad malting qualities. Much of it must of course go for feeding purposes. The oat crop is much more favourably reported of, and, with the exception of the northern and one or two of the south-western counties, is highly spoken of. It is likely to turn out well, and a fair breadth has been sown. The quality, owing to the vicissitudes of the weather, will of course vary much. In the midland counties the yield will be abundant. The straw, a very full crop, will be coarse, but very indifferent fodder; it almost rotted on the ground. The bean crop is reported of in nearly the same terms. The northern and south-western counties, owing to the absence of rain, have all defective crops, in many cases total failures; but the midland counties are all fairly spoken of, except the winter variety, which in many places totally failed. This will not be a productive crop, certainly not an average one, but the quality is fair, and it will relatively bear a good price.

The pea crop is not so well spoken of, although no great complaints are made, and these have not so totally failed in the northern counties. The early varieties are good, and the general crop may be taken as nearly an average one; but the samples of peas themselves are small, which must detract from the yield and price.

The quantity of old wheat remaining unsold by the farmers is no doubt considerable; but as the harvest was a very early one, we may calculate upon a *thirteen months* year to another harvest; so that all will be more than wanted. There is unquestionably great prosperity in our manufacturing districts, and therefore a great demand for bread will continue; added to this, there does not appear to be any great surplus of grain to come from abroad, most of Europe having suffered alike with ourselves; so that I have come to the conclusion that when the first pressure of grain upon the market is freely over, we may anticipate a gradual and steady improvement in price, particularly for wheat.

REGISTRY OFFICE FOR FARM SERVANTS.—A registry office for agricultural servants has been established in Farrington, with branches in some of the principal parishes in the district. The object is to promote the abolition of "mops" or hiring fairs, which often prove demoralising to the young persons frequenting them, and a public meeting announced to be held here shortly, in furtherance of the same desirable end, when the Right Hon. E. P. Bouvier, M.P., is expected to preside. In order to compensate the labouring classes for the loss of their annual holiday, which would result from the discontinuance of the hiring fair, it is proposed to establish in the various parishes, where practicable, a rural treat, somewhat similar to the "harvest home" gatherings, which are now becoming general in this neighbourhood.—*Willshire Mirror*.

THE CULTIVATION OF THE BEET ROOT.

The autumnal meeting of the members of this Society was held in the large room at the White Horse Hotel, Ipswich, on Tuesday evening, when Mr. A. Packard, of Woolverstone, read an able paper on "The cultivation of the Beet Root, and its feeding uses." Mr Manfred Biddell, vice-president of the Club, presided.

Mr. PACKARD, after a few prefatory remarks, proceeded with his paper as follows:—

The subject for discussion this evening I feel to be as important a one as we can well discuss, materially affecting as it does our pecuniary interests. Our Committee evidently esteem it as such, by the prizes which have been offered for the November meeting; indeed, agriculturists, almost without exception, are turning their attention to the beet root crop, no matter whether a person is farming fifty acres, one hundred acres, three hundred acres, or a thousand acres, no matter whether he is farming stiff clay land or rich loamy lands, or light sandy land; and very rightly do I think they are turning their attention to it, for where can be found a root that will produce so much weight, that will afford so much provision for stock, that will so well supply their cattle with provision at nearly all times of the year, and so much less liable to risk of adverse seasons (than other roots) as the beet root: and I find that where we grew perhaps ten acres or fifteen acres—and that was considered ample, a few years since, and as much as ought to be grown upon a farm of three hundred acres—we are now growing our thirty or forty, and even sixty acres. I think this clearly shows how important a subject we have here for discussion. There also have been many papers read, followed by animated discussions, upon this same subject. Some few years since, Lord Althorpe addressed the London Farmers' Club, I think it was upon the subject; the result of the discussion then was, that it was not considered advantageous to grow the beet root extensively owing to the extensive autumn cultivation requisite. Mr. Baker, of Writtle, has more than once, I believe, addressed the London Farmers' Club upon this subject; at one time he endeavoured to show the advantage that would be derived from growing beet root, that sugar might be extracted from the bulb, and the leaves stripped off whilst the root was growing and used as a food for milch cows; this latter process I should most decidedly object to, as I consider the bulb derives great benefit from the leaves; and it has been proved, that in proportion as you strip off the leaves, so will you diminish the weight or size of the bulb. At another time Mr. Baker showed the advantage that would be derived by increasing the breadth of the beet root crop and growing it instead of the turnip, and also the great use of this root for all descriptions of stock. I am about to take the same course as Mr. Baker took in his more recent introduction of the subject. At our May meeting Mr. Bond, very properly I

think, drew attention to the low per-centage of farming business. Well, I know of nothing so likely to increase that per-centage as by increasing the extent of the beet root. He also expressed it as his opinion that the heavy clay lands should have more stock imported into them than is at present. Well, gentlemen, I know of nothing which would tend to carry that object into effect so well as the extension of the beet crop. Mr. Bond also said that he thought the heath lands of Suffolk would soon become a disgrace to Suffolk enterprise. Well, if the breaking up of those lands is considered right, I know of nothing so suited to make them corn-producing as by first growing beet root upon them, and by a repetition of so doing. I think I am right in saying that this system is being carried out to a certain extent by a very enterprising gentleman not many miles from this town. I understand he grows beet root extensively upon these light lands, and with very good success. I hope he is a member of this Club, as, if not, he ought to be, and, if present, I am sure he will do good service to this Society by giving us a few details as to the carrying out the system. I do not know how it is, but of late years the turnip crop seems to have been a partial failure—at one time time affected by disease, at another by caterpillar, at another time by grub or wireworm—that it has appeared almost useless to attempt to grow it, and we have been compelled to resort to the beet root; and how fortunate it is that we have such a source to flee to, for we certainly have here a root that, if we desire it, will completely supply the place of the turnip crop, and with much greater advantage to the grower, for I think it is generally considered that it will produce a third more in value than the turnip crop, and that at the same cost of cultivation. I am corroborated in this opinion by one of the largest growers of beet root in my own neighbourhood; but this latter I hope to show more clearly by-and-bye. Then, again, we have a low price of corn: and, for all I know and can see, are likely to have for some time to come. Well, then, how necessary that we should direct our attention to the growth of this important crop (the beet root), whereby we shall be enabled to produce beef, mutton, and wool more extensively than we now do; and with the present prices for these articles, it must be a better paying system—that of grazing and breeding &c.,—than corn growing; but somehow or other, if we pay great attention to this root crop, we cannot by any possibility neglect the corn crop. The old adage "Take care of the pence, and the pounds will take care of themselves," might very well apply almost in the same way to this subject; for I might say "Take care of the root crops, the corn crop will take care of itself"—that is, as a matter of course, we shall be sure to grow good crops if we farm well for the root crop, and consume it upon the occupation. I will now say a few words upon the origin and introduction

of the beet root, and then pass on to the more immediate subjects for discussion. The beet root or mangold wurtzel, which latter appears to be the right name, seems to have originated in Germany, and has been for some length of time cultivated there and in France and Switzerland, both as food for cattle, and also for sugar, previously to being introduced into this country. Mangold Wurtzel are two German names, meaning "a root of scarcity," but might well be reversed and called a "root of plenty," for certainly with a heavy crop of mangold wurtzel there is not much chance of a scarcity of food for cattle during the greater part of the year. I find it was introduced into Great Britain about the year 1786: some seed was sent over here from Germany, with a letter of recommendation, which got into the hands of a Dr. Lettson, who, with great zeal, commended it very highly to the favour and adoption of British farmers; so you see that it has grown in this country about 70 years, and I have been very much struck to think what slow progress it has made amongst us till within the last few years, but now it seems to be increasing in extent of growth perfectly marvellous. It is now grown almost in every civilized nation of the world, where the climate is suited to its growth. I find that in the Island of St Helena it has been grown to very great perfection, the climate being evidently well suited to it; that at the time of Napoleon's banishment there Sir Hugh Inglis sent over to England two roots, each weighing 56 lbs.; and that by well manuring there has been grown there as much as 70 tons or more to the acre. I fear it will be some long time before it will be so prolific in its yield with us. There are various sorts of the mangold wurtzel, such as the yellow globe, the red globe, the long yellow, the long red, the ram's horn, and others; the two former are considered the best adapted for light lands and shallow soils, being heart-shape, tapering at both ends, more like a turnip, and consequently better adapted for such soils; the long-yellow and long-red beet I consider are best adapted for heavy clay land and strong mixed soiled lands, as growing most above the soil. I think I may say that all descriptions of mangold wurtzel have been much improved of late years, and depend upon it the better the quality of the root the greater weight will be obtained. Now, how careful we ought to be in procuring a good quality of seed, and I must think we are greatly indebted to those growers of the best seed who are paying such great attention in the selection of roots for seed: they are really doing their country some service. The best seed grower I know of is Mr. Ward of Great Bentley, in Essex, and I am happy to say too we have some good growers in my own neighbourhood—some members of this club. I would strongly recommend our friends to be very particular as to purchasing their seed, not to mind an extra 6d. per lb.; for what is it in comparison with four or five tons an acre more of beet root? I will now direct your attention more immediately to the cultivation of the beet root. First, upon heavy clay lands, and I would class the stiff mixed soiled lands with these, believing that the same system of cultivation is equally applicable to one as to the other. I wish

you to understand at the outset that I am not an advocate for what are termed long fallows; I believe such to be a positive loss to the occupier of the soil, and also as much loss to the nation: I have sometimes thought to myself when will the time arrive that the working man may be enabled to purchase beef and mutton? At present I apprehend the upper and middle classes, and perhaps the highly paid mechanic, are the chief consumers of such meats, the price being too high at any rate for the agricultural labourer to think of giving; and, I have said, certainly not so long as the heavy clay lands produce so little meat, certainly not so long as long fallows are the order of the day, and if I can in any way this evening persuade my heavy land friends to increase and extend the growth of beet root, not leaving a single acre of the land without something upon it, I think I shall not only be doing some service to them, but also to the working man, because once get the root crop grown, stock must be had to eat it, and the butcher must be the better supplied with meat, and, to a certain extent, the price will be the lower, coming perhaps within reach of the working man.

Our friend Mr. Bond advocated the system of making our heavy lands breeding farms; I have not the slightest objection to that, although I would much prefer making them grazing farms; but to have the same description of stock upon all such occupations would be quite impracticable—some must be grazing farms, some must be breeding farms; however, supply and demand would soon regulate all that. Well, then, to grow beet root extensively upon heavy clay lands great exertion, great foresight, judgment, and ability, must be used; and I would here remark that if there is no call for a person's ability, tact, and judgment in farming, why any noodle will do for a farmer, and it certainly will be throwing money away if we give our sons not a classical education only, but if we give them a good sound English education, such as is requisite to a man of business. I for one, however, am of opinion that it takes a more clever man to become a good farmer than is generally supposed; I should not think of making the son which is most deficient in ability a farmer, I think most likely he would be better adapted to stand behind the counter in some tradesman's shop. I said great exertions must be used, and these especially in the autumn; I would strongly recommend that as soon as the wheat is secured, the plough should be set to work and plough up the land; depend upon it one earth in August, or even in September, is worth two or three in March or April. I think we should find by the time harvest is over the wheat stubbles would be all once ploughed, and again directly ought we to turn about and plough them back again, and we should find, taking the average of seasons, that the land is pretty well cleaned. I am not presuming for one moment that there is much grass in the land, that I should deem quite out of the question; I take it that heavy land once cleaned is the easiest kept so of any description of land. Well, thus the land would lie till after the wheat is all sown, then again directly after I would recommend ridging it up, say 30 inches apart, and thus the land would

remain till the spring; and the first opportunity which offers itself I would recommend that 10 or 12 carts of farm yard manure per acre be carried on, and 3 cwt. of guano or 4 cwt. of artificial manure sown over the ridges, and then split them down as soon as possible after, and letting them remain so till the proper season for drilling in the seed; there would, by so doing, most likely be some frost in the meanwhile to pulverize the soil; if not, dry weather and rain alternately would act almost in the same way. If the weather permitted, February would be the proper period for dividing the ridges, and from that time till the latter part of April the soil would be sure to become pulverized. I believe this is the only way of insuring a plant of mangold wurtzel, whereas by working the land about March or April so much depends upon the weather as to whether a plant will be obtained. I recommend drilling the seed in preference to dibbling it in, as there is more despatch and the singling them out will not be so much consequence in the event of our being rather backward in that operation. It may be thought that to grow mangold wurtzel thus extensively on heavy land is quite impracticable. I am of opinion it is not so. Of course it has to a great extent been considered so; but remember it was not till recently that the cultivation of the beet-root upon heavy clay lands attracted so much attention, or that the discovery of guano was made, or the manufacturing of manures adopted. Then again, no one has scarcely been bold enough to set us an example, and we Englishmen are very fond of having had a precedent set us. Now, to my mind, this matter does seem to be quite capable of being carried; 'tis very likely the steam plough would greatly facilitate this object; I have very little doubt that it will in the next generation bear a very important part in the cultivation of the land; but without even the steam plough, I think this system can be carried out, and that without much or any extra help. Why not, if found requisite, purchase two or three pair of Devon working oxen? Plough them as long as you want them and then shut them up to graze. I will engage to say there will be no depreciation in the value of them, but that if you keep them till the following Christmas they will fetch a high price. However, I would recommend the work upon the farm, to some extent, to be re-distributed; and although I said it would be as well to cart 10 or 12 loads of farm-yard manure per acre for the beet root, as a rule I would say, cart none at all, in order that there may not be so much work to do, at that particular time of the year, and also that the land may not be so much trodden upon. Apply, instead, an increase of guano or artificial manure, and I have always found that this will produce just as good a crop of roots as farm-yard manure, and not cost so much per acre. I well know it is generally considered that the beet root cannot be grown without a very heavy cost; some have gone so far as to say it costs £10 per acre, and indeed, I have very little doubt that the more manure that is put upon the land the greater the crop will be, and so would any other root crop; but upon a large scale, and where the crop is going to be fed upon the land, I do not think such a heavy expense

needed; and by the improved state of the land which this extended growth of beet root will bring about, I really do not think the land will be found to require it. To carry out this extension of the growth of beet root, I think there is one especial alteration necessary to be made upon a farm, and that is, that our present plan of carting manure for the wheat crop just before ploughing and sowing the wheat must be done away with in order to give more time for the autumn tillage, and I would recommend that the manure which is intended for the wheat crop be carted directly after hayseal. I think we should find our wheat crop none the worse for this alteration, but experience has taught me that it is improved by it. If, then, such is the case, we may well adopt that course; and as I have proposed to abolish the long fallow system, there would be plenty of time for carting manure upon the clovers; and there is also another advantage not to be overlooked, and that is by manuring the clover stubbles after hayseal, more second crop would be produced, either for feed for sheep or for mowing, either for stover or for seed; and if this abolishing of long fallows is carried into effect, and a difficulty should even be found in finding work for all the horses, what an opportunity is offered for rearing of colts: each farmer, according to the size of his occupation, might have one, two, or three or more brood mares with foals by their sides, and I know of nothing which pays better than rearing of good Suffolk cart colts. I recommended the ridge system, and especially upon heavy lands, because in the event of the autumn not having been well suited to the tillage of the fallow land, an opportunity is afforded of completing the operations of cleaning the land between the ridges and after the beet root is up and ready for hoeing. I believe it quite possible, with Ransome's ridge or beet plough, to make quite as good a fallow as if the land had no crop growing upon it, or even with a common plough, by going twice between each row of beet instead of once; but as economy and despatch are two great essentials when producing upon a large scale, I certainly should prefer an implement that will do the work as well in going once in a place as the other in going twice.

Having thus grown our crop and cleared our land, the next thing to consider is the storing this crop, the securing it from the frost. This certainly is a very important item, and in some seasons a very difficult one. I propose that one-fourth of this beet crop be fed upon the land, precisely in the same way as we should feed off turnips, and without any previous pulling and storing. I think it quite possible to have that quantity so fed off before the wet season sets in, and to have the land ploughed up in time to receive the frosts. I would begin to feed off in September, as those beets which were put in early would be nearly ripe by that time; and we have some of us had experience that sheep will do well upon beet root fed thus, even till Christmas time, especially with hay or barley straw, cut or uncut, and half or three-quarters of a pound of oil cake per day each. Thus, then, one-fourth part of crop is taken care of without much trouble and expense, and the land, I think, must be materially benefited

by the process; one-fourth part more I would cart to the land adjoining (let it be either a clover layer or an old pasture), to be consumed there in the spring or summer months. Now, I know of nothing so calculated to improve these old heavy land pastures as feeding a portion of the beet root upon them, accompanied with a portion of oilcake or other food or corn; I believe it a far superior method of improving them than that of breaking them up and relaying, which system I have heard recommended. And with regard to feeding a portion of the beet root crop upon a young layer during the spring and summer months, why it must be a very cheap process of manuring that field for the wheat crop; and supposing that field lies a long distance from the homestead, just calculate the difference in the cost of manuring between this process and that of farm-yard carted from the homestead; and being so amply provided with provision for the horse stock in the shape of beet root, a portion of the clover can well be spared to be fed with sheep where it grows. The remaining half of the beet root crop I would have carted home for the use of the horses, bullocks, cows, and other stock to be fed in the straw-yard; but I do not at all think it necessary that this half should be all carted direct to the homestead. I would suggest the more easy method of carting it only to the two sides of the field in which it is growing, and there clamped up to be carted home to the farm-yard at a more convenient season, when the weather permits, perhaps during a frost, but a very large portion of it might remain till the spring and summer: there would be very little land thus wasted, and think of the immense saving in horse and manual labour at that important period of the year. As soon as a field is clear the ploughs must be set to work to stretch it up, and if in the spring it is thought that the land is not in a sufficient high state for the barley crop, two or three cwt. of guano or artificial manure will bring it up to its original position.

I will now pass on to the cultivation of beet root upon light and mixed soiled lands, and allow me to say that I believe on these soils the beet root can be grown to much greater advantage than either the swede or common turnips; and at no more cost. I contend that, with the same amount of tillage and manure, a greater weight of beet root can be grown than either swede or common turnip. I well know that opinion has prevailed that the beet root crop is very expensive to grow; I believe that to be the chief reason why its growth has not been extended so much as it otherwise would have been. I certainly am of opinion that no crop will bear forcing so well as beet root, and that it will increase in weight in proportion as it is manured, more visibly, perhaps, than anything else; but as my object is to see it grown extensively, and instead of turnips on light lands, I want those who hear me to see clearly that a greater weight can be grown, with only a minimum of cultivation, of this root than of any other. In discussing this part of the subject, I shall principally give my own practical experience, combined with a few observations kindly forwarded to me. I would then, almost in the same manner, recommend the system

of breaking up the wheat stubbles in harvest and after harvest, as I recommended upon heavy land, with this difference, that instead of the plough, I would use that valuable implement which bears the name of our respected vice-chairman, and whose father, I think, is justly entitled to be considered the inventor, I mean Biddell's scarifier, and which has invariably had the prize awarded to it, at the agricultural exhibitions, as the best scarifier; I would recommend that this scarifier should be used in breaking up the wheat stubbles, and that as soon as a field is cleared. I have almost invariably scarified twice in a place, and after two or three harrowings have put the scarifier through again, and whether the weather is fine or foul, I have always found it right to keep this implement at work till the commencement of the wheat sowing season; and again after that season is over (weather permitting) I have put it through for the fourth time, and then after harrowing the land well two or three times so as to get all the old grass and rubbish at the top, I plough it in, rather deeply, leaving it so for the winter; this system answers admirably well. In spring I have sometimes been quite astonished to see how clean the land is, having found that after once ploughing in the spring the land is quite ready for the beet-sowing; I then commence ridging it up into ridges about 27 inches apart, and here I would observe that I do not think it positively necessary, provided the land is already in a pulverized state, that it should be twice ridged up, unless it is thought desirable to cart farm-yard manure, and then, of course, it must be ridged up twice, but where it is intended to sow guano or artificial manure only, I do not think it actually necessary, at any rate, I have seen good roots grow from once ridging; first, sowing the guano or artificial manure on the land in its flat position, and then when ridging it up, as a matter of course the manure is chiefly covered up in the ridge. I do not mean to say that splitting the ridges may not be beneficial, but in growing beet root extensively, it is necessary to go the nearest way to work, to enable you to get the crop in during the proper season, which I consider does not extend later than the 2nd or 3rd week in May. I have recommended the ridge upon light as well as upon heavy land, and for this reason, that we are enabled to cultivate between the rows of beet root a fortnight longer than if the beet were drilled upon the flat or stretch. I would grow beet root upon the lightest land under cultivation, and even upon Rushmere Heath, provided it was thought right to break up and cultivate such lands. I have no hesitation in saying this root is better adapted for very light and poor soils than any other root; it would produce a third more in value on such soils, why? because the root does not require the amount of moisture that other roots do, owing to its being of a very watery nature, in fact, it seems to supply itself with water in a great measure. In ridging light land, I would have the ridges as near as I could fairly get them, say 27 inches, a shorter distance than that would be available for afterculture, and therefore I would put that as the minimum distance, and when setting out the plants, 14 or 15 inches apart, I would

recommend, thus allowing something like 110 roots to the rod, or 400 square inches to each root; now, as long as we have the same number of roots upon a given rod of land, I think it not at all detrimental to the growth of them that they should be placed wider one way than the other. To my mind it has always seemed an important point to ascertain the number of roots which should grow upon a rod of land, in order that the greatest weight might be obtained, because, after all, it is not so much importance to produce large roots (and which, of course, is much easier to do by having the distance between each root very wide) as it is to grow weight per acre; I believe that 400 square inches, which will allow something like 100 roots to the rod, is the right distance, and the right number whereby the greatest weight per acre will be grown. Mr. Ward, of Great Bentley, grows his beet root at this distance, and as he grows them upon a stretch of a certain width, he sets his roots out 22 inches by 18 inches, which gives a square of 396 inches. The best and cheapest system of ridging light land in my opinion is, with Ransomes' ridge plough to which is attached a marker, so that when drawing one ridge, another is being marked out for the plough to go in the next time, and there is this one great advantage, that the ridges are sure to be of an equal distance, so that the drill may easily be used when depositing the seed, and also the horsehoe afterwards. Besides there is great economy; instead of going twice as with a common plough, once is sufficient, and no time is lost in measuring the distances at each end when drawing out. Now this system, although so available upon land previously made a fallow of, cannot be carried out where the land has been growing rye for sheep feed, or stubble, turnips, or tares, and which is frequently the case on light land farms. I know it is not generally considered right to grow beet root upon such lands; but I am very strongly of opinion that there is no root so well adapted for such lands as the beet root, because it does not require the amount of moisture other roots do, and lands which have just been producing a crop are sure to lack moisture more than land which has been previously made a fallow. It is quite impossible to work these lands about, to have them ready for the beet root seed by the second or even third week in May; therefore I recommend that it be only once ploughed at a fair depth, and then that the beet seed be immediately drilled in with artificial manure. I have pursued this plan with some advantage, using Garrett's manure drill, which deposits the manure deeper than it does the seed. I consider I have grown a much greater weight of beet root, after rye, stubble, turnips, and even mown tares, than I could have done with any other kind of root. Upon such land, as well as upon some very light land, I should drill the seed as close as I should turnips, viz., 18 inches apart, leaving them in thickness upon the row as may depend on the state of cultivation the land may be in. I usually when drilling my beet seed use 3 or 4 cwt. of guano, or 5 or 6 cwt. of artificial manure, and this is no more than I should do for swedes, If I made any difference it would be by using 5 or

6 cwt. of salt for the beet root more than I should if I were drilling turnips. With regard also to hoeing and cleaning I find very little difference. When upon the flat or stretch I use Garrett's horsehoe two or three times, and the handhoe the same as I should for turnips.

With regard to salt being beneficial to the beet root, I have not hitherto been very sanguine, but consider it is beneficial thus far, it has a tendency to check small weeds and retain the moisture in the land, two things alone which would, as a matter of course, have a beneficial effect upon beet root, as they would upon any other crop. I think salt has a tendency to check the leaves and to increase the size of the bulb, whilst quality is somewhat improved. Some persons have entertained the idea that salt acts as a manure; I think it acts as a corrector, or as a medicine. A relative of mine gives me this result of a trial he made with fish salt; one portion of a field he drilled the seed in with artificial manure only, a small portion with nothing at all, and the remaining portion with both manure and salt; the result was this, that sown with both manure and salt was very good and much superior to the others; that with manure alone and that with salt alone nearly equal, the salted portion a little inferior, and that portion with nothing at all sown was very inferior; now this says something considerable both for artificial manure and salt. The beet root, growing, as it does, wild on the Mediterranean shores, as well as the shores of our rivers, even in this neighbourhood, the natural consequence would be, we should suppose, that in its more cultivated state it would be improved by an application of salt. A gentleman who has been kind enough to give me his experience whilst writing this paper, and who has had great experience in the cultivation of the beet root, having farmed in several counties, and among other places in the Hampshire Forests, says he has no doubt that those persons who farm by the sea coast are in a better position to grow heavier crops of beet root than those not living so near, from the fact that the beet inhales the salt air, draws in, as it were, the salt that is blown off the waters; now, as it is well known that the vegetable part of the creation breathes as well as the animal and human parts, and as living by the sea-side is generally considered beneficial to the health and growth of children, I see no reason why this gentleman should not be right. This, however, you might say argues as well for other roots and vegetables as for beet root, but not quite, I think, when we recollect that beet root was originally a sea-side plant. With regard to securing this crop, when so extensively grown upon the light lands as I should desire to see it, it would be quite impracticable to secure it all by carting it off the land and consuming the greater part of it at the homestead, neither would it be desirable or advantageous to do so. I would recommend that one-fourth part be fed upon the land with sheep and bullocks, just as we should feed off turnips; and I see no reason why we should not be feeding the beet off from September till Christmas; depend upon it that frosts previous to Christmas do not injure the beet root to the extent generally supposed. If you do

not disturb the root till the frost is out, it will return nearly to its original state; it is the repetition of frosts that destroys vegetables and roots, and not merely one or two not very severe frosts, or indeed one *severe* frost.

I think we had good proof of this last November; members of this club were grazing upon beet root in the field at that time, and I am sure they will satisfy our minds on this point, by giving us the benefit of their experience. Well then, I will say, feed one-fourth off without any previous securing; another fourth part I would cart home to the home-stead, for the use of the horse, cows, bullocks, &c.; another fourth part I would cart upon the adjoining wheat stubbles, where beet root is intended to be sown next year, and there clamp it up, for the purpose of feeding in the months of April, March, and May: in this way we should be manuring some portion of our land for the next year's crop of beet root, at little expense, especially if we feed the stock with artificial food and cut-hay, &c. I pursued this plan last year, and have now got a capital crop of beet root growing, with only the addition of 2 or 3 cwt. of manure and 5 cwt. of salt; the remaining fourth-part I would clamp up in small heaps in the same field in which they were grown, for the purpose of sheep feeding during the winter months, January, February, and part of March; now this last portion is secured without any horse help, for the heaps, which would contain not more than one load, will be no more than a man can throw together with his hands; these covered up with a little straw and earth, will be easily accessible during the winter, be the frost ever so severe; that portion, also, which is to be clamped up in the adjoining wheat stubble field will require but few horses, for four horses and four carts will cart a great quantity of beet root that short distance in a week. I admit all this storing of a crop will require a considerable number of men and lads, and it is possible a difficulty may be experienced in procuring them, but I rejoice in the fact that an increased demand for manual labour is the result of the system.

Having said so much upon the first part of the subject for discussion, and having dwelt much longer upon it than I intended, I could have wished that the subject for this evening had been confined solely to the *cultivation* of the crop, the other part being left for a future occasion. I do not know that it is too late to adjourn it to some future time; however, if it is your wish that I should proceed, I will do so, and that very shortly. Having recommended that *part* of the beet root crop be fed upon the land where it is growing, and part upon the land adjoining, it is evident that I consider sheep the stock best adapted for feeding the crop. Although it will be generally allowed that this root is well suited to sheep, and although in discussing "the feeding uses of the beet root," I may allot a prominent position to them, still I by no means consider the beet root a better food for sheep than for other animals; but I have no hesitation in saying that in this crop of roots we have provision well suited to all kinds of stock kept upon a farm.

First, then, I will take the horse stock. Arthur

Young, in speaking of the cultivation of carrots, in his work entitled "Eastern Tour," says "they are a means of sustaining one of the best breeds of farm horses in the kingdom." Of course he alludes to the Suffolk breed, which especially of late has attained such notoriety. No doubt carrots are a very excellent food for horses; but I think I might with truth say of beet root, that it is also a means of sustaining a good breed of horses, for there is little doubt that it is a very cheap food for working horses and colts, for they have been known to thrive upon that alone. In Germany the yellow beet is in much request as food for horses. In feeding them upon beet root, however, I would strongly recommend giving them as much cut chaff as they will fairly eat with it; and, in fact, the best way is to feed them in the same manner as they are fed with corn, first cutting the beet with Gardner's turnip cutter or Biddell's root grater; which latter I have used both for horse stock and neat stock, and have found it to be a great economizer of food. I have heard of some persons keeping their horses entirely upon beet root and chaff; I am not here to recommend such a system of feeding, but roots given with a portion of corn I do not hesitate to say is the safest, cheapest, and most economical system of keeping horses. See what a saving it is to the hay and stover stock: it enables even heavy land-farmers to feed some of their clovers upon the land, with a portion of beet root as I previously hinted at, as well as light-land farmers. Again, what is more profitable than rearing colts? Suffolk horses are and have been selling at high prices, and I doubt not many of our first-class breeders have found it to be a great source of profit. What an advantage it is then when such stock can be kept in a great measure upon the beet root during the winter months, beet root and chaff being the principal food; and also with regard to riding horses, some persons, no doubt, have been fortunate enough to turn them to a profitable account; indeed, such a system has been recommended at the London Farmers' Club in preference to grazing bullocks. I do not exactly agree with it, but at any rate it will not do for us all to turn our attention to the same description of stock, or the markets would soon become glutted; some must turn their attention to one and some to another department of stock feeding. I believe some persons in this county, which is not much famed for riding horses, have realized high prices for riding colts, and I quite expect to hear this evening that such persons have found the beet root to be a cheap and economical food for such.

2nd. I have found beet root good food for milch cows; it has a tendency to produce milk—an important feature in dairying. It has been objected to as tending to make the butter white-looking, but to prevent that I mix yellow carrots with the beet root in the proportion of one-third carrot to two-thirds beet root. Mr. Baker, of Writtle, says he keeps a large dairy of cows upon a portion of beet from August till the following June.

3rd. With regard to bullocks and neat stock generally, we most of us know what an amount of provision we have for the grazing of bullocks

("those famous manure manufacturers") in this beet root crop, which is so generally allowed to be a good and nutritious food for such stock; little, however, need be added upon this part of the subject; suffice it to say that we are enabled, from the extensive growth and heavy production of this root, to graze all the year round. I used to think when grazing bullocks for the Christmas market that I was compelled to grow a piece of early sown swede turnips for the purpose of feeding during the months of September, October, and November, but since the swede crop has turned out such a failure I have used the beet root and have found it to be so superior to the swede that I shall grow no more swedes for that purpose. A quantity of dry food I have always considered necessary to counteract the watery nature of the beet root, and I always allow the bullocks free access to barley straw, and besides that, I mix cut hay and straw with the roots, diminishing the chaff as the warm weather approaches, for, as a matter of course, the animal will not eat so much chaff in warm weather as in cold, and it will not be so requisite, the watery tendency of the beet root having somewhat subsided. In feeding young growing stock upon beet root, I have found Biddell's root grater, manufactured by Ransomes and Sims, to be a very valuable machine, enabling me to mix out a great quantity of cut straw with the beet root, and it is quite astonishing how it economises the roots, at the same time the stock is benefited by the system.

4th. With regard to sheep, how fortunate it is the beet root is adapted to them, as it enables us to substitute the beet root for the turnip on an extended scale. I think there are gentlemen present who will be very willing and glad to give us the benefit of their practical experience upon the subject, and, therefore, I shall say but little upon it. I have invariably found that both shearing sheep and lambs do uncommonly well upon the beet root, and that, whenever I have taken them off the beet root and put them upon swede turnips, they have not grazed anything like so well; as a rule, I always supply them with plenty of barley straw, in racks, placed in the sheepfold, as well as cut chaff. I have always found both sheep and bullocks to eat a great quantity of straw, and actually crave after it. The reason that some persons' stock has not done so well upon beet root as could have been desired, is because they have not had a sufficiency of straw, or other dried food. As to breeding ewes, I do not feel quite so sanguine as to beet root being a proper food for them. A small portion of the root will not be injurious to any animal in a state of pregnancy; where injury has been done, it has arisen from giving the animal the beet root without any restriction as to quantity; I do not believe that ewes fed half upon beet root and half upon straw, cut hay or grass, will be at all injured by such feeding; but the further advanced any animal is in the state of pregnancy, the less beet root it ought to be allowed, and the beet root food ought to be reduced in proportion as the animal advances. After the ewes have lambed down I should give them beet root, allowing them gradually a large portion, as the lambs grow older.

I think beet root thrown upon rye land or rye grasses for the ewes, is a very excellent plan.

5th. With regard to pigs (and I cannot much recommend the beet root for them) I think it positively injurious to sows in pig and also to small pigs; but for small pigs 3 or 4 months old I believe it well adapted; such pigs will graze as well and pay more money, fed with beet root and beans or peas, than they will any way; the pork would not be quite so good as when fed otherwise, but that is not a question for the grazier.

With these observations I have done; I have to seek your pardon for having detained you so long, and I thank you for your kind attention. I have drawn your attention to the following particulars of the subject, viz.—The importance of the subject for discussion; the cultivation necessary upon heavy and light lands; the best system of securing and feeding the crop; its adaptation to heavy clay and sandy lands; its feeding uses, as food for horses, colts, milch cows, grazing bullocks, young stock, sheep (both grazing and breeding), and for pigs.

I trust we shall have a long discussion upon the subject, in which we are all more or less concerned, and feeling confident that there are many gentlemen, practical men of business, who will be pleased to give us the benefit of their experience, I hope we shall return to our homes, well satisfied that we have been here to some good purpose, and that our time has been profitably spent.

The Rev. CHARLES THOMAS JAMES, formerly curate of Ermington, and recently appointed Government Inspector of Model Lodging Houses and Factory Schools, was staying at the Railway Hotel, Taunton, on Tuesday night, and intended to start next morning for Tiverton. He had been unwell for several days, and was suffering from indisposition when he retired to rest. The following morning, as he did not make his appearance, the servants entered his room, and found him lying on the bed, quite dead. Several phials were found in his room—one containing soap liniment and castor oil, another the sediment of mixed prussic acid and almond emulsion, and another containing about half an ounce of prussic acid of Scheele's strength. Lieutenant Charles D. James, 36th Regiment, stationed at Devonport, was immediately telegraphed for; and on Thursday an inquest was held before Mr. Monckton, coroner. It was shown in evidence that the deceased took prussic acid under medical prescription. Several letters which the deceased had written on Tuesday night were read. One of them, addressed to his son, said that his indisposition almost mastered him, but appointed to meet his son at Plymouth on Thursday. The jury returned a verdict that the deceased died from the effects of an overdose of prussic acid, taken to relieve himself from pain. The deceased was well known and much respected in agricultural circles, not only in this country but throughout England, and had always manifested a deep interest in the welfare of the farm-labourer.—*Western Times*.—Mr. James was a judge of pigs at the Warwick Show of the Royal Agricultural Society, this year, and of riding-horses, at the Suffolk Meeting. He was a member of the Committee of the Central Farmers' Club; and frequently took part in the discussions. His appointment as Inspector of Lodging Houses followed on a very admirable address he made in proposing the labourer at the Chelmsford Meeting of the Royal Society.

AGRICULTURAL STATISTICS OF IRELAND FOR THE YEARS 1858 AND 1859.

ABSTRACT OF CEREAL CROPS.

	1858.	1859.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Wheat	546,964	465,497	—	81,467
Oats	1,981,241	1,981,197	—	44
Barley	190,768	177,519	—	13,249
Bere and Rye ..	16,472	13,242	—	3,230
Beans and Peas..	12,935	14,841	1,906	—
Total	2,748,380	2,652,296	1,906	97,990

Decrease on Cereal Crops in 1859:—96,084 acres.

ABSTRACT OF GREEN CROPS.

	1858.	1859.	Increase.	Decrease.
	Acres.	Acres.	Acres.	Acres.
Potatoes	1,159,707	1,200,144	40,437	—
Turnips	338,202	322,266	—	15,936
Mangel Wurzel & Beet Root....	29,731	27,108	—	2,623
Cabbage	33,132	31,580	—	1,552
Carrots, Parsnips, & other Green Crops	23,399	22,056	—	1,343
Vetches and Rape	33,360	33,207	—	153
Total	1,617,531	1,636,361	40,437	21,607

Increase on Green Crops in 1859:—18,930 acres.

GENERAL SUMMARY.

Decrease on Cereal Crops in 1859	96,084
Increase in Green Crops "	18,930 acres
Do. on Flax "	44,683 "
Do. on Meadow & Clover "	12,185 "
Total decrease in the extent of land under crops in 1859	20,386

TOTAL EXTENT, IN STATUTE ACRES, OF CEREAL AND GREEN CROPS.

	1858.	1859.
Wheat	546,964	465,497
Oats	1,981,241	1,981,197
Barley	190,768	177,519
Bere and Rye	16,472	13,242
Beans and Peas	12,935	14,841
Potatoes	1,159,707	1,200,144
Turnips	338,202	322,266
Mangel and Beet	29,731	27,108
Cabbage	33,132	31,580
Carrots, Parsnips, & other Green Crops	23,399	22,056
Vetches and Rape	33,360	33,207
Flax	91,646	136,329
Meadow and Clover	1,424,495	1,436,680

RETURN OF LIVE STOCK.

	Horses.	Cattle.	Sheep.	Pigs.
1858	611,321	3,667,304	3,494,993	1,409,888
1859	628,916	3,810,136	3,588,356	1,362,873
Total increase } Increase.				
or decrease }	17,595	142,832	93,363	147,010

Total area of Ireland

Total under cultivation

The holdings in Ireland, from all of which returns are obtained, are nearly 600,000. The number of enumerators this year was about 4,000; they were selected from the constabulary.

WILLIAM DONNELLY,

Registrar-General.

Agricultural Statistics Office,
5, Henrietta-street, Dublin.

September, 1859.

PRICES OF SUSSEX STOCK.

"Prithawes," in the parish of Westham, has twenty years occasionally appeared before the public as the site, where existed a pure and first-rate breed of Sussex stock. The herd was well known and highly valued, having been matured and brought to perfection by Mr. Josiah Pitcher, a man of sterling judgment, but of unostentatious manners. Nothing but true merit has gained him the proud position which he now enjoys as a breeder of Sussex cattle. His stock succeeded in securing prizes at the Paris exhibition for a cow and bull, although the class in which he exhibited was open to other breeds, including the Devons. He has also been very successful at various local shows, especially at Rye, against all Sussex and Kent, in 1855 and 1856, when he obtained the silver tankards. Of late he has not entered the lists of competition, but contented himself with the laurels he had gained. Quietly pursuing his agricultural operations, and successfully prosecuting his business, he decided this year to retire from his farm, and enjoy the fruits of his persevering industry. It, therefore, in the early part of the year became known that the Prithawes herd would be sold, and those attached to the Sussex stock looked forward to this autumn with great interest. The sale was placed under the direction of Mr. Southerden, and on the 15th September it was sold at such prices as the excellence of the animals deserved. As might be expected there was a very large attendance of influential graziers, agriculturists, and others. There were upwards of 200 present. The satisfactory results of the sale will be collected from the following:—

Cows.—Lot 1.—Pure Sussex cow, six years, forward in flesh, 81 guineas, bought by Mr. Tuppen. Lot 2.—Superior ox, forward in flesh, 35 guineas, Mr. Tuppen. Lot 3.—Cow, five years, 19 guineas, Mr. Hawes. Lot 4.—Cow calf, 8½ guineas, Mr. Hoather. Lot 5.—Cow, five years, 29 guineas, Mr. Thomas Childs. Lot 6.—Cow calf, 19½ guineas, Mr. Hoather. Lot 7.—Cow, six years, £18, Mr. John Gooden. Lot 8.—Cow, took a prize at the Rye Cattle Show, 1858, and the first prize at the County Cattle Show, at Hailsham, in 1859, 47 guineas, Mr. E. Cane. Lot 9.—Cow, six years, 24½ guineas, Mr. T. Smith. Lot 10.—Bull calf, 4½ guineas, Mr. Payden. Lot 11.—Cow, Mr. Tolbooy. Lot 12.—Cow calf, £14, Mr. Hoather. Lot 13.—Cow, six years, 21 guineas, Mr. Jellands. Lot 14.—Steer calf, £8, Dr. Skinner. Lot 15.—Cow, seven years, bred by the late Mr. J. King, sister to the cow that took the Silver Tankard at the Rye Cattle Show in 1856, 24 guineas, Mr. Hawes. Lot 16.—Steer calf, 5½ guineas, Mr. Gooden. Lot 17.—Cow, five years, 25 guineas, Mr. E. Cane. Lot 18.—Cow calf, 19 guineas, Mr. John Shoosmith. Lot 19.—Cow and bull calf, five years, 25 guineas, Mr. Noskes. Lot 20.—Cow, four years, 22½ guineas, Mr. Verrall. Lot 21.—Steer calf, 8½ guineas, Mr. Gooden. Lot 22.—Cow, three years, 24 guineas, Mr. John Shoosmith. Lot 23.—Cow, three years, from a cow that took the first prize at Hailsham and Lewes Fat Stock Shows in 1858, 40 guineas, Mr. Shoosmith. Lot 24.—Cow calf, 12½ guineas, Mr. Hoather. Lot 25.—Cow, three years, 31½ guineas, Mr. Verrall. Lot 26.—Steer calf, 8½ guineas, Mr. Verrall. Lot 27.—Cow, 22½ guineas, Mr. John Shoosmith. Lot 28.—Cow calf, 14½ guineas, Mr. Hoather. Lot 29.—Cow, three years, 26 guineas, Mr. Heasman. Lot 30.—Cow calf, by a bull bred by Mr. J. Stonham, of Beckley, and took the first prize at the County Cattle Show, at Hailsham, in 1856, 17 guineas, Mr. Tilden Smith. Lot 31.—Cow, three years, 25½ guineas, Mr. Thomas Childs. Lot 32.—Cow calf, 19½ guineas, Mr. Hoather. Lot 33.—Cow, three years, 28 guineas, Mr. Thomas Barton. Lot 34.—Cow calf, 16 guineas, Dr. Skinner.

HEIFERS IN CALF.—Lot 35.—Very handsome two-year-old Sussex heifer, 22½ guineas, Mr. Heasman. Lot 36.—Two-year, 25½ guineas, Mr. Heasman. Lot 37.—Two-year, sister to the cow that took the first prize at Hailsham and Lewes Fat Stock Shows, in 1859, 28½ guineas, Mr. Jellands. Lot 38.—Two-year, 20 guineas, Mr. Bourne. Lot 39.—Two-year, 26 guineas, Mr. Robert Hawes. Lot 40.—Two-year, 24 guineas, Mr. Jellands.

YEARLING HEIFERS.—Lot 41.—15 guineas, Mr. Hoather. Lot 42.—20½ guineas, Mr. Verrall. Lot 43.—20½ guineas, Mr. Jellands. Lot 44.—£19 10s., Mr. Jellands. Lot 45.—19 guineas, Mr. E. Cane. Lot 46.—£13 10s., Mr. Hoather. Lot 47.—£15 10s., Mr. Heasman. Lot 48.—£15 10s., Mr. Tolbooy. Lot 49.—16½ guineas, Mr. Hoather. Lot 50.—£13 10s., Mr. Jellands.

BULLS.—Lot 51.—Very superior four-year-old Sussex bull, bred by Mr. Tilden Smith, to which most of the cows are sired, 24 guineas, Mr. Frank Childs. Lot 52.—Yearling bull, from the same cow as lot 1, which is sister to the old prize bull that took

the first prize as a yearling at the Royal Agricultural Show at Lewes, in 1852, the first prize as a two-year-old at Hastings, in 1855, and the prize as an old bull at Worthing, in 1854, and was the sire of the three, four, and five-year-old beasts—32 guineas, Mr. T. Smith. Lot 55.—Yearling bull, from a cow bred by the late Mr. W. Funnell, by the prize bull that was sold at the sale in 1857, and took the first prize as a yearling at the County Show at Lewes, in 1855, the first prize as a two-year-old at the County Show at Halesham, in 1856, and the first prize as an old bull at the County Show at Chichester, in 1857, and was the sire of the two-year-old beast—21 guineas, Mr. Tolboy. Lot 54.—Bull calf, 30 guineas, Mr. George Cooté. Lot 55.—Bull calf, 23 guineas, Mr. J. Shoosmith. Lot 56.—Bull calf, £16, Mr. Langridge. Lot 57.—Bull calf, from a cow bred by Mr. Tilden Smith, by a bull bred by Mr. Child; this cow took the prize at the Rye Cattle Show, in 1855, and her daughter took the silver tankard at the same show, in the same year; she is also sister to the cow that took the first prize at the Halesham and Lewes Fat Stock Shows, in 1858—35 guineas, Mr. G. Cooté. Lot 58.—Bull calf, from a cow bred by Mr. Tilden Smith, sister to the cow that took the prize at the Rye Cattle Show, in 1855, by a bull bred by Mr. E. Cane—40 guineas, Mr. E. Cane. Lot 59.—Bull calf, £16, Mr. Madgwick.

STEERS.—Lot 60.—Pair of very handsome two-year-old steers forward in flesh, £38 10s., Mr. Elliott. Lot 61.—Ditto, £39 10s., ditto. Lot 62.—Ditto, £37 10s., ditto. Lot 63.—Ditto, £38 10s., ditto. Lot 64.—Ditto, 36 guineas, ditto. Lot 65.—Pair of yearling Sussex steers, £26, Mr. Jollands. Lot 66.—Ditto, £31, Mr. William Duke. Lot 67.—A yearling Sussex steer, £14, Mr. Jollands.

OXEN.—Lot 68.—Pair of working oxen, six and seven years old, 40 guineas, Mr. Hawes. Lot 69.—Ditto, five years, 46 guineas, Mr. Duke. Lot 70.—Ditto, five years, 44 guineas, Mr. G. Cooté. Lot 71.—Ditto, five years, 47 guineas, Mr. Tuppen. Lot 72.—Ditto, four years, 47½ guineas, Mr. W. Mannington. Lot 73.—Ditto, four years, 47 guineas, Mr. Tuppen. Lot 74.—Ditto, three years, 47 guineas, Mr. Cooté. Lot 75.—Ditto, three years, 43 guineas, Mr. Madgwick. Lot 76.—Ditto, three years, 45½ guineas, Mr. Tuppen.—*Sussex Express*.

SALE OF CAPTAIN BALL'S SHORTHORNS, AT ROBERT'S WALLS, MALAHIDE, DUBLIN.

This important sale took place on Monday, the 3rd October, under the superintendence of Mr. Stafford, of London. The attendance was very fair, and would have been much larger, were it not that many were prevented from being present in consequence of Tuesday being the opening day of the great Ballinacree Fair. As it was, whilst the concourse of mere on-lookers was limited, the gathering consisted chiefly of bona fide buyers, not only from different parts of Ireland, but also from England and Australia. After partaking of an ample lunch, the company adjourned to a neighbouring field, when the sale commenced with the aged cows. The following is the list of names, prices, and purchasers:—

NAME.	CALVED.	Gs.	PURCHASER.
Witch	Aug. 20, 1849 ..	27 ..	Mr. F.W. Cusack
Lily	Mar. 15, 1849 ..	25 ..	Mr. Sherlock
Peahen	Feb. 26, 1849 ..	36 ..	Mr. J. Anderson
Jenny Lind	Mar. 20, 1850 ..	20 ..	Mr. N. Archdall
Red Rose	June 10, 1850 ..	16 ..	
Empress 2nd	Mar. 27, 1851 ..	19 ..	Mr. N. Archdall
Katrina	April 22, 1851 ..	18 ..	Sir C. W. Domville, Bart.
Peahen 2nd	May 25, 1851 ..	30 ..	Dr. Peart
Sunnyside	Feb. 5, 1852 ..	23 ..	Mr. Jamieson
Julia 2nd	April 1, 1852 ..	46 ..	Mr. J. Anderson
Fairest of the Fair	July 6, 1852 ..	19 ..	Mr. N. Archdall
Pride of Erin	Mar. 25, 1853 ..	74 ..	Dr. Peart
Lissy	May 24, 1854 ..	52 ..	Mr. T. Barnes
Fashion	Oct. 28, 1854 ..	80 ..	Mr. W. Owen
Agnes 8th	Mar. 17, 1855 ..	35 ..	Dr. Peart
Wood Nymph	April 28, 1855 ..	76 ..	Mr. W. Torr
Fidelity	May 25, 1855 ..	155 ..	Mr. W. Owen
Stella	Feb. 14, 1856 ..	24 ..	Mr. F.W. Cusack
Fancy Fair	Feb. 21, 1856 ..	35 ..	Mr. Jamieson
White Star	May 19, 1857 ..	23 ..	Mr. Jamieson
Peahen 8th	July 25, 1857 ..	105 ..	Mr. Bostock
Walesby Twin 15th Aug. 9, 1857 ..		63 ..	Mr. Jamieson

NAME.	CALVED.	Gs.	PURCHASER.
Agatha	Jan. 20, 1858 ..	61 ..	Mr. Atherton
Letitia	April 7, 1858 ..	100 ..	Mr. Bostock
Josephine	May 13, 1858 ..	50 ..	Mr. N. Archdall
Fair Maid of Malahide	May 23, 1858 ..	33 ..	Mr. Jamieson
Peahen 9th	July 22, 1858 ..	20 ..	Mr. Jamieson
Woodlass	Dec. 24, 1859 ..	60 ..	Mr. W. Torr
Nightingale	Feb. 1, 1859 ..	32 ..	Mr. F.W. Cusack
Recherché	June 1, 1859 ..	40 ..	Mr. F.W. Cusack
Peahen 10th	June 18, 1859 ..	22 ..	Mr. W. Owen
Florence	June 24, 1859 ..	32 ..	Mr. W. Owen

The average price of the foregoing thirty-two head of cows, heifers, and heifer calves, was £48 2s. With the exception of Sol, bred by Mr. Torr, calved Feb. 11th, 1850, the bulls were chiefly young calves, with two or three yearlings. Sol was purchased by Capt. Farrell for 33 guineas; and Mesars. Jamieson, Bell, Welsh, &c., got yearlings at 30 to 31 guineas; the calves of this year ranging from 20 to 30 guineas.—*Irish Farmers' Gazette*.

TREATMENT OF SHEEP FOR PLEURO-PNEUMONIA.

SIR,—It may be of some use to my brother-farmers to know the result of my treatment of sheep for pleuro-pneumonia. In July I came home, and found that I had lost several ewes: one was ill at the time, and presented all the appearances that a cow does under this disease. I had her killed, and examined her carefully, and found her sound, with the exception of the parts about the lungs, which were just like those of cattle that have died of pleuro-pneumonia.

Some time afterwards, in my absence, my wife heard of another ewe being ill, and had it brought in. She found it apparently in the last stage of the disease, and my steward and shepherd both thought it past recovery. She, however, determined to try the homoeopathic treatment, beginning with phosphorus, and continuing with bryonia, and, finally, sulphur. The sheep perfectly recovered. Since then I have had two more cases, a ewe and a wether. The first was taken in time by my steward, and recovered. The latter was very ill indeed; but under his treatment, following the directions of the little pamphlet by Turner of Manchester, he also was recovering, when he was put out in a field with a ram. The ram attacked him, and he was found nearly dead, and was for some days hardly able to breathe, but is now recovering, and almost well. These three examples do not prove the correctness of the homoeopathic treatment; but I think they show that it is well worth further trial. Yours, &c., C. G. GRAY.

Portnard, Cappamore, October 4, 1859.
—*Irish Farmers' Gazette*.

THE BEDFORDSHIRE AGRICULTURAL SOCIETY held its annual meeting at Bedford, on Friday, Sept. 30, when the show was pronounced to have been generally the best ever known in the county. The exhibition of stock was particularly good, Mr. Robinson, of Clifton Pastures, having the lion's share of success with a number of entries from his herd of well-bred Shorthorns. Mr. Charles Howard was as pre-eminent amongst the Oxfordshire Down sheep, and Mesars. Newman and Twitchell were first and second with the Leicester wethers. The best cart colt was bred by Mr. James Thomas, but is now the property of Mr. T. Battams, who took to him with the other stock at Liddington; and Mr. Armstrong, of Rockstone, had the premium for hunters. The prize ploughing was more than usually noticeable for the high character of the work, and the firm of Page, of Bedford, were conspicuous for the excellence their implements evinced in the trials. A party of some two hundred and forty dined at the Swan Hotel, under the presidency of Lord St. John, who was supported by the High Sheriff, the town and county members, and a very strong muster of practical agriculturists.

SALE OF BALWYLLO STOCK.

The principal feature of attraction was the Balwyllo herd of pure bred Angus black polled cattle—numbering forty-four animals. We subjoin a list, giving the prices and by whom purchased, from which it will be observed that the celebrated breeders—Mr. McCombie, Tillyfour; Mr. Lyall, for Lord Southesk; Mr. Watson, Keillor, &c.—have possessed themselves with some of these animals. The bidding was in some instances very brisk, especially in the case of the heifers, the superiority of which seemed to be recognised.

COWS.

NAME.	CALVED.	GS.	PURCHASER.
Keepsake....	1851.	21	.. The Hon. Charles Carnegie.
Annie Laurie	1851.	22	.. Mr. Wyllie, Arndean.
Grace Darling	1854.	29	.. Mr. A. Mustard, Leuchland.
Young Faany	1852.	21	.. Mr. Wemyss, of Wemyss Castle.
Topsey	1856.	31	.. Earl of Southesk.
Mary	1856.	30	.. Mr. McLaure.
Queen	1856.	45	.. Earl of Southesk.
Eva	1856.	37	.. Mr. Ruxton, Farnell.
Welfare	1856.	22	.. Mr. Jack, Middledrums.
Cherry	1856.	15½	.. Mr. Thow, Derrichie.
Sally	1854.	18	.. Mr. Edward, Huntlyhill.
Susan	1849.	25	.. Mr. Blaikie, Auchindown.
Switchy	1852.	27½	.. Mr. Dowie, Denstrath.
Susan (No. 2)	1855.	18½	.. Mr. Jack, Middledrums.
Myrtle	1855.	19	.. Mr. Dingwall, Inglemaldie.
Sarah	1852.	31	.. Mr. Henderson, Harestanes, Fife.
Freedom	1852.	12½	.. Mr. Carnegie, Fithie.
Nightingale..	1854.	28	.. Mr. Glennie, Ferneyflat.

HEIFERS.

Two year olds.

May-day	1857.	29	.. Mr. Anderson, Cluny.
Young Lola			
Montes....	1857.	30	.. Mr. Stephen, Conglass.
Evelyn	1857.	45	.. Mr. McKnight, Chapel of Garioch.
Bracelet 2nd	1857.	34	.. Mr. Barclay, Yondertown, Banff.
Modesty	1857.	26	.. Mr. Wemyss, of Wemyss Castle.
Molly	1857.	20	.. Mr. Galloway, Stanton, Fife.
Blossom	1857.	18	.. Mr. Fairweather, Craigend.

One year olds.

Heiress.....	1858.	54	.. Mr. McCombie, Tillyfour.
Edith 2nd ..	1858.	35	.. Mr. Haig, Glenogil.
Alice.....	1858.	41	.. Do.
Rosebud	1858.	61	.. Earl of Southesk.
Lily	1858.	17	.. Mr. Barclay, Yondertown, Banff.
Amy	1858.	18½	.. Mr. Wemyss, of Wemyss Castle.
Princess	1858.	48	.. Mr. Lyall, Shielhill.
Primrose	1858.	16	.. Mr. Barclay, Yondertown, Banff.
Dora	1858.	16	.. Mr. Wemyss, of Wemyss Castle.
Charlotte..	1858.	12	.. Hon. Charles Carnegie.
Ruth	1858.	14½	.. Mr. Bisset, Newton.

BULLS.

President 3rd	1856.	41	.. Mr. Watson, Keillor.
Baglan 2nd..	1857.	20	.. Lord Milton, Ireland.
Lord Clyde ..	1858.	81	.. Mr. McCombie, Tillyfour.

BULL CALVES.

Emulator....	1859.	14	.. Mr. Adamson, Stannachie.
Omar Pacha ..	1859.	11	.. Mr. Wyllie, Arndean.
Pioneer	1859.	21	.. Mr. Whyte, Spott.
Prince	1859.	27	.. Mr. Guthrie, of Guthrie.
Conqueror ..	1859.	14	.. Mr. Bisset, Newton.

SALE OF MR. BROWN OF UFFCOTT'S SHORTHORNS.

This well-known Wiltshire herd was brought to the hammer by Mr. Stratford, on Tuesday, Oct. 18. The ring was formed in a field close by the Swindon station, and thus the visitors were saved a long six miles' drag to Mr. Brown's farm. Not a few

looked in on their way to the great fair at Hereford, and most of the leading breeders of the neighbourhood, including Mr. Bowley and Mr. Stratton, were present. Out of the twenty-three lots there were no less than eleven of the Graceful tribe, which owed its origin to Graceful 1st, by Killyerby. This heifer was bred by Mr. Severe, of Oliver, near Richmond, and bought in Darlington market, and sent down to Uffcott in lieu of one of a lot which Mr. Brown had selected in Durham when he first commenced with shorthorns.

Although his herd has always been small, Mr. Brown has not only won a second bull prize at the Royal Agricultural at Salisbury, but he bore off the gold medal at Smithfield last Christmas as well, with a heifer by one of Mr. Stratton's bulls. His proximity to the celebrated Broadhinton herd induced him to make several good crosses with Hero of the West, Hickory, &c.; but latterly he had used his own Botanist, whose sire Velasco by Crown Prince or Windsor, is at present let for 200 gs. The bidding was not very lively until the fourth lot, Graceful IV. (40gs.), was brought out, and bought like Graceful VI. (54gs.) by Mr. Ruck, from the Cirencester neighbourhood. This gentleman also worked the Earl of Aylesford's agent, Mr. H. Sharp, pretty hard for Graceful V.—a fine deep-ribbed cow; but she fell for 85gs. to his Lordship, who won the first prize at Birmingham last year with Devona, and is now engaged in forming a shorthorn herd. Queen of Scots (56gs.), Paragon (50gs.), and Duchess IV. (51gs.) are also bound for the Packington Pastures, and a quintet was completed by the purchase of Botanist (180gs.), a bull with very nice hair and handling, for whom the Australian agents were exceedingly "busy," although a gentleman from Cornwall made the last bid but one. There was quite an excitement in the ring as the bidding progressed. The Pirate by the Pope, was a remarkably long, low, and thick-fleshed bull, with beautiful quarters. He was bought for Australia as one of an extensive shorthorn order, which has lately arrived from there. The five bulls, three of them under eight months old, averaged £54 12s., and the cows and heifers £39 13s. 4d., thus producing £987, or a gross average of £42 18s. 3d. In addition to the purchasers above-mentioned, we may note Messrs. Staples, Popham (the owner of the celebrated Derby winner, Wild Dayrell), Lawford, Bowley, Butler, May, Davis, and Hutt. Mr. Brown does not, we believe, intend to keep any more shorthorns, but to devote himself to his flock of Hampshire downs, which has already earned no small fame in the district.

LINCOLNSHIRE RAMS WITH THE LEICESTER FRAME OR CAST.

EXHIBITED BY MR. KIRKHAM, OF HAGNABY, AT PETERBOROUGH FAIR.

SIR,—Mr. Kirkham's forty-eight rams making more, or higher by £7 per head, than any other lot of rams in the fair, has set many breeders of sheep to think for themselves how they were obtained. In my opinion, Mr. Kirkham has got rid of all the bad points of the old Lincoln, and retained all the good ones; namely, the heavy wool, size, and constitution, the mainspring, &c. To them he has judiciously added the best points of the Leicester, such as the Balewell cast or mould, fine bone, and early maturity to fatten, &c. Mr. K. has wisely alloyed them until they are a specimen of what sheep ought to be—bred for profit, useful and ornamental, a great weight of wool and mutton combined at an early age. The truth is neither puffing nor flattery. The able auctioneer, Mr. Briggs, found the value of Mr. K.'s 48 rams to be £1,029 12s. Mr. K. told me, after the sale was over, that Mr. Samuel Tirrell, of Eagleton, Rutland, had bought his best ram at £55, although Mr. Marshall had given him 70 gs. for one. Many competent judges say that Mr. Tirrell's is a model sheep, with a Leicester frame, and a Lincoln skin. Mr. K. has clearly proved and shown what may be done with Lincoln sheep. Mr. Kirkham and Son have made this season £2,852 12s. of rams, which is a fine example. SAMUEL ARNBY.

Peterborough, Oct. 13th, 1859.

REVIEWS.

TILLAGE A SUBSTITUTE FOR MANURE; Illustrated by the Principles of Modern Agricultural Science, and the Precepts and Practice of Jethro Tull; including an Epitome of Tull's Operative Directions in Successive Unmanured Corn Culture, and the Particulars of Loie-Weedon Husbandry, and other Instances of Tull's Method of Farming.

By ALEXANDER BURNET, M.A., Land-agent, Member of the Royal Agricultural Society and of the Central Farmers' Club.

London: Whitaker and Co. Roberts, Chester. 1859.

The Tullian system of sèrial manuring is now upon its trial—perhaps its last; and a pretty severe one it is. Not even on Tull himself was greater ridicule and contempt thrown, than upon those who have revived and proved its validity. Why this should be the case, we are at a loss to conceive, unless we resolve it into ignorance on the one hand, and prejudices on the other; and we all know how far these two anti-progressive principles will lead a man to oppose anything new, however excellent. And, although the Tullian system was started above a century and a half ago, it is still a new one, so far as the practical application of it in husbandry is concerned.

Modern science, however, has thrown considerable light on the subject, leading men of intelligence to reflect how far the discoveries they have made will enable them to account for the successful results of the Tullian system. It is now well known, for instance, that there are certain principles inherent in soils, which possess the faculty of attracting the sèriform fluids floating about in the air, and arising from the various animal and vegetable organisms in a state of decomposition; and that this faculty or power of attraction is increased by frequent tillage. It is, moreover, suspected that one effect—perhaps the greatest—of manures, is still further to stimulate it, by both a chemical and a mechanical action. Now the two first of these discoveries lie at the very foundation of the Tullian system; and the only difference between him and the present advocates of it is, that the nature of those sèriform fluids was unknown to him or in his time, but are now clearly defined, and their properties identified. There is, therefore, less excuse for the opponents of the founder of the system, because the principles involved are now better known and understood.

Mr. Burnet's work is calculated to draw the attention of the agricultural public to the subject, especially at this time, when the low price of wheat has created a good deal of alarm, and in some cases led the farmer to discontinue the purchase of artificial manure.

The main principles he lays down—which, in fact, are those of Tull, illustrated by modern examples—are:

1st.—That root crops, for the purpose of raising manure for the cultivation of cereals, are unremunerative.

2nd.—That the atmosphere contains all that is necessary to produce remunerative wheat or other cereal crops, under certain conditions, without manure.

3rd.—That the conditions are, fallowing and comminution of the soil and continuous horse-hoeing.

4th.—That the soil possesses in itself, by nature, a sèro of fertility, which it will maintain on an average of years, the amount of which will be given out in proportion to the amount of tillage bestowed upon it, without manure; the thermometer of fertility rising and falling according to the variations of the seasons.

These principles are substantiated by the practice of Tull himself, in 1712 to 1725; of Mr. Dean, from 1744 to 1764; of the Rev. W. Close, from 1782 to 1785; of Mr. Budd, from 1790 to 1794; of Mr. Beaman, from 1816 to 1822; of Mr. Box, from 1825 to 1832; and of Mr. Clarke from 1857 to 1858. All these experiments were made with the plough. The following experiments were made with the spade or fork: Rev. Mr. Smith, from 1846 to 1858; Mr. Jones, from 1850 to 1858; the Rev. Sir George Robinson, from 1819 to 1858.

The results of these two systems—the plough and the spade—are very remarkable. The average produce (in wheat) of the seven first experiments, under the plough, was 24.5 bush.; whilst that of the second, under spade husbandry, was 33.2 bush., showing nearly nine bushels per acre in favour of the latter. And it is further to be observed that the above produce is from half the land only, the intervals between the rows being of the same width (3 feet) as the part that is planted.

Our space will not allow us to dilate further on this, to us interesting subject. After, therefore, recommending the work to the reader's perusal, we close this notice with the following quotations:—

"Thus, at every turn do we find modern science paying obeisance to the comprehensive and eminently practical genius of JETHRO TULL" (p. 205).

"It cannot be that the English farmer will longer leave the momentous problem involved in these propositions to be solved by amateur experiment, nor less impossible is it to conceive that *landlord* and *agent* will be backward to encourage and even stimulate every reasonable attempt, on the tenant's part, to determine whether 'Tull's Cereal System' may or may not be profitably engrafted on modern agriculture. To be convinced that the present forms of alternate husbandry are pregnant with danger, it is only necessary to peruse with attention the report of a recent most important discussion in the *Central Farmers' Club*, in which wide-spread degeneration of the *real qualitative type* in barley, as well as clover and turnips, is unequivocally asserted on the most conclusive evidence" (p. 209).

BRITISH TIMBER TREES: their Rearing and subsequent Management, in Woods, Groves, and Plantations, &c., &c.

By JOHN BLENKARN, Agricultural Engineer and Surveyor

London: Routledge and Co., Farringdon-street, and New York. 1859.

The plantation of timber trees has been much more attended to during the present than in the last century. The long maritime war with France, which made it necessary for our very existence as a nation to maintain a large and efficient navy, created a demand for oak timber especially, which almost cleared the country of that valuable and noble monarch of the forest. Since then, many landowners have planted great numbers of oak and other forest-trees, which have already, in some instances, well repaid them for the outlay. In the present day, when a new material has been successfully applied in ship-building, and "Heart of Oak" is no longer the exclusive protector of our white cliffs and shingly shores, it may be supposed that the rearing of timber is no longer absolutely essential to the safety of the country; nevertheless, as our landowners are clearing the hedge-rows of the timber by which they have hitherto been adorned to the prejudice of the crops, it is still necessary that the stock should be kept up for other purposes as well as ship-building, which latter use, in fact, continues to absorb increasingly large quantities of timber, notwithstanding the extensive application of iron. The enormous extension of our foreign commerce, and consequently of our mercantile marine, as well as of our ships of war, is such, that but for the introduction of iron it would have been impossible for the country to have produced mature timber enough to supply the demand. Mr. Blenkarn's work is a well-timed treatise on the economy of the forest, and he combats successfully the idea that timber does not pay for the ground on which it grows. "Three thriving oaks, growing on a hard gravelly and poor soil, were felled in Nottinghamshire, which on an average girted 15 feet at three feet from the ground, and each tree contained about 480 cubic feet of timber. The trees were planted in 1693 or 1698, and were above 149 years old when they were felled. As these trees were perfectly sound, and yearly increased in size, it is probable that had they been suffered to remain another century, their bulk and cu-

bical contents would have increased fully one-half. The value of the trees when cut down was more than £120, a sum equal to thirty shillings per acre (without taking interest into account) for the land they occupied during the 149 years of their growth—a reply to such as state that timber will not pay for the ground it occupies, or injures by its shade" (p. 42).

THE CULTURE OF THE PEACH AND NECTARINE.

By GEORGE M'EWEN, late Superintendent of the Horticultural Society's Gardens at Chiswick, and formerly Gardener to His Grace the Duke of Norfolk, at Arundel Castle. Edited and enlarged by J. Cox, F.H.S., Gardener to W. Wells, Esq., Redleaf.

London: Groombridge and Sons, Paternoster-row. 1859.

This is a valuable posthumous treatise on the cultivation of two of the most luscious of Nature's vegetable productions, by an attention to the instructions contained in which, any person possessing the requisite of a brick wall, fronting any point between south-east and south-west, may produce these fruits in abundance, in the open air, or, if he has a hothouse, may have them at those seasons when their rarity makes them more valuable. The engraving at the head of the work, of the "Late Admirable" absolutely made the writer's mouth water to look at it.

FARM INSECTS; being the Natural History and Economy of the Insects injurious to the Field Crops of Great Britain and Ireland, &c., &c. PARTS IV and V.

By JOHN CURTIS, Honorary Member of the Ashmolean Society of Oxford, and of the Entomological Society of France, &c., &c.

Blackie and Son, Glasgow, Edinburgh, and Warwick-square, London.

The known celebrity of the author of this work, as one of the most skilful entomologists of the day, would lead us to expect something superior and complete from his pen; and the work itself fully warrants the high opinion we have entertained of his talents and knowledge of the subject. Embracing, as it does, "suggestions" for the destruction of the insects it describes, it must prove invaluable to the agriculturist, who suffers, from them year by year, far more than he has an adequate idea of. The insidious manner, too, in which most of these "pests of the farm" introduce themselves is little known to the farmer, who is unable to guard against them. We quote the following, on the *timea granella*, a small moth, as a specimen: "It deposits its eggs on the sheaves in the field, as well as after the grain is stored and threshed out, and it will feed as well upon barley, rye, and oats as upon wheat; and Leuwenhoek adds 'That these worms are not only destructive to corn, but are also in old timber, books, boxes, woollen-stuffs, and the like, &c.'"—p. 817. No farmer ought to be without this work, which, if its suggestions are attended to, will enable him greatly to modify and reduce, if not prevent, the ravages of these universal pests. The engravings are first-class.

CULTIVATION OF THE POTATO.

In lifting and storing the potato crop, the cultivator has an opportunity of observing the relation which the amount and quality of the produce bear to the soil, its situation, the modes of culture, and the variety grown. The season has been somewhat anomalous. The long-continued drought after the potato-sets were planted, with the high range of the temperature during the whole period of growth, would doubtless act powerfully upon the crop; still, the results of the season should regulate in some measure future practice. The produce this season is generally above an average, while the proportion of diseased tubers is unusually small; corroborating, therefore, the general belief that a hot dry season is highly favourable for the potato plant. This agency is not directly under the cultivator's control, and may therefore be dismissed as one which he cannot meet except by change of locality, unless so far as thorough-draining and deep cultivation influence the temperature of the soil.

As in previous seasons, such soils as dry, vegetable, light sandy, and calcareous, have produced the largest produce of sound tubers; and that damp and wet soils, particularly those of an argillaceous character, have produced full crops, but with a considerable proportion of the tubers diseased. Lands recently reclaimed from moor have generally yielded an abundant return, with a few symptoms of disease in the tubers. The same result in relation to disease has been observed on reclaimed peaty soils—thus showing that moorish and peaty soils are very suitable for the potato plant.

The influence of situation and of exposure upon the crop has not been so marked as in previous years; still, low-lying and sheltered fields have produced crops with a considerable proportion of the tubers diseased, and those which are apparently sound when lifted are showing symptoms of decay since the crop was stored.

The modes of culture have operated most powerfully this season—doubtless partly owing to the drought and heat experienced during spring and summer. Lands manured in autumn with farmyard manure have generally yielded a much greater produce, and of better quality, than lands of similar character manured at the period of planting with farmyard manure. The earlier the manure was applied in autumn, and ploughed in, the larger has been the produce. The action of portable manures has been less uniform than in previous seasons. This applies more particularly to Peruvian guano. Where the crop has been early planted, and this manure used and applied at the period of planting the potato-sets in addition to farmyard manure, the size and number of the tubers have been considerably increased, and the produce generally sound. This refers alike to lands manured in autumn or spring with farmyard manure. Where Peruvian guano has been used alone or along with a superphosphate in raising the crop, the produce has been small, and the proportion of undersized tubers very considerable, particularly where the crop was late in being planted. Where guano was applied as a topdressing, its action has been also less uniformly successful. Applications of bone dust and of superphosphates as supplementary to other manures have been productive of very varying results. The absence of sufficient moisture doubtless interfered with the manurial effects, especially where the planting of the crop had been delayed. Rapedust as a supplementary manure has generally proved beneficial, particularly in increasing the number of tubers.

The time of planting appears to have caused the most marked difference in the produce, both as to the amount and as to the proportion of diseased tubers. Early planting has proved, generally, highly advantageous. The stems came up vigorously and grew with unusual luxuriance, and the crop was nearly ripe when the blight appeared on the haulms. Deep planting proved advantageous; this doubtless is owing to the greater supply of moisture within the reach of the rootlets of the plant. The early and frequent stirring of the soil after the sets were planted also acted powerfully in causing a vigorous and healthy growth. Early and deep furrowing up of the plants appears to have diminished the proportion of diseased tubers. The distance between the rows and the distance between the plants formed an element of more than usual influence. Wide-drilled fields with the plants wide apart produced under the average of those fields drilled close, with the plants near each other in the rows. Drills of 28 inches, with the sets placed 12 inches apart, appear to have yielded the best results. Never, perhaps, in any previous season was the influence of culture more apparent than this one, both on the amount of produce and the quality of the tubers.

The varieties grown have been gradually diminishing in number. The proportion of sound to diseased tubers has been this season apparently little influenced by the variety or kind grown, the soil and mode of culture being more marked than varieties of the potato. The Regents occupy the greatest breadth. There are more than one sub-variety of Regents. All have produced a full average crop, except those sub-varieties having the stems and leaves of short and stunted growth; these kinds are in limited cultivation. A comparatively new variety in cultivation, generally called Rocks, has yielded a large crop of well-formed and comparatively sound tubers. Red varieties have proved less uniform in produce than in ordinary years. The tubers are generally sound, but the proportion of small ones is considerable. The experience

of the last two years is unfavourable to the extended cultivation of the red varieties.

Practical farmers who have bestowed attention on the potato crop this season, particularly at the period of lifting, will probably have observed some facts worthy of being recorded. The marked contrast presented in different fields under dif-

ferent management must have been a frequent subject of comment among cultivators. Those who have made observations will confer a favour by communicating the results, particularly of experiments undertaken with different manures, and modes of applying the manures, periods of planting, with cleaning of the crop, and varieties grown.—North British Agriculturist.

CALENDAR OF AGRICULTURE.

Finish the sowing of wheat if any remains undone from last month. Take up Swedish turnips, store the roots at the homestead, and give the tops to the sheep in the fields or to young cattle in the yards.

Flood watered meadows, and put into proper order for use the main channels, conveying gutters, and the sluices of flood-gates.

Begin to cut underwoods, plant forest trees, open-drain plantations, repair old fences, and make new ones, cast open ditches, and repair roads.

Thrash grain regularly twice in a week to supply the animals with food, and the yards with litter. Cut chaffs from hay and straws mixed, for the horses, the fattening bullocks that are tied up, and for being steamed for the milch cows. Apply all litter to the yards thinly and evenly, and spread over the surface all substances of different qualities for the purpose of being mixed.

Supply to the cattle in the yards, by break of day, an ample feed of turnips, rooted and topped for the fattening animals, and with the tops attached for the other sorts of cattle. Wooden cribs with latticed bottoms suit best, as the filth and rain-water escape freely downwards. The roots

should be all eaten up by night, that no accidents from choking may happen unseen during darkness. Give to milch cows the stools of cabbages and beet root, and one feed daily of steamed meats.

Continue the feeding of sheep as directed last month. The animals may be folded over the night on the bare ground in mild climates; but very often they must be allowed to run back for shelter.

Feed pigs as directed last month; give ample littering, and keep the animals dry. Feed poultry with light grains, and with steamed potatoes mixed with meals, and given in troughs placed in a shelter shed in the poultry yard.

Attend to the feeding of young horses in the farm-yard. Provide a regular supply of fresh water in a trough, and a convenient and dry shelter shed. Give hay and straw in chaff, bran and oats, and a feed daily of raw or steamed roots. The first winter's keep has a very great share in making good animals.

Begin to plough stubbles, and fallow with the subsoil plough, and prepare by fallowing the lands intended for the early spring crops of roots, so long as the weather permits the operations of cultivation to be performed.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Artichokes: Protect the plants by mulch or masses of leaves, after removing all the old stalks and decayed foliage. Dig roots for temporary supply of the so-called Jerusalem artichokes. Store all the potatoes, carefully observing the condition as to soundness and decay. Keep the store very dry. Broccoli and Cauliflower in the open ground should be laid down, and be guarded with a covering of dry earth laid close over the stems.

Carrots: Dig and store; also beet root and some parsnips.

Celery: Finish earthing. If frost threaten, cover the ridges and tops with dry haulm.

Endive: Tie up some plants, and remove others to dry frames for bleaching.

Lettuce in frames: Give air to occasionally. Do the same to radish and salads.

FRUIT GARDEN.

Raspberries are tied to stakes by cords six rods

to each, stopping at an angle towards the north; or to a neat open trellis. It is good policy to secure by this means the full exposure of next year's growing canes to the sun. Plants are too much crowded by a perpendicular confined tying to stakes.

FLOWER GARDEN.

Tulips, hyacinths: Plant in rich sandy beds, open the holes, neatly place the bulb an inch or two deep, with dry free sand around each, so that each part of the leaves is touched. Move a few herbaceous plants, roughly fork the surface of beds, and scatter decayed leaf-mould and old cow dung over it. Observe neatness and order everywhere.

Pits, frames, and other erections, with semi-hardy plants, should be kept as dry as possible, and aired at any convenient opportunity. Dry sawdust is a good material to plunge in, as it guards the mould effectually.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

The crops having been secured in most parts of England, as well as in Ireland and Scotland, at a much earlier period than usual, and the weather having been tolerably favourable, although the fall of rain has been an average one, ploughing and sowing have progressed steadily during the past month, with the land in fine condition for the reception of the seed furrow. In all other respects, out-door labours are in a forward state, even in what may be termed the most backward districts. In a comparative sense, the quantity of both old and new wheat thrashed out has been only moderate; nevertheless, the demand for that description of produce has not improved, notwithstanding that consumption is on an extensive scale. And here we may remark that the usually large operators in produce have almost wholly declined to speculate either in English or foreign wheat; hence, sales have been confined to parcels for immediate consumption, and the trade has continued remarkably quiet, at prices about equal to those current in the previous month. This state of things, considering the quantity of bread now consumed in this country, and the unusually small supplies of both French and American flour on offer, has created no little surprise in various quarters, especially as it is generally admitted that the yield of the new crop of wheat in this country is inferior, both as respects quantity and quality, to that produced both in 1857 and 1858. It may be somewhat difficult to understand the principle now governing the trade, since we find that the stocks of foreign grain in our warehouses have not increased, and that wheat—the continental supplies of which on offer are not to say extensive—is by far the cheapest produce, even when compared with all the leading markets of the world. The dulness in the trade, and the continued low prices, may, we think, be attributed to two important features. In the first place, large arrivals of floating cargoes from the westward continue to be reported off Falmouth. These arrivals have been sold chiefly for inland consumption, so that provincial buyers have not found it necessary to operate in wheat either in London or at the large outports. In the second place, the leading millers have imported foreign wheat on their own account to some extent; hence they have not been compelled to purchase largely at Mark Lane or elsewhere. So long as this state of things continues, so long shall we have an inactive trade, and it may be well doubted whether there will be any important movement in it during the remainder of the year, even though there is scarcely any foreign flour on offer either at Mark Lane or Liverpool. Barley, however, especially fine qualities, owing to their extreme scarcity, is likely to rule high. Oats, too, will, no doubt, maintain their present value; but both beans and peas are likely to rule lower in price, since it is now ascertained that the produce of those two articles this year throughout Europe is considerably in excess of 1858. For the most part, our accounts from all quarters in reference to the potato crop are favourable. The growth appears to have turned out a full average one as to quantity, and the losses by disease have been comparatively trifling. Prices have ruled from 70s. to 115s. per ton, against 80s. to 140s. at the corresponding period in 1857, and 55s. to 90s. in 1858. The crop both in France and Holland has been a poor one; consequently, very few foreign potatoes can be expected into London during the winter months.

In our leading counties, both hay and straw have been in moderate request. The trade in the metropolis has become steady, at the following quotations:—Meadow hay, £2 12s. to £4 4s.; clover ditto, £3 10s. to £5 5s.; and straw, £1 4s. to £1 10s. per load.

The wool trade has shown signs of very little activity; nevertheless, prices generally have continued steady. The

next public sales of colonial wool will commence on the 10th November, when only about \$2,000 bales will be offered. The enormous increase in our exports of woollen goods leads us to the conclusion that present quotations are safe, although the demand for English wool on continental account has not improved.

Considering the extent of the growth, the hop trade has continued in a healthy state, at what may be termed fair quotations. The present value of hops in our market, and the poor prospect of any increase in it, seem to indicate that future arrivals from the continent will be on a very limited scale. The duty here has been done as high as £310,000.

In Ireland and Scotland, fine wheat, barley, and oats have sold at full quotations; but all other kinds of produce have met a very inactive inquiry. Most of the markets have been fairly supplied. Prime fat and store animals have continued to realise extreme quotations.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Although the various markets have been well supplied with both beasts and sheep during the month just concluded, trade generally has continued in a satisfactory state, and prices have ruled high. We may observe, however, that the general quality of the stock has exhibited what may be termed a serious deficiency, when compared with many previous corresponding periods of the year; hence really fine animals have tended upwards in value. In some instances the prime Scots and crosses have changed hands at 8s., very superior Downs and half-breeds at 5s. 4d. per 8lbs. Without anticipating any important decline in the quotations, we may observe that the present wide margin between the value of the best and the most inferior breeds is not likely to be of long duration, unless, indeed, our graziers have been very unfortunate in their selection of stock. We must bear in mind that there has been a great abundance of pasture food during the greater portion of the present year, and that an enormous quantity of hay has been secured in excellent condition. Again, the turnip and beet crops are turning out well in almost every county; and the price of linseed and cake is certainly moderate, considering the extent of the demand. With all these favourable influences, however, meat is not likely to be cheaper. We may have large supplies on offer, and we may have extensive importations from the continent; yet, owing to the flourishing state of commerce, and the steady employment now afforded to our artisans, it may be well doubted whether they will exceed the demand. The foreign beasts recently imported have shown very little improvement in their general quality; but we may observe that the stringent custom-house regulations—in other words, the close inspection of the animals by competent persons prior to being landed—have wholly prevented the introduction of stock in a diseased state. The general weight and condition of the sheep have wonderfully improved. Many of the sheep from Holland have sold at 45s. each, and they have met a steady demand at that quotation. Nearly the whole of them have shown signs of crossing with our best breeds—they have carried a large amount of internal fat—and have become favourites with the butchers. It is somewhat remarkable, however, that foreign calves—though they exhibit whiteness of flesh, and are otherwise saleable—keep from putrefaction a much shorter period than those reared in this country. Buyers, therefore, purchase them with much caution; but, owing to the small number of English calves now exhibited in the metropolitan market, they are compelled to purchase foreigners in order to carry on their business.

Much surprise has been expressed at the apparent backward state of German agriculture, from the continued arrival of sheep from that country in miserably poor condi-

tion. The bulk of those received via Hamburg have been disposed of at from 15s. to 16s. each, and upon which the expenses are 2s. 6d. ! It would appear surprising that the German breeders should not be in a position by this time, seeing that they have now open to them a most valuable and a ready-money market, to produce a better commodity. The arrivals of late have shown a degree of poverty on the part of the owners which could hardly be anticipated in this progressive age. The Dutch graziers have wisely, as regards their own interests, succeeded in producing a description of sheep well calculated for general consumption in England; and, judging from past experience, a further improvement in them is pretty certain. France, however, is still very far behind Holland in the production of live stock. For a considerable period, very few beasts, sheep, or pigs reared in France have reached us; and, to meet consumption, importations are still necessary, although breeding stock has from time to time been imported from England in large numbers, and of a stamina well calculated to increase supplies.

The annexed figures show the imports of foreign stock into London since we last wrote:

Beasts	6,026 head.
Sheep	24,323 "
Lambs	158 "
Calves	784 "
Pigs	878 "

Total..... 32,164 "

IMPORTS AT CORRESPONDING PERIODS.

	Beasts.	Sheep.	Calves.	Pigs.
Oct. 1858	4,600	24,145	1,581	853
1857	5,819	24,102	1,998	1,233
1856	8,871	10,802	1,280	895
1855	8,136	21,137	1,358	1,501
1854	6,894	16,328	1,009	1,063
1853	8,190	30,643	1,797	1,585

The above comparison shows that last month we imported a fair average supply of stock, for the time of year.

The total supplies of home and foreign stock exhibited in the Metropolitan Cattle market have been as under:

Beasts	24,892 head.
Cows	526 "
Sheep	116,962 "
Calves	994 "
Pigs	8,062 "

Included in the above are 12,120 shorthorns and crosses from Lincolnshire, Leicestershire, and Northamptonshire; 2,570 of various breeds from other parts of England; 429 Scots and crosses from Scotland; and 1,812 oxen and heifers from Ireland.

COMPARISON OF SUPPLIES.

	Beasts.	Cows.	Sheep.	Calves.	Pigs.
Oct. 1858.....	26,910	516	120,300	1,736	2,940
1857.....	26,833	497	115,409	1,572	2,580
1856.....	24,941	457	103,870	1,956	3,918
1855.....	24,656	490	118,578	2,748	3,558
1854.....	26,456	510	146,048	1,900	3,620
1853.....	27,327	545	145,400	2,517	3,112

In the month, beef has ranged from 2s. 10d. to 4s. 10d. as general quotations, mutton 3s. to 5s. 4d., veal 3s. 8d. to 5s. 8d., and pork 3s. 4d. to 4s. 8d. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	Oct., 1855.				Oct., 1856.			
	s.	d.	s.	d.	s.	d.	s.	d.
Beef, from	8	2	5	0	2	10	4	10
Mutton	8	4	5	0	8	6	5	2
Veal	8	6	5	4	8	6	5	4
Pork	8	10	5	2	8	6	5	2

	Oct., 1857.				Oct., 1858.			
	s.	d.	s.	d.	s.	d.	s.	d.
Beef, from	8	2	5	0	2	8	4	10
Mutton	8	4	5	6	2	10	5	0
Veal	3	4	5	4	8	4	5	0
Pork	3	6	5	4	2	10	4	4

Very large supplies of Scotch and country-killed meat have been on offer in Newgate and Leadenhall markets. Neverthe-

less, a steady business has been transacted, as follows: Beef, from 2s. 10d. to 4s. 4d.; mutton, 3s. 2d. to 4s. 6d.; veal, 4s. to 5s.; pork, 3s. 4d. to 5s. per 8lbs. by the carcass.

The present mania on the part of what is termed the "Moscow Company," in Russia, in speculating in tallow, though in the long run it may prove a ruinous operation, has had the effect of enhancing the price of that commodity in London to 60s. per cwt.: hence the value of rough fat has risen to 8s. 3d. per 8lbs. In the event of these prices being supported, fat stock will no doubt continue to rule at fully its present market rate. Considering that nearly the whole of the foreign tallow now in London and warehoused at St. Petersburg is in the hands of the company in question, and that the importations from other sources are not likely to increase to any extent, we think that any important decline in the quotations is very doubtful, unless, indeed, the supply of town-made should be much larger during the winter than it now is.

SOUTH LINCOLNSHIRE.

The season is all that could be wished; our pastures, turnips, and coleseeds are growing most luxuriantly. We had unsettled weather in September, but now we have a return to July and August, and our farmers are busily taking advantage of it. Cultivation is going on rapidly, and much land will be prepared for wheat in the best style. From the place where this is written no less than four steam cultivators are to be seen daily plying their task, and that most satisfactorily. The lands are remarkably well cultivated, rendering it unnecessary to use the plough; consequently, wheat seeding is going on simultaneously and favourably. This speaks well for steam cultivation; and in this dead level district I have no doubt it will soon become general. At the Long Sutton meeting held last week, three of these cultivators competed for the Fifty Pound Prize given by that Society, and each made most efficient and capital work. The soil was completely broken up to the depth of from eight to ten inches, and greatly pulverised by the process. Smith's cultivators were principally used. Many hundreds of the agriculturists of the district viewed the operations, and one universal approval seemed to characterize the meeting—Chandler's combined application of a vertical windlass to his engine obtaining favour with the judges. We would remark that the Long Sutton Meeting has now become the great meeting of the year, in South Lincolnshire; and the committee deserve great credit for the many novel and interesting implements and machinery they have brought before the public, and shown in work for the information and benefit of the district. The variety of ploughs to be viewed and shown at work in the ploughing match will alone amply repay a visit. Let critics of a high order say what they may about these exhibitions of skill and tact in our workmen, we can point to the stubborn frost and snow them that great good has been done and is still doing. We are all busy with our various occupations, and every hand is employed in getting in wheat and harvesting potatoes and mangolds. These come up admirably clean and good. The potatoes are small, but not greatly diseased, and the mangolds are all ripe and ready for graving. The leaves have mostly turned yellow, which I take to be the true sign or indication of ripening and fitness for leading; like apples, they should be ripe before gathering. Our stock in the grazing fields are doing exceedingly well, and much beef and mutton will be thus somewhat unexpectedly made. The sheep put to coleseed and turnips are not doing truly well. The crops are still growing, and the sheep do not eat enough to make them thrive. The abundance of keeping has caused a slight reaction in the market for stock: both cattle and sheep are dearer. We have many offers of coleseed for sale: it is likely to go still cheaper. This crop in this district is generally sold by the fen farmers to the marsh and upland breeders or graziers, so that it is a matter of importance to them whether we have a fine or an untoward Autumn. Our wheat thrashing discovers a worse crop than even our fears indicated; and the quality is very bad, the price proportionately still worse. Oats, beans, and peas are likely to yield a fair crop. The breeders of sheep may congratulate themselves upon having such a plentiful season for their ewes; and an unusual fall

of lambs may be anticipated. We never saw the breeding flocks in higher condition. A larger number than usual has been put to the ram, and great provision is now annually made for them. The most remarkable feature of this Autumn in business is the taking up of the mangold crop. The breadth grown is large, and the quantity produced is enormous. Go where you will, everyone is engaged "gra-

ving mangolds;" and they are graves! extending for hundreds of yards. This is a somewhat new feature in management, of which I entertain a very high opinion as likely to form a new era in the Spring provision for our stock, by which far greater numbers will be safely provided for, and this may ultimately lead to an extended cultivation of root in preference to corn crops.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

AXMINSTER FAIR.—The supply of sheep was about the average, though rather under the supply of the previous October fair. Considerable business was done, and prices may be quoted for horn ewes from 38s. to 45s.; Down ewes from 32s. to 38s.; horn lambs from 20s. to 30s.; Down lambs from 22s. to 30s.; fat sheep, 6½d. to 7d. per lb. The bull/ock fair was well supplied. Fat beasts, of which there was a tolerable show, from 10s. to 11s. 6d. per score. Cows and calves were scarce, at prices from £11 to £15. Barreners from 6s. to 7s. per score. Heifers from £5 to £8 per head. There was a good supply of pigs. Slips, 10s. to 30s. The horse fair was very full.

BERRIEW FAIR was remarkably well supplied well supplied with stock of all descriptions, and was well attended with buyers. Some very fine bullocks were shown, and excellent prices realized, the demand for all cattle being very brisk. The show of pigs and sheep was good, and many sales were effected at excellent prices. Horses in fair demand.

CARLISLE FAIR.—There was a poor show of milk and calving cows, and the prices asked ranged from £9 to £12, and in one instance £16 was got for a good short-horned cow in-calf; better half of these were not sold. Shorthorned heifers and bullocks were an average show, and commanded some attention during the latter part of the day. Ayrshire cows met a dull sale. Irish cattle were plentiful, and on the whole met a good demand. They went off very slow during the morning, and it was not till late in the afternoon that anything like a sale was effected. A few sales were made for Highland heifers, but for stirks of that breed business was stagnant the whole of the day. On the whole the market was an average one, considering the unsettled state of the markets. The prices obtained ranged as follows: Galloway heifers and bullocks, £5 10s. to £9 10s.; milk and calving cows, £8 to £12; Irish, £5 to £8 15s.; Highlanders, £5 10s. to £6 10s.; shorthorns, £6 10s. to £9 15s. Half-bred and Cheviot lambs attracted most buyers, but crosses and Cheviot ewes were not so easily disposed of. The Leicester tupe left the market unsold. Only two or three good draught horses on offer, while, for saddle or harness, scarcely a good animal was to be seen. Ponies scarcely inquired for. The supply of pigs was the largest that has been offered here for some months past. There were eighty cart loads, and brought prices ranging from 14s. to 24s. each. A drove of Irish shots were also offered for sale, but they met a poor demand. The demand for young pigs was good, and a total clearance nearly effected.

DALKEITH FAIR was rather short in point of number compared with last year, and the quality generally was not so good, particularly the three year olds. The two-year-olds and six quarters, however, were in rather better condition. The buyers were numerous, and business commenced at an early hour, and the better class of stock of all ages met with a ready sale. The prices obtained for the better class of stock equal those of last year; while on the three-year-old good-conditioned stock the prices were 5 per cent., on the inferior kinds somewhere about 2½, and upon the stirks 5 per cent. higher than those obtained at Jedburgh and Kelso. At the close few beasts remained unsold. The great demand for shorthorned to-day is supposed to have arisen from the recent timely rains, which are expected to improve the turnip-crop. The Irish cattle were very numerous, especially two-year-olds and stirks. The three-year-olds were deficient both in quantity and quality. Beasts rising a year and a half-year old brought about £11, two-year-olds from £11 to £12 10s., and the better class of three-year-olds from £13 to £15. At the

close of this market few good-conditioned beasts were left unsold. It was considered by the holders of this stock that this was the best market during the latter part of this season. The horse-market was crowded with good draught-horses, fillies, and colts, but there were few good saddle and harness-horses. The demand for draughts, although there was a large number of dealers from all parts of the country, was not what was expected, which caused trade to be stiff in this department; and although Mr. Edgley of Gilmerton, Mr. Yule of Glasgow, Mr. Given of Glasgow, as well as Mr. James Henderson of Edinburgh, Messrs. Wilson and Gray, and also Mr. Burns of Edinburgh, did business in their own way, it was admitted that prices were a shade lower than at recent markets. Mr. Thomas Hamilton, Haddington, bought several young beasts from £30 to £35.

DEVIZES FAIR.—There was about an average supply, and sheep of all kinds, except ewes, sold well, at fully the prices at Weyhill. Lambs were in good demand, and sold at from 20s. to 35s. a-head; ewes sold at from 28s. to 41s.; good wethers were inquired after; there were but few in the fair, and they sold well at from 34s. to 44s. Prime cattle sold freely. There were a good many lambs. Some very prime colts sold extremely well.

GLOUCESTER MONTHLY MARKET.—The number of beasts was nearly double that at the last market, and their condition was greatly improved. The supply of sheep was rather large, but not of first-rate quality. There was a brisk trade, at the following quotations:—Beef, from 6½d. to 7d.; mutton, from 7d. to 7½d. per lb. At these prices the market was nearly cleared.

HEREFORD FAIR.—Fat beasts were scarce, and realized 7d. per lb. without difficulty; and the aggregate price of prime horned stock was 5 per cent. higher on the second than the first day. All the stock, with the exception of a few lots of inferior beasts, went off very quickly. The trade in sheep was brisk, and the supply good. Fat wethers maintained their full value of 7d. per lb. Ewes about 6d. per stone lower. There were a great number of horses, but very few really good hacks. All kinds of horseflesh seems to have deteriorated in value during the last six months, and young cart-horses and colts were not worth so much by 25 per cent. as they were twelve months ago. In pigs there was not much doing; but fat porkers were worth 5s. to 5s. 6d. per stone.

KELSO PENNMYUR FAIR.—There was a small show of Cheviot ewes, but a good one of young wethers. Three-year-old Cheviot wethers brought from 24s. to 29s. 3d., two-year-old from 23s. to 28s. 9d. This description of stock was down about 2s. from last year's prices. Cheviot ewes brought from 20s. to 26s., being from 1s. 6d. to 2s. 6d. up from last year. Sales were slowly effected, but nearly the whole stock was disposed of.

LANARK FAIR was a very dull one. There was a good show of horses, but few cattle or sheep. The average prices of horses ranged from 25l. to 35l. Few of either sheep or cattle changed hands; cows at the calving brought from 8l. to 11l., but there seemed to be no demand for stock cattle.

LEOMINSTER FAIR was well attended. There was a capital supply of stock. Owners appeared determined to maintain high prices, purchasers were therefore very shy, consequently few sales were effected.

MANSFIELD FAIR.—There was a large number of horses shown, but principally inferior animals; what few good ones there were sold readily at from 60l. to 70l. each. Good useful cart horses were also in demand, and readily changed hands at prices varying from 30l. to 50l. A large

number of two-year-old colts were shown, the dealers asking from 15*l.* to 27*l.* The supply of cattle was more limited, and principally inferior stock. Good milch cows fetched a ready sale at about 26*l.*, and in-calf heifers 18*l.* Fresh barren also sold well. Inferior sorts were very bad to quit. The show of sheep was very moderate, and at about average prices.

MARKET HARBOROUGH FAIR.—The show of horses was exceedingly large, especially of inferior quality, and the sale for these was very slow. Many good horses had been sold for the two or three days previous, and realised more money than at the last fair. The show of fat beef was less than last year, consequently it realised higher prices. In other beasts a good business was done, but the quantity was not so large as in previous years. The same may be said of sheep, of which the numbers were shorter than last year.

MITCHELL FAIR.—About the usual number of sheep were penned, and the sale for store ewes was pretty good; wethers also sold freely, and fetched about 6*d.* per lb.; at the close of the day very few sheep remained unsold. For store bullocks the sale was not brisk; nevertheless, a good many oxen and steers changed hands. Good beef fetched from £3 to 3 guineas; the effect, however, of the recent arrivals of foreign beef was evident, fewer of the western butchers being present than is usually the case.

MUIR OF ORD MARKET.—There was little demand, and any desire to purchase on the part of buyers was for lots available for ready sale to the butcher. There were few lots, however, of a superior description; and except some blackfaced wethers the show altogether was inferior. The unsatisfactory state of the turnip crop throughout the country necessarily influences the character of our northern sheep markets.

NORWICH ST. FAITH'S FAIR.—At this important fair the number of beasts was smaller than has been known for years. Of Scots about 800, the quality and condition of the different droves were very prime; of Short-horns and Irish less than 400, which were of a second-class description, and commanded but little attention. The weather being unusually fine, and the buyers for the Scots tolerably numerous, a fair amount of business was transacted at fully 6*s.* 6*d.* per stone for the best lots; second rates 5*s.* 6*d.* to 6*s.*, leaving about one-fourth unsold. Short-horns 5*s.* to 5*s.* 6*d.*; a dull sale, and half unsold. Irish none worth notice. The high prices prevented many graziers from purchasing, giving the preference to Norwich Hill, which may now be considered one of the best markets in England. Although both the breeders and dealers admitted the prices were high; still we fear at the close there will be little if any profit realised. We are glad to be able to state keep was never known to be more plentiful, the turnips and beet-root improving daily. In the horse fair very little was doing; scarcely a first-class animal offered. The show on the Fair Stand on Thursday very small, and the day throughout being wet prevented any business being done.

PENNYMUIR FAIR.—The stock was in excellent condition, but was below an average in numbers. The demand was good, and prices were from 1*s.* 6*d.* to 2*s.* up for ewes, and about 2*s.* to 3*s.* below the same fair last year. Cheviot ewes 22*s.* to 25*s.* 6*d.*, wethers 26*s.* to 29*s.*, dinmonds 23*s.* 6*d.* to 25*s.*

ROSS FAIR was well supplied with store stock, but there was a remarkable scarcity of fat stock. Steers and fresh barrens were in demand, and sold readily. Fat beef and mutton was worth 7*d.*, and met a brisk sale. The horse fair showed many good animals, but the sale was a dull one.

SHERBORNE FAIR.—Fat stock was plentiful, but there was a reluctance on the part of purchasers to give former prices, consequently there was a drag. Sheep were plentiful, and sold well. Lambs also realised good prices. Other stock sold proportionately well.

STRATFORD-ON-AVON FAIR.—There were about 800 sheep penned, but buyers were few and business slack, in consequence of the high prices asked. Of stock there was a very short supply of beef, which we may quote, with mutton, at 6*d.* to 7*d.* per lb. Pigs, both porkers and bacon, brought from 9*s.* to 10*s.* per score, according to quality.

WELLOW FAIR was well supplied and well attended by

buyers, and in every particular maintained its high reputation for the excellence of the stock penned. The sale was brisk, lambs fetching from 22*s.* to 40*s.*, and ewes sold readily at from 32*s.* to 55*s.* per head.

WEYHILL FAIR.—There were 165,000 sheep penned on Monday. The *Hampshire Chronicle* computes the number at 150,000. The statement published by a daily cotemporary that "between 300,000 and 400,000 hurried in for sale," is not correct. The greatest number ever exhibited at Weyhill was in 1846, when over 200,000 were penned. Last year there were only 155,360. There were this year but very few Dorsets (not worth quoting), and hardly any Somersets. The following are the prices obtained, as far as could be ascertained by a competent authority: Of the Hampshire downs lambs appeared to be most sought after; some pens were so fine that they fetched from 46*s.* up to 54*s.* per sheep, next in quality making from 40*s.* to 45*s.*, inferior 34*s.* to 38*s.*, poorer from 30*s.* to 32*s.* Ewes in lamb, best from 48*s.* to 56*s.*, second-rate in size, &c., 42*s.* to 46*s.*, smaller 40*s.* to 42*s.*, inferior 30*s.* to 36*s.*; tegs, best from 50*s.* to 52*s.*, next in quality 46*s.* to 48*s.*, small 42*s.* to 44*s.*; wethers, fat from 48*s.* up to 50*s.*, second-rate 32*s.* to 40*s.*; rams for sale or letting for the season at from 10*l.* up to £40. Sussex Downs were also very fine, some making nearly as much as the Hampshire breeds; some fine pens of lambs making from 40*s.* to 48*s.* each, ewes in lamb from 42*s.* to 46*s.*, wethers 36*s.* to 44*s.*, tegs 34*s.* to 42*s.* Wiltshire ewes, at from 38*s.* to 44*s.*; lambs, 30*s.* to 38*s.*; tegs, 30*s.* to 36*s.*; wethers, 32*s.* to 40*s.* Dorsets were sold at the same prices as at Appleshaw fair. Poorer sheep of every breed were sold at less money than the above-named figures. The best flocks were sold at from 3*s.* to 5*s.* per sheep more money than the same description and breed sold for in 1858.

TUESDAY. There was an immense assemblage of persons interested in cattle. Business was active for superior qualities of stock, and the best description of horses and cart colts readily found buyers, the prices of which were as undermentioned: Horses for riding and road and cover hacks sold at from 25 to 36 guineas; young horses of high blood for the field (hunting) made from 40 to 60 guineas; weight-carrying cobs, 20 to 35 guineas; fashionable young horses for double harness, 48 to 55 guineas; well made strong young horses for road and machine work varied in price from 25 to 40 guineas. Cart horses, young horses, well-shaped and easy walkers, were selected at from 38 to 48 guineas, and destined for London work. Cart colts ranged in prices from 25 to 35 guineas, and yearlings 12 to 15 guineas. Welsh ponies fetched from 6*l.* to 10*l.* each, and Hampshire Forest colts, 8*l.* to 12*l.* In the stock field well-bred cows, full milch, made from 17*l.* to 20*l.*; ditto, plain bred ditto, 12*l.* to 14*l.* Alderney cows, 10*l.* to 14*l.* Good steers for stalling, 11*l.* to 16*l.* Fat bullocks and ditto heifers made 17*l.* to 22*l.* Yoke oxen for farming work made from 36*l.* to 40*l.* per pair. The Welsh cattle droves sold off slowly, steers making 10*l.*, heifers 7*l.* to 9*l.*, and cows, calving down or in full milk, £9 to £12.

WEDNESDAY. The number of pockets of hops pitched this year exceeds that of last fair, and will nearly approach 5,000. London was largely represented by hop-factors and merchants, and he chief brewers sent agents. At the commencement of the fair very few sales were effected. Hop-growers asked an advance on recent prices made at country markets, &c., and buyers being unprepared for this step on the part of hop-planters, business began slowly. Large growths were purchased on speculation, and will be retailed out. Sussex supplied some well-grown and well-preserved hops. Kent brought pockets of her choicest gatherings, which met a good inquiry. Mid and East Kent obtained the highest price. Wealds commanded a sale at late prices. Worcester and country hops were in request, although prices asked prevented active business. Farnhams, as usual, formed the chief attraction of the hop fair, and the eager demand for this description of hops caused good prices to be made. The samples were in excellent condition. The annexed were the prices made: Sussex, fine growth from choice plantations, made £3 to £3 10*s.* per cwt., and many growers held over rather than make abatement; Kent hops, Wealds, sold at £3 10*s.* to £3 18*s.*, and £4 per cwt., Mid and East Kents realising £4 to £4 10*s.*, and £5 per cwt.; Worcester and country pickings varied in price from £3 12*s.* to £4; Farnhams fetched £5 18*s.* to £6 6*s.*, and primest samples £7 per cwt. In the aggregate a large amount

of business was transacted, although there was no activity displayed, as business was principally in the purchasing of whole growths, and which will be subsequently submitted for sale in lesser proportions; in fact, the fair cannot be said to be more than formally opened, and hops are still being brought up. The chief discussion among hop-growers, factors, &c., was in reference to duty to be paid on hops of this year's growth: that it will reach £280,000 is now settled without doubt, and competent authorities compute the duty to be paid to the Government at £285,000, and several bets were laid at odds that the duty will come up to £290,000.

WOODBIDGE FAIR.—The number of beasts exceeded that of the previous year, particularly in polled Scots, which were brought forward in great numbers, owing to the short crop of turnips in Scotland, and the general large amount of all kinds of feed in this district. Messrs. Fenner, Strachan, and Little, had the largest stands of Scots, for the very primest of which £12 to £14 per head was asked. Mr. Munning's Shorthorns were very fresh in condition, and £22 each was demanded. Sheep few in number, as were also colts and horses.

WOOLER FAIR.—In the sheep market there was under an average show, but business was brisk, and almost every lot was cleared off the ground early. Prices ranged as follows: Leicester dimmots 40s. to 46s., half-bred ditto 34s. to 38s.; Cheviot widders 25s. to 32s.; Leicester ewes 38s. to 42s., half-bred ewes 32s. to 36s., Cheviot ewes 18s. to 24s. Over 1,000 head of cattle were shown, and sold readily at prices which astonished and intimidated many intending buyers.

Two and a-half year olds brought from £12 to £16, one and a-half year olds from £6 10s. to £9, six month calves from £3 10s. to £5. Cows were not numerous, but sold readily at prices ranging from £10 to £18. There were not many first-class horses shown, and prices did not appear to suit vendors. The number of pigs was below an average. The prices ranged from 15s. to £2 a-head.

WORKSOP FAIR.—The supply of sheep, chiefly ewes, was very large. But few lambs were shown. Useful sheep sold from 35s. to 42s. There was a very fair show of beasts, scarcely any fat, which were slow of sale. The horses were more numerous than usual, but nothing first-rate. Although the fair was immensely stocked, not much business was done.

IRISH FAIRS.—**BALLINAY** was the best business fair which has taken place for some time in Co. Monaghan. Beef scarce and in demand; top price, 60s. per cwt. Dry cattle and springers were in excellent demand; two-year-old store bullocks fetched from £7 to £8 per head; three-year-old heifers from £7 to £11; yearlings, £5 to £8. Anything fat in the sheep market brought full prices, and nothing in condition left the fair unsold. Bacon and pork had a downward tendency, 45s. per cwt. being the average price for best bacon. Young horses fetched from £30 to £60. **BALLINAKILL.**—There was a large supply of stock, principally store cattle, and store bullocks were particularly in demand. **DUNAMONA** was well supplied with cattle, and anything in condition realized good prices.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

October has passed away, leaving a record of the greatest heat and severest cold known in that month for a long period. Vegetation continued in vigorous progress up to the 21st, when four days of hard winter suddenly came upon us, cutting up the young growth of evergreens, and bringing on a rapid fall of the leaves. The frost has, however, done service as a preparation for seeding the ground where the soil was wet and heavy, and thus may serve to hasten on the autumnal sowings. These have already commenced in the lighter soils; but the scarcity of fine samples for this purpose was never more severely felt, occasioning a large demand from Scotland, where they are more plentiful, and thus the Scotch farmers, who have suffered from drought, will find an unexpected benefit. The more the English crop is thrashed, the less satisfactory does it prove, both in quality and yield; and were it not for the stocks of old on hand, nothing could prevent a material rise, as our neighbours, the French, are this season in much the same state as ourselves, and have quite ceased sending us important supplies, in consequence of the steady advance in their markets. Yet the general arrivals of foreign, both from the Black Sea and Baltic, have been more than sufficient for present wants, and therefore have checked the upward tendency of prices, though all these shipments have lost money where sales have taken place. The advance of the month can scarcely be said to exceed 1s. per qr., and even this is not fully apparent in the averages; but it must be remembered that since the damp and rainy weather, the condition has been seriously going back, perhaps fully

2s. per qr.; so that a small rise, with a much deteriorated quality, looks well for the future, when the frost shall have dried the grain, and foreign shipments shall be less liberal. As there has been an advance in many foreign markets, irrespectively of the state of prices in Great Britain, and as even America, which began to be feared as a large exporting country, shows a great diminution in the receipts at New York this year as compared with last, even to the extent of 1,800,000 barrels of flour, the case is plain that the Western farmers are dissatisfied with present rates, and do not mean to send liberally, except under monetary pressure or the inducement of better prices. Neapolitan wants and the political excitement throughout Italy serve to keep up the Mediterranean markets; and Spain, which lately was calculating on some export trade as the consequence of a better crop, still keeps up a range of prices, which quite renders such a thing improbable. It is, therefore, rather in our own stocks, both of foreign and of old English, that a hindrance is at present found to any important advance; but as these are pretty well balanced by the great increase of population as well as of commerce, we expect the turn of the year will open brighter upon farmers, and that there is some prospect of a yet earlier improvement.

The following quotations, as received from foreign markets, will show the relative state of wheat prices. The French markets stand thus:—Nantes top price 43s., Toulon 46s., Paris 46s. 6d. per qr. In Belgium, Louvain new was 46s., old 48s., red at Antwerp 47s. At Amsterdam prices ruled 35s.

to 54s., there being much of low quality. At Hambro', Holstein 63lbs. wheat was worth 46s., Marks to 47s., Wahren red 48s., Königsberg and Berlin fine mixed 48s. to 49s., Danzig to 50s., Stettin red 43s., Petersburg, Saxonsky 42s. per qr. Odessa ranged from 35s. to 43s., and over for the best samples. Taganrog and Berdianski for soft wheat about 38s. At Smyrna as high as 42s. was paid. In Alexandria the inferior Behara brought 31s. 6d. In Naples red wheat was worth 47s. In Spain, the top quotations at Santander was 55s.; at Barcelona 66s. The New York market still quoted equal to 50s. per qr. for white Kentucky, weighing 62lbs. per bush.; and in Chicago itself the light spring wheat was worth 27s. per qr. of 48lbs.

The first Monday in London opened on a light foreign supply of wheat, and only an average one of home-growth. There were but few additions from Kent and Essex in the course of the morning, and these samples were unusually bad in condition. The few parcels of fine on show brought fully the former quotations, all inferior sorts being difficult to quit at the same money. Millers were, indeed, obliged to seek the fine quality at the foreign stands, where heavy and sweet descriptions obtained fully the previous Monday's prices. The country advices this week were very nearly agreed. Spalding, Norwich, and Bristol, with a few other places, quoted an advance of 1s.; but Louth was dull. At Liverpool an advance was attempted on Tuesday, which did not succeed, and the closing market was unaltered, London only being firm.

The second Monday had better foreign supplies, with about the usual quantity of home-growth, the near counties again sending up but few samples, and those inferior. There being a fair inquiry for dry English, the lots of such that could be found were taken off at 1s. per qr. improvement, and there was a retail inquiry for a good foreign at nearly an equal advance, but bad-conditioned English, as well as light, were not dearer, but slow to sell. The same agreement as noted last week ensued in the country markets, on this occasion there being a general advance of 1s. per qr. Gainsborough and Melton Mowbray advanced 1s. to 2s. per qr.; but Hull, Leeds, and Newark, were only rather dearer. Liverpool succeeded in establishing a rise, on Tuesday, of 4d. per cental on wheat; but Friday only confirmed previous rates.

The third Monday opened on a heavy arrival from abroad, though the home-supplies were only moderate. Kent and Essex in the course of the morning sent up but very few samples, and those poor specimens of the last growth. There were large seed orders on hand, which for want of quality could not be executed, though buyers were prepared to pay full rates for warranted sorts. Prices were with difficulty maintained, and the foreign trade was subdued in tone, in consequence of the plenty offering only picked parcels going off in retail. There was again very little difference from the London report in the state of the country markets, but Bristol, Gloucester, and Daventry showed more firmness than other places. Liverpool, though well attended on Tuesday, was rather

worse than better, and on Friday there was a very languid trade.

The fourth Monday had a moderate English and large foreign arrival. Essex and Kent this morning sent up a rather better supply, of improved quality and condition. Still millers, not overlooking the abundance of good foreign, were but slow buyers at the previous rates; inferior sorts not being placed at the close of the day. Throughout the country this week the markets were unaltered, including Liverpool; and where lower prices were offered they were resisted by farmers.

The flour trade throughout the first four Mondays of the month has very little altered. Notwithstanding the great falling off in foreign imports, more especially from France, the advance on Norfolks has only been 1s. per sack, occurring on the third Monday; but with better supplies on the following Monday the upward movement ceased. The cessation of French imports is not to be wondered at, as almost every shipment produced a heavy loss. Fine American would no doubt bring good prices; but the United States markets seem to preclude the expectation of seeing first quality in London, as the best Genessee and Missouri are worth 7 dols. per brl. at New York, or 41s. 6d. per sack of 280lbs. free on board—to which must be added freight duty, factorage, and expense; while our own highest quotation is 43s. per sack for town-made. The better descriptions of French are worth about 36s. 6d. per sack at Paris, and will scarcely bring that price, duty paid, here. The four weeks' imports into London have been 32,826 qrs. English wheat, 71,906 sacks flour, with 65,205 qrs. foreign wheat, and only 600 sacks flour—against 28,517 qrs. English wheat, 66,945 sacks country flour, and 49,431 qrs. foreign wheat, 4,402 sacks 2,308 brls. foreign flour in the same time last year; the present deficiency in flour at London has, therefore, been more than made up in wheat. The imports into the kingdom for Sept. last were 180,899 qrs. wheat, 120,736 cwt. flour; in Sept., 1858, they were 306,812 qrs. wheat, and 196,184 cwt. flour.

The barley trade during the first four weeks of October, with increasing receipts, both English and foreign, has been very steady as to prices, or rather improved, more especially for the best and lowest sorts. Malting qualities of English growth have come very sparingly to the London market, but there have been fair supplies from Scotland, and the Saale qualities from Hambro' have been well approved, some recent shipments of the latter being very fine, for which 40s. per qr. has been demanded by factors; still it is found high prices make a slow trade, and there is a great deal of second-rate malt on hand difficult to quit. Middling qualities of English growth have all along been very dull, with uncertain value, but the low rates of Odessa descriptions have made ready sales; in these latter there seems likely to be no reduction, and the scarcity of the best malting will probably command high prices till the end of the season. The imports into London for four weeks were 22,883 qrs. British and 35,993 qrs. foreign—against 13,220 qrs. British, and 67,098 qrs. foreign in October, 1858. The imports into the kingdom

The trade in cloverseed has scarcely begun, dealers here having waited for a more favourable state of the foreign markets, and hitherto they have

PRICE.	Sept. 10.	Sept. 17.	Sept. 24.	Oct. 1.	Oct. 8.	Oct. 15.
42s. 9d.	..	..	..	..	..	..
42s. 6d.	..	..	..	..	..	..
42s. 5d.	..	..	..	..	..	..
42s. 1d.	..	..	..	..	..	..
41s. 11d.	..	..	..	..	..	..
41s. 10d.	..	..	..	..	..	..

PRICES OF SEEDS.

BRITISH SEEDS.

MUSTARDEED, per bush., new 12s. to 16s., brown 12s. to 16s.	
CORIANDEER, per cwt.	14s. to 16s.
CANARY, per qr.	58s. to 62s.
TRIFOIL, new, 24s. to 26s.	
TARNS, Winter, new, per bushel. 7s. to 7s. 6d.	
LINSEED, per qr., sowing —s. to 60s., crushing 54s. to 58s.	
LINSEED CAKE, per ton £9 10s. to £10 10s.	
RAPSEED, per qr., 54s. to 58s.	
RAPSEED CAKE, per ton £9 10s. to £6 0s.	

FOREIGN SEEDS, &c.

CLOVERSEED, red —s. to —s. white —s. to —s.	
TRIFOIL, —s. to —s.	
HEMPSEED, small, 38s. per qr. Dutch —s. to 38s.	
CORIANDEER, per cwt. 16s. to 18s.	
CARRAWAY, 86s. to —s.	
LINSEED, per qr., Baltic 52s. to 56s. Bombay 58s. to 50s.	
LINSEED CAKE, per ton £9 10s. to £11 0s.	
RAPSEED, Dutch 54s. to 58s.	
RAPSEED CAKE, per ton £9 10s. to £6 0s.	

HOP MARKET.

BOROUGH, MONDAY, Oct. 24.—Our market has been somewhat inactive during the past week, and prices, except for the finer descriptions, may be written a shade lower.

Mid and East Kents	84s., 112s., 147s.
Wealds	60s., 68s., 76s.
Sussex	58s., 62s., 65s.

MEASE AND WILD.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, Oct. 24th.—Since our last report the arrivals of Potatoes, coastwise and by railway, have been seasonably extensive, and in fair condition. On the whole, a steady business is doing, as follows:—

Essex and Kent	80s. to 110s. per ton.
York Regents	70s. to 100s. "
Scotch	70s. to 90s. "
Lincolns	90s. to 100s. "

COUNTRY POTATO MARKETS.—YORK, Oct. 15: Potatoes sell at 5d. to 5½d. per peck, and 1s. 8d. to 1s. 10d. per bushel. LEEDS, Oct. 18: The supply of Potatoes has again been limited, and prices on the advance, 7½d. to 9d. wholesale, and 9d. to 15d. retail per 21lbs. RICHMOND, Oct. 15: Potatoes, 2s. per bushel. KNARESBRO', Oct. 19: Potatoes, 7d. to 8d. per 21lbs. MALTON, Oct. 15: Prices had an upward tendency. MANCHESTER, Oct. 18: Potatoes 5s. to 10s. 6d. per 252lbs.

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Oct. 24.—The present cold weather imparts a firmness to our market, and fresh made butter is the turn dealer than it was last week.

Dorset, fine	per cwt. 120s. to 124s.
Middling	" 98s. to 104s.
Devon	" 112s. to 114s.
Fresh	per doz. lbs. 13s. to 16s.

CARMARTHEN BUTTER MARKET, (Saturday last.)

—A remarkably small supply of Butter to market this day, in consequence of which, and a fall of snow, with severe frost, prices hardened up to 11½d. to 11¾d., which the farmers freely obtained. We do not look for any reaction in price this season; and a continuation of this weather will soon drive our market up to 112s. per cwt.

CORK BUTTER EXCHANGE, (Saturday last.)—The

supplies for the week were fair, averaging 2,000 firkins a day, being about 1,000 under last week. The demand was very brisk, and prices advanced from 2s. to 6s. during the week. Firsts, 110s. on Monday, went up to 112s. on Wednesday, and to 114s. on Friday; seconds advanced from 146s. to 112s.; thirds, from 95s. to 97s.; and fourths, from 85s. to 87s., during the week. The market is still firm, and prices are likely to be steady. Some holders are getting into stock.

HEREFORD.—Good Gloucester cheese, both double and single, was scarce; the price ruled from 6d. to 7d. per lb., according to quality. Cheddars were largely on offer, from 6d. to 6½d. per lb.

WOOL MARKETS.

ENGLISH WOOL MARKET.

LONDON, MONDAY, Oct. 24.—There is rather more business doing in English wool for export purposes, at full prices, but the transactions for home use have continued on a very moderate scale. Holders generally are firm, and the favourable result of the public sales at Liverpool is likely to impart a steadier tone to the market, which, for the most part, is fairly supplied.

Per pack of 240lbs.

Fleeces—Southdown Hogs	£18 10s. to £19 10
Do. Half-bred Hogs	18 10 19 8
Do. Kent	17 10 18 0
Do. Southdown Ewes and Wethers	17 0 17 10
Do. Leicester do.	16 0 17 0
Sorts—Clothing, picklock	18 10 19 0
Do. Prime and picklock	17 10 18 0
Do. Choice	16 0 17 0
Do. Super.	14 0 15 0
Do. Combing—Wether matching ...	20 0 21 0
Do. Picklock	17 0 18 0
Do. Common	14 10 15 10
Do. Hog matching	23 0 24 0
Do. Picklock matching	17 10 18 10
Do. Super do.	14 10 15 10

LEEDS (ENGLISH AND FOREIGN WOOL MARKETS), Oct. 21.—There is an undiminished consumption of wool in the worsted and woollen mills of the West Riding; and there is consequently great confidence in the present prices being fully maintained, although the demand in the warehouses is not characterised by any remarkable activity. For low wool there is a good demand, and some sorts are not easily met with.

LIVERPOOL WOOL MARKET, Oct. 22.

Laid Highland Wool per 24lbs.	s. d. s. d.
White Highland do.	15 6 18 0
Laid Crossed do. unwashed	15 6 16 9
Do. do. washed	16 0 18 0
Laid Cheviot do. unwashed	17 0 19 6
Do. do. washed	21 0 26 0
White Cheviot do. washed	24 0 40 0

FOREIGN AND COLONIAL WOOL MARKET.

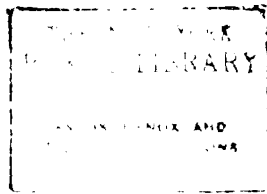
German, { 1st and 2nd Elect.	s. d. s. d.
Saxon, { Primus	3 4 to 4 6
and { Secunda	2 4 3 0
Prussian, { Tertia	2 0 3 4
COLONIAL:—SYDNEY—Lambs	1 8 1 10
Scoured do.	1 10 2 24
Unwashed	1 2 2 11½
Locks and Pieces	0 7½ 1 4
Slips and Skin	0 11 1 10½
PORT PHILIP—Lambs	1 5 2 4
Scoured do.	1 2 2 9½
Unwashed	0 6 1 7
Locks and Pieces	0 8 1 10½
S. AUSTRALIAN—Lambs	1 8 1 9½
Scoured do.	1 3½ 2 6
Unwashed	0 4 1 3½
Locks and Pieces	1 1 1 2
V. D. LAND—Lambs	1 6 2 5
Scoured do.	1 7 2 9
Unwashed	0 9½ 1 6
Locks and Pieces	0 8 1 10½
CAPR OF GOOD HOPE—Fleeces	1 1½ 2 2
Lambs	1 2 2 0½
Scoured	1 2½ 2 1½
Unwashed	0 7½ 1 5

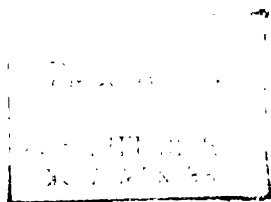
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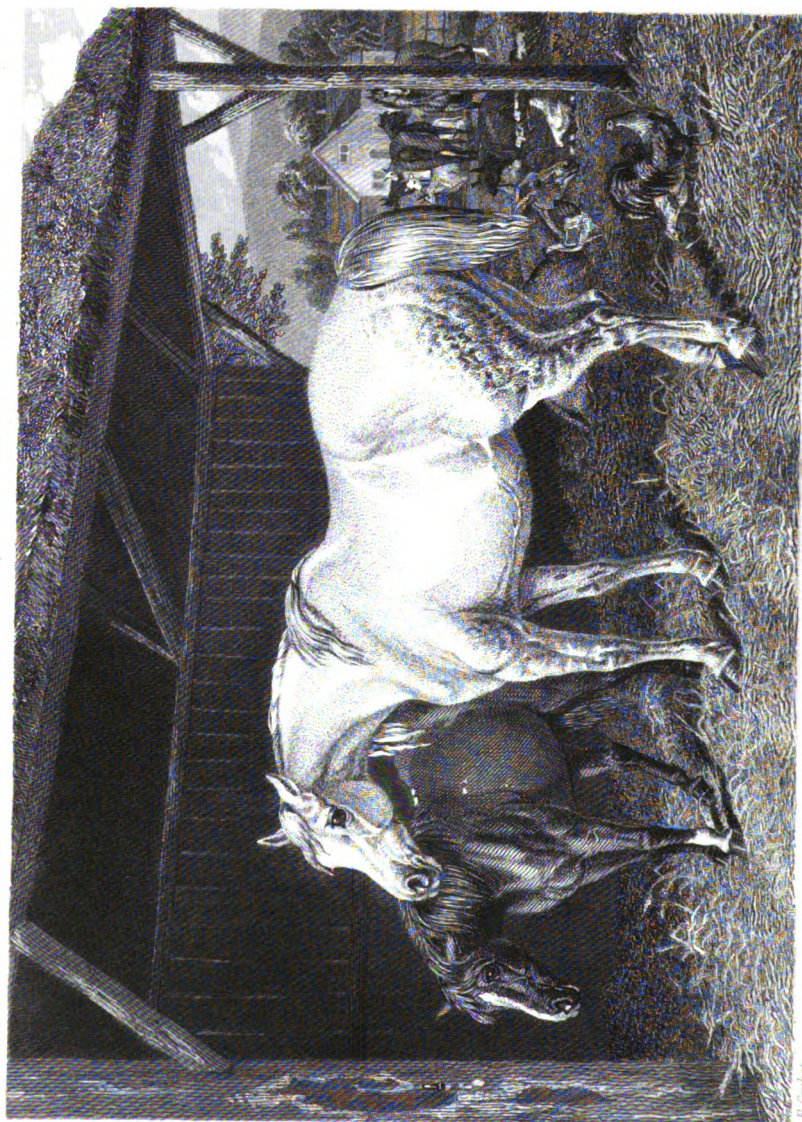
PERUVIAN GUANO, (current of GUANO, &c.)	£12 5 6 to £6 0 0
Do. Do. (under 30 tons)	12 12 0 13 5 0
KOORIMOOIRIA GUANO, (48 per cent. Phosphate and 4 per cent. Ammonia)	6 0 0 6 10 0

Nitrate Soda (per ton)	£15 10 0 to £16 0 0
Nitrate Potash or Saltpetre	32 0 0 33 0 0
Sulphate Ammonia	14 0 0 15 0 0
Muriate ditto	20 0 0 26 0 0
Superphosph. of Lime	5 10 0 6 0 0
Soda Ash, or Alkali	11 0 0 12 0 0
Gypsum	1 10 0 2 0 0
Coprolite	2 10 0 3 0 0
Sulph. of Copper or Roman Vitriol, for Wheat	28 0 0 to 32 0 0
Do. do. 1st quality	32 0 0 33 0 0
Do. 2nd quality	32 0 0 33 0 0
Do. 4-inch	0 17 6 0 19 6
Oil Vitriol, concentrated, per lb.	0 0 1 0 0 0
Do. Brown	0 0 0 0 0 0

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E. H. Fisher

The White Horse

London: Published by J. B. Whittier & Co. 1847.

E. Carter

THE FARMER'S MAGAZINE,

DECEMBER, 1859.

PLATE I.

A PRIZE SHORTHORN HEIFER;

BRED BY MR. J. W. BROWN, OF UFFCOTT, SWINDON.

This heifer made some sensation at the two great Christmas Fat Cattle Shows of last year. At Birmingham she took the first prize of 10 sovs. for Shorthorn heifers, with the silver medal to the breeder; and at the Smithfield Club Show the week following, another first prize of 15 sovs. for Shorthorn heifers, with another silver medal to the breeder, and the GOLD MEDAL as the best cow or heifer in any of the classes. It was thought by many good judges that she had not full justice done her at the Midland Counties Meeting, and certainly the award in London would go to confirm this; as the heifer beat here "the best Shorthorn" and gold medal cow of the Birmingham entry. There was, however, unfortunately but little opportunity for the public to make a second comparison, as Mr. Brown's heifer was suffering from disease almost from her arrival in Baker-street, and of course, had at once to be removed from the yard. This was the more to be regretted, as she was really a beautiful heifer, showing a very happy union of symmetry and quality. In fact, her touch was finer than one would have almost supposed from a rather short pedigree. Still, on one side she was by Mr. Stratton's well-known Waterloo (11025) out of one of Mr. Brown's own cows, also the dam, we believe, of Mr. Brown's prize bull, Salisbury. The Smithfield heifer was just upon four years old at the time she was shown.

The gold medal heifer came as a very good prologue to the Uffcott sale of Shorthorns in October last, when some fair prices were realized. The herd was never a very large one, and Mr. Brown has now quite given up this branch of breeding; intending for the future, as he writes to us, to devote himself entirely to the breeding of the well-known Hampshire Down sheep. Amongst these, also, he has achieved some well-merited success. In fact, Mr. Brown has always been more of a sheep man, and one of his most famous rams took a gold medal at the Great Paris Agricultural Exhibition in 1856.

PLATE II.

THE GAFFER'S GREY.

We recognize in the Gaffer's Grey that useful creature, the farmer's maid-of-all-work, and we should say by appearances it was her Sunday out. On what other day should we have a chance of finding her idle? If the Gaffer is not riding her round the farm, or driving her to market in the light-cart, she is at bush-harrow in the long meadow, in the hay-making machine, or gone to the mill with a sample-sack of the wheat close. Or Ben, another jack-of-all-trades, has taken her to the Post-office, or to Farrier Bolus to get a drench for the Shorthorn. If she is not thus employed, then Gaffer Giles has taken her to the County Assizes, or to meet the foxhounds at Furze Gorse, or to make a round of calls with Lord Oily Gammon—his M.P., as the Gaffer styles him, having given him his vote—whom he compliments continually on that celebrated speech his Lordship had in his hat, on the hustings. Or they are at a ploughing match, a fair, or cricket match: or the Gaffer has been appointed judge at some local coursing meeting—or, whom do you see riding up the avenue on the grey, with his gun over his shoulder, on some great day at the Earl of Battue's, but Gaffer Giles once more? Then, on getting to the Round Hills, or "The Black Pig" in a hoar or white frost half an hour before time, and almost beginning to think the groom really spoke the truth, when he told us, on leaving home, there would be no hunting, with what delight have we hailed the Gaffer and his Grey coming round the corner just as the sun broke out, by the side of the old Squire, in the middle of his merry little pack! And for a near cut home, who knew all the weak points in the fences, every bride-way, ford, or line of gates within a circuit of twelve miles of the Valley Farm, better than the Gaffer and his Grey? It being Sunday, and having but a thin pair of boots on, you must excuse our walking round the yard, but you will find the Shorthorns in a shed at the back, and the bull in an adjoining one, so just look out that he don't pin you against the wall. If hungry the Gaffer will be returning from church in a quarter of an hour, and we will warrant you have an Old England welcome to the roast beef and plum-pudding.

THE HERDS OF GREAT BRITAIN.

CHAPTER XII.

MR. STIRLING'S, OF KEIR.

Rain and mist ruthlessly pursued us, as we wandered, note-book in hand, last September, amongst the English herds; and Scotland was doing itself ample justice in this respect, when, fresh from those "beeves of Cumberland," so renowned in Border story, we alighted at the Bridge of Allan, and went on our way to Keir. If a Southron eye had cared to gaze on that wide-spread carse of Stirling, where St. George's cross met St. Andrew's in

"As red and rude a fray,
As o'er was proof of soldier's thaw,
Or theme for minstrel's lay,"

well nigh six hundred autumns ago, it would have had no scope that morning. We could scarcely discern the proud old Castle and Craig landmarks, which still bear their mute witness to the meeting of those mighty hosts, when the plough-share no longer turns up the rusty pike-head, and even the memory of the "battle sheaves" has died away; but Dunmyot shrouded itself less sullenly behind us, and we caught occasional glimpses of the bleak range of the Sheriffmuir Hills, with the little homestead of Pendreck clinging to their side.

Gallows Hill, where many a "neck verse" has been sung, was on our right, directly facing the entrance of the Keir avenue, and then a ride of another mile brought us to the Mains, the pleasant residence of Mr. Young, the factor of the estate. Keir includes about 1000 acres within its policy wall, and nearly the whole of it is in Perthshire (the Yorkshire of Scotland), which Mr. Stirling represents in Parliament. The annual draft roup, which is chiefly confined to shorthorn bull calves, Clydesdales, and Leicesters, was just over, and the herd only numbered twenty-five cows and heifers and two bulls. Its commencement dates from 1852, when Blencow (11,182), of the Gwynne tribe, and bred by Mr. Troutbeck, was purchased. Four or five cows, of the Sweetlips tribe, from Mr. Boswell's, of Balmutto, composed the germ of the females, which have been gradually strengthened by heavy purchases at Sir Charles Knightley's, Mr. Ambler's, and other breeders' sales, as well as by private contract. When Blencow passed into Mr. Harvey of Pinkston's hands, his place was taken by Leader (11,674), of Mr. Milne of Faldonside's breeding; and in 1855 Mr. Fawkes's yearling bull, John o'Groat (13,090), by Bridegroom (11,203), joined the herd for 200 gu., after he had been placed second to Master Butterfly at "cannie Carlisle." Mr. Fawkes stipulated that he should be shown at the Yorkshire Society's Meeting that summer, and the first honours which he won there received an accession at the Glasgow Society in 1856, when he was awarded the silver medal as the best bull in the yard. In the following summer he was the first

prize aged bull at Salisbury, and when Glasgow had again handed him her prize ribbons, he was seen in public no more.

The pleuro disease broke out that autumn, and no less than 22 cows of the herd died after John o'Groat, who wasted very slightly during his month's illness, and just saw the new year in. He had served some cows belonging to neighbours at 10 gu. each, and several of the Keir survivors, so that the blood of what so many judges have declared to be "one of the very finest big bulls ever seen in a show-yard," has left its mark in Scotland. The heifers are large, thick-fleshed, and slightly long on the leg, and generally very easy to distinguish from their family resemblance to him about the head, and peculiar mode of holding it straight out. His calves made a very high average at the Keir roup in his Salisbury year; one of them, Marble Cutter, from Young Carrara by Blencow, reached 200 gu., and was shortly afterwards sold to the Australians at a fifty-guineas advance; while a queer calf went for eighty-two. There were then some negotiations with Mr. Richard Booth for Sir Samuel, but the disease (from which the herd has been free for eighteen months) was too recent to risk him, and consequently Hiawatha (14,705), by Captain Balce (12,546) from Playful, and a brother to Lady of Athelstane,—who had been purchased in the preceding year at 200 guineas, from Mr. Douglas, has been solely in use for two seasons. He had in that gentleman's hands beaten Col. Towneley's Fred, and Sparrow Hawk, Mr. Ambler's Museum, Sir James The Rose, and a long row of bull calves, at Rotherham; and in 1857, he was shown in the Keir lot, along with John o'Groat, Miss Nightingale, and Windsor Flower, at the Highland Society's Meeting, at Glasgow. This is the only occasion on which Mr. Stirling has entered the Highland Shorthorn lists, and then both his bulls were placed first in their classes, and Miss Nightingale third to Rose of Athelstane and Ringlet. So far he has won a large number of prizes at Glasgow and other local shows; but John o'Groat is the only Shorthorn that he ever sent to have a battle royal in England. Ayrshires are also kept for the dairy; and the Park is well stocked with bullocks, and Leicester sheep, which have been principally crossed from the flocks of Lord Polwarth, and Messrs. Brown of Burton, Roy of Menthory, Carter of Richmond, and Simpson of Blainallie.

The breeding of Clydesdales, which is also a great feature at Keir, is contemporaneous with that of the Shorthorns, and, foals included, the stud cannot number less than sixty. Twenty-five of them are brood mares, which are generally put to the horse at three. The Suffolks have totally failed to strike root in the hearts of the Scottish husbandmen. In vain did Mr. Stirling purchase a clever pure-bred chequut, by Crisp's Cap-

tain; and give 120 gs. for a chestnut mare, daughter of Catlin's Duke, and an Ipswich prize-winner to boot. They said that they had too much roundness of bone, and a lack of freedom of step, and that the mists affected their eye-sight. A little carter (whom of course we addressed as "Sandy," at a shot) took up this last position, and stuck to it as stoutly as if he had been an oculist. The Clydesdales we saw here measured from sixteen-three to fifteen-two, but they like them all sixteen if possible. Clyde, the sire of most of the young stock, had been purchased from Mr. Samuel Clark, of Kilbarochan, and sold for 150 gs. to The Speaker; and we heard that the Duke of Richmond had lately given Mr. Stirling 70 gs. for a two-year-old filly, and the Earl of Airlie, 10gs. more for another. "Jean," the dam of the Duke's filly, met us in company with "Star," "Bet," and the fair "Sally," who was first at Perth, and second at the Highland Society. In fact, nearly all the twelve working on the farm seemed to have worn the prize ribbons some time or other, and one mare, past or present, had been decorated sixteen times.

Crossing the road from The Mains, hard by the ploughmen's cottages, we reached, by a gentle ascent, that admirable new farm-stead, with which they were so truly in character. Mr. Stirling has already spent three anxious years watching the progress of his plans, and the summer of '61 will barely see them completed. The cost is computed at about £8,000, including the clock tower, which is lined in the interior with polished ashlar work. It is built of the freestone of the country, and the floors are laid with Arbroath flag, neatly and closely pointed upon six inches of stone metal. Nearly the whole of the interior walls are lined, like the tower, for about six feet, and beyond that with squared rubble, which avoids the necessity of plaster, and does not afford vermin the faintest hope of gaining a settlement. The principal entrance is at the north-east corner, near the granary. Beneath it, on the east range, comes the cart-shed fitted with grease-pot niches; the water-tank in its rear, covered so as to be used for a store for farm implements not in use; the barn; the straw-house, and behind them, the saw-pit, the smithy, and the engine-house, on whose chimney the starlings were perpetually perched, while a gigantic fly-wheel was lazily resting against the wall beneath, and waiting for its eight-horse power engine. At the corner of the south range is a twelve-stall stable, eleven feet high, and divided in twain by a harness-room. Future Robin Burnes could have no more comfortable ingle to ruminate by, as the fire flashes cheerfully on the polished pine wainscoting; and the bump of order among the six must be feebly developed indeed, if with so many aids to neatness on the walls, they cannot keep their harness bright, and in its own domain. Each of them has also a separate bin, holding the exact weekly allowance of oats and beans. The stalls are nine feet by six, and iron-bound; the water (which is drawn from cocks in the stable), hay, and oats are all kept strictly to their three compartments in the manger, and the rope of the halter acts in a long

square tube, and is untied from below. The overseer's house forms the centre of this range, and is connected with the dairy, which is so contrived, that the sun can never strike the cream. Next in order are some loose-boxes, including one without corners for the especial use of a mare when she is about to foal. After a tour up the clock-tower stairs, at the south-west corner, to the future business room, we descended to the byre, which composes, with the cowman's house, the whole of the west range. The byre itself is 128 feet 6 inches long, and is so constructed that it may very easily be divided into three. It is built for thirty-two cows, which stand, two-and-two, in stalls of polished flag, each with an iron rack of its own, which is filled by the aid of the tram-road in front. On the north side are the piggeries, the calf-houses, and the lumber-shed; and although at present there is no trace of them, 15 loose boxes and two bolting-houses are to be built in the centre of the square, and encircling the manure-heap. The latter will be so constructed as to be covered or not at pleasure; and the contents of the adjacent urine-tank will be pumped on to it by means of the engine. The magnitude of the homestead may be judged of from the fact that the width of the roadway in the court, which will be paved with squared whinstone, is twenty-four feet. Of this, however, a small portion is taken up with the tram-road, which runs round it, and thus opens up a complete communication between the byre and the dung-heap. There is nothing peculiarly decorative about the buildings, with the exception of the tower, but devices and mottoes have been applied with no niggard hand. Each department bears an emblem of its contents in stone; and hence a stranger wandering only round the outside, can get all the bearings exactly. A horse's head—for which neither Clyde, Young Champion, Darkle, nor Audubon, son of Birdcatcher, could have stood to the sculptor—marks the stable; but Stella's and Lady Bountiful's heads have been copied by him for the cowhouse. A wheat and barley-sheaf crown the windows of the granary; and a brace of reaping-hooks and scythe-stones, crossed, are reserved for the door through which the sheaves are borne to the thrashing-machine. Mr. Stirling has well acted up to his family motto, "*Gang Forward*," which once or twice had its place with "*Poco à Poco*" (Little by little) on the walls; and "*Tak Time ere Time be tent*" speaks with apt and homely eloquence from the lucky clock-tower, which is unblest with an E. B. Denison's or a Barry's love.

From the future home of the Keir shorthorns, we then crossed the meadow to the present one. After doing duty for nearly a century, the site is shortly to be taken into the grounds; and the one old ash, which holds its solitary state, will have to yield its place at last to a Turkey oak or a variegated plane. But we are not among those far-famed garden terraces yet, and the peacocks, which are vulgarly hobnobbing with the "kain chickens," the white Dorkings, the small boar of Prince Albert's breed, and the first-prize sow at Glasgow—are only slight foretastes of it. After the structures we had just left, it seemed strange to commence our wanderings into the

ancient calf-houses, but we were soon in and out of three, which contained calves by Hiawatha, from Wellington, Laura Bell, and Rosy by Sir Charles (13705), the latter of a very clever stamp, and with a good eye and muzzle. The cows always lie out, and have no oil-cake or artificial food after May morning; but it was just milking-time, and we saw them at home. First and foremost among them was Drapery, a massive, short-legged cow, with good form, and much heavy flesh, but a trifle strong in the horn. She has only been shown once in her life, and then at Glasgow this summer, when she won the cow prize (beating Mr. Tod's royal prize cow, Volga), and the medal for the best female in the yard. She is by Grey Friar (9172), and was bred by Sir Charles Knightley, at whose sale Mr. Young purchased her for 100 gs., along with Chemisette (105 gs.). The latter died in the disease, but it quitted its hold of Drapery when she slipped her calf to the Duke of Cambridge (12742), and Stella adopted a similar style of recovery. Next to her was Laura Bell, by Phoenix (10608), (the winner of about twenty prizes, including firsts at the three nationals in one year), for whom Mr. Douglas bid up to 150 gs. at Mr. Chrisp of Hawkhill's roup. She has a great deal of character, but is perhaps a little high on the leg, and decidedly the tallest cow there. Rosanna, by Sir Charles Knightley's Lovemore (10476), and bred by Colonel Pennant, struck us as thick and well ribbed up, and with more style than the big and useful Eliza 2nd, who fetched the top price (100 gs.) at Sizergh. A nice forequarter and bosom marked Syllabub by Puritan (9553), who was bred by Mr. Harvey Combe, and bought at Mr. Grenfell's sale; and her bull calf by Hiawatha, who left Keir for 100 guineas, has since won the first prize and medal for young bulls at Dundee. Near her stood the white Lady Bountiful, rather less than the others, and a little high on the rump, but remarkably good in front. The gaudy style of Buchan Hero had been transmitted in a degree through three generations to Tanzy by Leader (11674), whose capital back and length made up for her being a trifle light in the twist. Heir-at-Law (13005) was represented by Young Sonsie, bred by Mr. Mark Stewart, of Southwick; and Miss Nightingale, by Grand Turk (12969), seemed a big well-formed cow, with nice quality and flesh, and inheriting all the fine length of quarter of her sire. She won six prizes in Mr. Ambler's hands; and Mr. Young, after bidding Mr. Torr up to 250 gs. for Britannia at the sale, purchased her for 200 gs. Twice over she was second to Mr. Ambler's own Lady Mary, and once, at the Durham County, to Mr. Booth's Queen of the Máy. There was Stella, too, a very excellent cow, bred by Mr. Syme, of Redkirk, with rarely covered huggins, good handling, and an enormous udder. A very creditable calf from her by Hiawatha was in an adjoining shed, along with one of three days

old from Syllabub, and the only light-coloured one that Hiawatha ever got.

On our way to the other byre, we looked in on Windsor Flower, a nice little cow, with a fine head and eye. She was purchased for 250 gs. from Mr. Wetherell, along with her Earl of Derby calf, which soon after died. Her stifle has been injured in service; but although she looks slightly out of bloom, her daughter by Lord Scarboro' (1845) is certainly no improvement upon her, and was quite thrown into the shade by the Princess of Cambridge, a well-haired, and thick-fleshed daughter of Chemisette. Next to her stood Minnehaha, by Heir at Law, who was purchased as a calf for 100 gs. from Mr. Douglas, and whose neat head and forequarters and well-spring ribs have been reproduced in her first calf, Langton, by Hiawatha. Among the John O'Groat heifers, we especially marked Anna Rose from Rosanna, a little plain perhaps in the quarters, but very thick-fleshed and promising; Cassandra from Topsy by Matadore (11800) is not so catching at first sight, but she is very good in her top, and promises to make a very slashing cow in time.

And so we left the old homestead, and strolled away beneath the quaint archway, with its *Salve* and *Vale* benedictions, amid trees from every tropic, and along hedges of golden holly, and finally through the house itself, in our search after Langton, Hiawatha, and the trotting horse. Passing by cabinets rich and rare, and the master-pieces of Velasquez and Murillo, we at last descried in a corridor the paintings of John O'Groat, Miss Nightingale, and Mrs. Diasaeli by Exchequer (9721), flanked by some Edinburgh prize West Highlanders and Elis and Touchstone. But night was fast drawing on, and we had no time to linger over canvas life. Little Duncan was in waiting, with his beloved Hiawatha, a very handsome long and low bull, perhaps a trifle slack behind the shoulders, and showing rather too much offal, but with a very sweet head, and long snugly-packed quarters. Besides his very promising son Langton, he had two other companions in the court yard, one of them Young Champion, a true inheritor, with his neat head and beautiful couplings, of the blood which ran in the veins of Shac-a-Bac, Old Shales, Tearaway, and the other Old Norfolk cob worthies. Equally good in his line was his neighbour on the other side of the archway, a white-faced two-year-old Clydesdale colt, who had just beaten a large field for the head prize at Perth, and is likely to have sixteen foals dropped to him next season at Keir. He was the last trace we saw of it, as he stood by chance in the morning the grand centre piece of the avenue gate, where his guardian was lingering for a bit of gossip; and thus we had the pleasure of leaving Scotland with one of its model bays fresh in our eye, and a hope that we might greet him again in his Perth form, among the Canterbury Pilgrims of next summer.

THE EARLY ENGLISH AGRICULTURAL AUTHORS.

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

That the early inhabitants of our island practised agriculture is well known. That the districts bordering on the English Channel were better cultivated than those of the interior of the island, we learn on the authority of Cæsar. After his expedition to England, B.C. 55, he described the Cantii, or inhabitants of Kent, and the Belgæ, inhabiting our counties of Hants, Wilts, and Somerset, as the most advanced of our island tribes in the habits of civilized life. They cultivated the soil, employed marl as a manure, stored their corn unthrashed, and separated it from the chaff and bran, only as their daily demands required. The interior inhabitants lived chiefly upon milk and flesh, being fed and clothed by the produce of their herds. "The country" adds Cæsar, "is well peopled, and abounds in buildings resembling those of the Gauls, and they have a great abundance of cattle. They are not allowed to eat either the hen, the goose, or the hare; yet they take pleasure in breeding them." Cicero in one of his letters remarks, "There is not a scruple of money in the island; nor any hopes of booty but in slaves"—a description that the industry and intelligence of succeeding ages have rendered singularly inapplicable.

Such are the earliest yet meagre allusions to the farming of our island, in our possession. There is no doubt but that our ancestors had more agricultural knowledge than we are always willing to believe. And that this skill in the art of tillage did not diminish in succeeding Saxon and Norman days, is equally certain. To the very earliest existing notices of the farming of saxon times I do not, however, propose now to direct the reader's attention. My intention is to commence these retrospective glances, with some of those writings or official notices which appeared from the ninth or tenth centuries, to about the year 1532—the year when old Fitzherbert published his work on the English farming of those days.

The conciseness and spirit with which these early English writers addressed their contemporaries is well worthy of our notice. They had evidently little faith in the effect of long arguments or half measures. Their works could only be known in manuscript. Printing was, in the days to which I refer, either unknown or merely rudely commenced. Our earliest authors therefore imitated, almost of

necessity, the terseness of our early lawgivers, who practised brevity to admiration. Now it is in the statute books of England, Wales, and the sister-kingdoms, that we find some of the earliest notices of the agriculture of our islands. And it is not only an amusing but an instructive inquiry to trace in these laws the primitive notions of our ancestors with regard to husbandry—how bravely former English senates endeavoured to teach farming by acts of parliament; tried to keep not only the prices of food below its market value, but of labourers' wages also; how they earnestly strove to protect his growing corn from vermin, from trespasses of all kinds, excepting game, and how they even endeavoured to teach the men of those times what they should eat, what clothes they should wear, and in what rural sports they should indulge.

Their very limited knowledge of the true principles of political philosophy, indeed, more recent senates have not always exceeded, and modern parliaments have rarely equalled in their laws even the vigor of those of the Houses of Plantagenet and Tudor.

The reader when he is following me through some of these early legislative writings, must remember that in those days the population of England was in all probability not much larger than that of London now. That the country was undrained, ill cultivated, and that only the richest portions of the land were enclosed, commons and forests occupying the remainder. Of the produce of that portion under the plough, every notice which has escaped to us betrays the poverty. For instance in 1387, on the manor farm of Hawstead in Suffolk, 66 acres of wheat produced 69 quarters of grain, 26 acres of barley yielded 52 quarters 2 bushels of seed. And about the same period the manor farm of Dorking, in Surrey, produced from 30½ acres of barley 41 quarters 4 bushels of grain, 28 acres of oats only 38 quarters 4 bushels.

The writers whose works I propose to hereafter notice, are Greathead or Grotehead and Fitzherbert. But previous to this it will be well to take heed of the laws which before and during their time were made to regulate the proceedings of the farmer.

The value of his corn nearly attracted the attention of our parliaments. In a statute supposed to have

been made in 1266, the 51st of Henry III., the municipal authorities of towns were thus directed: "First they shall enquire the price of wheat, that is to wit, how a quarter of the best wheat was sold the last market day, and how the second wheat, and how a quarter of barley and oats."

In 1360, by the 34th Edward III. c. 20, the exportation of corn was prohibited. It was 33 years after that time, that in 1398, by 17 Richard II., c. 7, all the king's subjects were allowed to export corn to any but to the king's enemies. This act was not repealed till the year 1603.

In 1436, 15 Henry VI., wheat was allowed to be exported when it was 6s. 8d. per quarter at the place of shipment, and the preamble of the act indicates that the produce of wheat had increased beyond the demands of the population, since it says when alluding to the restrictions on the exportation of corn, "For cause whereof, farmers and other men *which use manurement of their land*, may not sell their corn, but of a bare price, to the great damage of all the realm."

It is evident from this statute that only some of the most enterprising farmers, then manured their corn land. Still they did not so increase the produce of grain as to render their country quite independent of foreign corn; for only a quarter of a century afterwards, we find the first symptom of protecting duties.

In 1463, by the 3rd of Edward IV., c. 2, it was declared that "the labourers and occupiers of husbandrie, within the realme of England, be dayly grievously endamaged by bringing of corn out of other lands and parts, into this realme of England, when corn of the growth of this realme is at a low price." It then proceeds to enact that corn shall not, under pain of forfeiture, be imported into England, until wheat exceeds in price 6s. 8d. per quarter, rye 4s., and barley 3s.

Our old British ancestors long before this time had, however, absolutely prohibited the exportation of corn.

By the old laws of Wales, made certainly not later than the tenth century (*Ancient Laws and Institutes*, p. 655,) it was ordered that "three things are not to be conveyed to a foreign country, without the permission of the country and the lord—gold, books, and wheat. And three things that an aillt (alien) is not to sell without the permission of his proprietary lord, lest he should want to buy them of him—wheat, money, and horses. And where his lord shall not buy them of him, he is at liberty to sell them wherever he willesh, so that he do not sell them to a foreign country."

In 1533, the act of 25 Henry VIII., c. 2, for a time put an end to the exportation of English corn, and absurdly enough gave the lords of the council the power to declare by proclamation the prices at which farmers and others should be compelled to sell their commodities, although, as the preamble of the act much more wisely allows, "dearth, scarcity, good cheap, and plenty of cheese, butters, capons, &c., and other victuals, happeneth, riseth, and chanceth, of so many and divers occasions, that it is very hard and difficult to put any certain prices to any such things."

Long before the resolute days of stout old Harry the VIII., the legislature had been at work heartily endeavouring to reduce the price of provisions below their market value, for in 1266, by the 51 Henry III, it was ordained (and this statute was not repealed until the 8th of Ann c. 18) that "when a quarter of wheat is sold for 11d. then wastel bread of a farthing shall weigh 6lbs. and 16 pennyweights, (a pennyweight round and without any defacing, was to weigh 32 wheat corns in the midst of the ear, and 22 pennies do make one ounce, 12 ounces a lb.). And by the same statute it is provided that "when a quarter of wheat is sold for 3s. or 3s. 4d., and a quarter of barley for 1s. 8d. or 2s., and a quarter of oats for 1s. 4d., then brewers in cities ought, and may well afford to sell two gallons of beer or ale for a penny, and out of cities three gallons for a penny."

The parliament of those times were evidently in earnest in their endeavours to keep the bakers and brewers in order, for during the same year (1266) was passed the "statute of the pillory and tumbrel," which also continued in force till the time of Queen Anne. This, like all our early statutes, eschewed all unnecessary verbiage. The stout barons of that year thus commenced their act: "If a baker or brewer be convict because he has not observed the assize of bread and ale, the first, second, and third time he shall be amerced according to the offence, if it be not over-grievous; but if the offence be grievous and often, and will not be corrected, then he shall suffer punishment of the body, that is, to wit, a baker to the pillory, the brewer to the tumbrel or some other correction."

We may suspect by this marked distinction between the punishment of the bakers and the brewers, that even then brewers were held to be in a larger and more dignified way than the bakers, since they were to be allowed the privilege of riding in a tumbrel.

A certain degree of humanity was displayed by the legislature even in punishing rascally bakers,

for by another statute made about this time (Ruffhead, vol. i. p. 186), it was provided that a baker should only be amerced "if his bread be found lacking one farthing in two-and-sixpence : " but if his short weight exceeded this, he was to be placed in the pillory. And further, it was humanely provided that "every pillory, or stretch neck, must be made of convenient strength, so that execution may be done upon offenders without peril to their bodies." The unprincipled butcher by another statute (*ibid* p. 187) was subjected to the same punishment, "who selleth swine's flesh mealed, or flesh dead of the murrain."

The lawgivers of the iron days of Cressy and Poitiers had evidently an interest in other viands beyond mere beef and mutton, for in the act of 1363 (37 of Edward III, the statute of Westminster, made by the king, lords, and commons), we find that "for the great dearth that is in many places of the realme of poultrie, it is ordained that the price of a young capon shall not pass three-pence, and of an olde capon fourpence, of a pullet one penny, of a goose fourpence, and in places where the prizes of such vittailles bee less, they shall holde without being enhanced by this ordinance. And that in the townes and markets of upland, they shall be sould at a less prise according as may be agreed upon between the seller and the buyer." This wise law was not repealed until the year 1624.

More than two centuries after this absurd poultry statute, we find the parliament imitating this necessarily abortive attempt to run counter to market prices, by an act to regulate the price of butchers' meat. In the year 1532, by the 24 Henry VIII, c. 3, an act which was not repealed till the year 1541, it was declared in "an act concerning flesh to be sold by weight," that all beef, mutton, veal, and pork, should be sold by "haberdepoids" weight, and moreover that no person should thereafter take "for any pound weight of flesh of the carcasses of beefe or porke, above the price of an halfpenny, and of mutton or veale above the price of one halfpenny and half farthing," and after endeavouring to enforce these prices by a penalty of 3s. 4d., it gravely continued: "Provided alwaies that the heads, necks, inwards, purtenances, legs, nor feet, shall be counted no part of the carcasses aforesaid, but such to be sold for a lower price."

The Parliament were not content with fixing the price of calves' meat: they even declared what a butcher should not kill; for instance, in 1529, we find in the old statute-books (the 21st Henry VIII.), "An Act against the Killing of Calves" for three

years, because, as the framers of the Act gravely inform us, "of late yeeres now passed the breeders of such calves, of their covetous minds, have used to sel their calves young sucking to butchers, weining, rearing, and bringing up few or none, whereby the increase of old cattell is marvellously minished and decreased." A penalty of 6s. 8d. is then imposed upon any one who should kill a calf during the next three years.

As might be reasonably expected, the farmers evidently evaded this act very extensively. But the Legislature was not to be turned aside from their grave resolves; so in 1532, by the Act of the 24th Henry VIII, c. vii., after explaining in its preamble that the act of 1529 was intended to provide "that calves once wained should not be put to slaughter before they were of convenient yeeres and meete for beefe," but that since the last act divers bad persons had continued "to kill young beasts called wainlings, steers, bullocks, and heifares, of one or two yeeres old, or little more," it goes to enact that no person shall, under a penalty of 6s. 8d., cause any cattle to be killed under two years old.

Then, again, the same parliament had evidently discovered another mare's nest; they deemed the increase in the price of mutton to have arisen from the flocks of England having become too large: so, as usual with them, they were prompt in attempting the remedy of an Act of Parliament.

In 1533, therefore, the 25th Henry VIII, c. 13, is an Act entitled, "Concerning the numero f sheep one should keep. After describing at some length the several enormities that do ensue by the greedy desire of having many sheep—some persons then having 24,000 and 20,000 sheep—" by which a good sheep for victual that was accustomed to be sold for 2s. 4d. or 3s. at most is now sold for 6s., or 4s., or 3s. 4d. at the least," it goes on to enact that no one shall have more than 2,000 sheep in future under a penalty of 3s. 4d. for every sheep above that number. And by sec. 14 of the same act, it is provided that no one shall hold more than two farms; under a penalty of 3s. 4d. per week they shall hold any land contrary to the act.

And the legislature of those days were not content to regulate the number of sheep a farmer should keep, and the price he should obtain for his mutton, but they regulated the trade in his wool. It was not to be exported, or, when it was allowed to be sent out of the kingdom, it was carefully provided that it should be sent only to the staple at Calais. I have not found in the English statute-book any direction as to how he should shear his sheep; but the Scotch government early issued

directions similar to that of the Irish parliament of 1634.

The public acts of those days inform us that even as late as the seventeenth century the flockmasters of Ireland and Scotland had a summary way of gathering the wool from the sheep, which their rulers were enlightened enough to restrain. Thus, by the act of the Irish parliament (11 and 12 Charles II., c. 15), entitled "An act against plowing by the tail and pulling the wool off living sheep, it is declared that "in many places of this kingdome there hath been a long time used a barbarous custome of ploughing, harrowing, drawing, and working with horses by the tayle, whereby (besides the cruelty used to the beasts) the breed of horses is much impaired in this kingdome. And also divers have, and yet do use the like barbarous custome of pulling off the wool yearly from living sheep, instead of clipping or shearing them." These miserable practices were then declared to be illegal, and to be punishable with fine and imprisonment.

It is evident, however, that there had been a previous Irish ordinance on this subject, since such a reformation is referred to in a letter written to his Scotch council by King James, in 1617. Chambers' (Annals of Scotland, vol. i., p. 471) gives an extract from a curious entry in the Scotch Privy Council Record. The document states that "In some remote and uncivill places of this kingdom an old and barbarous custom was still kept up of *plucking the wool from sheep instead of clipping it.*" The king hearing of the practice, wrote a letter to his Council, denouncing it as one not to be suffered; telling them that it had already been reformed in Ireland, under a penalty of a groat on every sheep so used, and was "far less to be endured in you." The Council immediately (March 17, 1617) made an order to the same effect; and after stating that many sheep died in consequence of this cruel treatment, concluded with a threat of severe fines on such as should hereafter continue the practice. "It is remarkable," adds Mr. Chambers, "that in the Faroe Islands there is to this day no other way of taking the wool from sheep than that which was then only kept up in remote parts of Scotland."

It was as early as the year 1337 that we find the exportation of English wool prohibited. The same measure of injustice to the farmer was conferred in 1521. And in 1696 the wisdom of Parliament was evinced by the prohibition of the export of wool from England, or even from Ireland into England. It was not till the year 1824 that the

Acts of Parliament restraining the exportation of wool were repealed.

The Scotch parliament were by no means to be outdone by that of England; for so late as the year 1581, in the seventh parliament of James VII. of Scotland, it was enacted "That no manner of wool be transported, or put in schippes or boates to be transported, furth of this realm in time cumming." A law had been previously made, in 1467, that no cattle or sheepe should be sold out of the realm of Scotland; and again in 1535, by the fourth parliament of James V. of Scotland, it was directed, with all becoming gravity, "That na manner of men in time cumming sell nolt, sheepe, or other cattle, auld nor young, to ony English-men be himselfe or ony other mediate person, nor have nor send the samin in England to be sauld."

It sounds strange in our ears to read in these Scotch acts the title of "James, by the grace of God, King of Scotland, England, France, and Ireland."

We have seen how, previously to 1634, the Irish were wont to fasten their horses to the plough by their tails; and there is some reason to conclude, from a print in a Saxon manuscript now in the Harleian collection, that our Saxon ancestors did the same. I find no act in the English or Scotch statute-books relating to so barbarous a custom: not but that the Caledonian senate legislated upon the horse; they regulated his shoeing, and restrained his owner from over-feeding him. For in 1477, by the tenth parliament of James III., it was enacted, "because ignorant smithes through ignorance or drunkennesse spillis and enrickis mennes horse," that a smith shoeing a horse in the quick should pay the cost of the horse till he be whole, and furnish the owner with another; and if the horse will not mend, that the smith hold the horse. And in 1581, by the seventh parliament of James VI. of Scotland, "that none under a baron or landed man worth a thousand merks of yearly free rent keep horse at the hard meat after the 15th of May, or take them in before the 15th of October, on pain of forfeiting the horse." And the reason assigned is "that amangis the monie uther occasions of deurth of victuallers, there is ane speciallie very unprofitable to the commonweill, quhiik is the holding of horses at hard meat all the summer season, used commonlie be personnes of mean estaite, cowppers of intention to make merchandise of the said horsis, being for the maist part small nagges, and na horses of service."

The parliament who, in 1533, regulated the number of sheep a farmer should keep, had more

enlightened views in regard to the encouragement of the linen manufacturers. They erred strangely, however, when they tried to enforce the cultivation of flax on all soils. It was in 1532 that, by the 24th of Henry VIII. (repealed in 1592 by the 35th Eliz., c. 7), it was enacted, after a well-drawn preamble, setting forth the advantages of encouraging the home manufacture of linen, that every person having arable or pasture land "apt for tillage" should every year for every sixty acres in their possession sow "one rode or one quarter of an acre with line-seed, otherwise called flax-seed or hemp-seed."

Here, again, the Scotch parliament had long preceded that of England in regulating the husbandman's crops. In 1426, by the fifth parliament of James I. of Scotland, it was enacted that "ilk man tairland with a plouch of aucht oxen sall saw at the least ilk zeir a firloft of quheate, half a firloft of pease, and forty beanes, under the paine of ten shillings to the baronne of the lande that he dwellis in."

When the English Parliament regulated the crops and the prices of the farmer's produce, they proceeded to consider what they deemed the enemies of his growing corn. We find, indeed, that they thought of the crows, for in 1532, by the 24th Henry VIII. c. 10, intituled "An Act for the Destruction of Crows and Rooks," the preamble informs us that "Forasmuch as innumerable numbers of rooks, crows, and choughs do daily breed and increase throughout this realm, which do yearly destroy, devour, and consume a wonderful and marvellous great quantity of corn and grain of all kinds, in the sowing, ripening, and hemelling, and over that a marvellous destruction and decay of the covertures of thatched houses, barns, reeks, stacks, and other such like, to the great damage and undoing of a great number of all the tillers, husbands, and sowers of earth;" it therefore provides that every town and hamlet shall provide crow-nets; and that takers of crows have two-pence a dozen by way of reward. This sage law was repealed in 1576, by the 18th Eliz. c. 15. It is noticeable that a century before this the Parliament of Scotland had made an onslaught on the poor rooks, for in 1424 was passed an act against the "bigging of Ruikes in Trees," because, as the statute adds, they "dois greate skaith upon cornes."

Straying cattle were not neglected. It might be moreover concluded, from the great minuteness with which the damage done by stray cattle is specified in our old Welsh laws, that either the

farmers' fences in those times were generally in a dilapidated state, or that the Welshmen were as litigious then, as sometimes they are supposed to be now. By the laws of Howell Dda, made in the early part of the tenth century, it is provided that, "to release an animal impounded, money payment only is due—a penny for a horse, a half-penny for a bullock, for a colt 14 days old one penny."

Every crop that a person shall harvest he is to look after, and the cattle are free. By the crop is understood corn after it is severed from the land, wherever it grew, the produce of an orchard, cabbage, flax after it is cut, or in a garden uncut, tedded hay, thatch for houses, and their fences, leeks, and everything that pertains to a garden. "Let him fence so strong about his garden that beasts cannot break into it; and if he do not, and it should be broken into, he is not to be compensated; except for the trespass of poultry and geese, because it is not possible to fence, so as to exclude them, since they can fly." Then the law continued: "The barns are to be open from the time the first sheaf is brought into them until the calends of winter, to admit the air; and if the corn be damaged during that period, the owner is to be compensated. From the calends of winter onwards, the barns shall be closed in the manner required: they are to be closed by three eatherings on the sill, and a wattle upon the doorway, with three bands thereon, two on the back, and one on the front; and if that be broken, the corn and the barn are to be compensated, the corn in the barn by giving a whole sheaf for every damaged sheaf." (*Ancient Laws and Institutes*, p. 158.)

Former, and indeed, all subsequent Parliaments, have treated other enemies of growing crops, viz., game, much more gingerly than they did the cattle and the crows. This is shown by their forest and their game laws. The abhorrence of poachers, in fact, amongst the landowners of those iron days, was evidently as great as in our more silken, or cotton times. They took very decisive measures, however, in the 13th century to abate such unqualified destroyers of game. In 1293, by the 21st Edward I., it was enacted, "To the intent that trespassers in forests, chases, parks, and warrens, may more warily fear hereafter to enter and respass in the same than they have heretofore," that they might be killed if they refused, on demand, to surrender themselves to the keeper or his assistants. This slaying, however, the statute gravely and humanely provided, must not be done by the keepers out of malice, and merely on the pretence of a trespass.

A century afterwards, we find that even slaying poachers did not stop poaching, for in 1494, 11th Henry VII., c. 17. It was provided, that no one should set "snares, nets, or other engines," to take "fesants or partridges." And a quarter of a century nearer our own time, by another act, that of 1522 (14th and 15th Henry VIII., c. 10), the hares were protected, since it was then rendered felony to kill hares by tracing them in the snow; the fine being 6s. 8d. upon all breakers of the law.

The treatment of the farm labourers in the times of which I am speaking was evidently harsh and unfeeling. They were, indeed, serfs, who only very slowly participated in that freedom for which the Commons of England so long, and at last so successfully struggled. But the state of the poor labourer from the time of which I am speaking down to the days of Henry VIII., was still that of serfdom. Runaway idlers were to be enslaved; sturdy incorrigible beggars might be executed as felons. This unhappy state of the poor labourer in husbandry must be remembered, when we read the harsh statutes by which their work, their wages, and even their dress, was regulated by grave acts of the rude Parliaments of other days. The labourers were then not even allowed to abstain from work when they did not require to be hired; for 1349, 23rd Edward III., by "the statute of Labourers," it was provided, as the preamble states, in consequence of the great pestilence having carried off so many of the ploughmen, and labourers having increased their demands for wages, that "every person able of body under the age of 60 years, not having to live upon, being required, shall be bound to serve him that doth require him, or else committed to the gaol until he find surety to serve," at the old wages. And he was not allowed to learn any craft or trade; for in 1388, by the 12th Rich. II., it was ordered, that whosoever served in husbandry until he was twelve years of age, should so continue. The Irish Parliament in 1447 passed an act to the same effect; and in 1425, the Scotch Parliament, to prevent idlers in rural populations, made a law "that ilke man of simple estate that suld be of reason labourers have onther (either) halfe-an-oxe in the pleach, or else delve ilk day seven fute of length and seven of breadth under the paine of ane oxe to the king."

Seldom was the husbandman to have the market value of his labour, for in 1350 by the Act of the 25th Edward III., c. 1, which remained unrepealed until the year 1563 (Eliz. c. 4), it was enacted "That carters, ploughmen, drivers of the plough, sheapherdes, swineherdes, and all other

servantes, shall take liveries and wages accustomed the soil twenty yeeres, or four yeeres before (by the previous acts of the same reign), so that in the country where wheat was wont to be given, they shall take for the bushell ten pence, or wheat at the will of the giver, till it is otherwise ordained. And that they be allowed to serve by an whole year, or by the other usual termes, and not by the day. And that none pay in the time of sardling or heie-making but a penny the day; and a mower of meadowes for the acre fivepence, or by the day fivepence; and reapers of corn in the first weeke of August twopence, and the second weeke threepence, and so on till the end of August; and less in the country, where less was wont to be given, without meat or drinke or other courtesie to be demanded, given, or taken. And that all workmen bring openly in their hands to the merchant townes their instruments, and there shall be hired in a common place and not privie. Item—That none take for the thrashing of a quarter of wheat or rie over 2½d., and the quarter barlie, beans, peas, and otes 1½d. if so much were wont to be given; and in the country where it is used to reape by certain sheeves, and to thresh by certain bushells, they shall take no more, nor in other manner than was wont the said twenty years and before. And that the servants bee sworne two times in the year before lord stewards, bailliffs, and constables of every town, to holde and doe these ordinances. And that none of them go out of the townes where he dwelleth during the winter to serve the summer, if he may serve in the same townes, takeing as before is said. Saving that the people of the countie of Stafford, Lancaster, and Derby, and the people of Craven, and of the marches of Wales and Scotland, and other places may come in the time of August and labour in other countie, and safely return as they were wont to do before this time. And that those who refuse to take such oath, or perform that that they be sworn to, or have taken upon them, shall bee put in the stocks by the said lord stewards or constables, by three dayes or more, or sent to the next gaol, there to remaine till they will justifie themselves. And that stockes be made in every townes by such occasion betwixt this and the feast of Pentecost."

By the same statute, threshers, "tyler and other coverers of ferne or strawe, were to have 3d. per day, and their knaves 1d." We might reasonably conclude with such wages there could be little fear of the labourers decking themselves in fine garments; but it seems that the Parliament of that time thought differently, for in 1363, by the 37th

of Edward III., it was enacted "That carters, ploughmen, drivers of the plough, oxherds, kowherds, shepherds, and all other keepers of beasts, threshers of corne, and all manner of people of the estate, of a groom attending to husbandry, and all other people that have not fortie shillings of goods nor chattels, shall not take nor wear no manner of cloth, but blanket and russet wool, of twelve pence, and shall weare the girdles of linnen, according to their estate, and that they come to eate and drinke in the manner pertaineth to them, and not excessively; and it is ordained, that if any weare or doe contrary to any of the points aforesaid, that he shall forfeit against the King all the apparel that he hath so worn against the form of this ordinance." This wise statute was not repealed till the year 1533, 24th Henry VIII., c. 13. The Scotch labourers in husbandry were probably more economical in their dress, for it was not till about a century after this English Act, that the Parliament of Scotland in 1457, resolved "That na labourers nor husbandmen weare on the warke day, bot gray and quhite, and on the halle daie bot light blew, greene, redde; and their wives right swa, and courchies of their awin making, and that it exseed not the price of xi pennyes the elne. And that na woman cum to Kirk nor mercat with her face mussalled or covered that she may not be kend."

But not only, it seems, did the English peasantry of that time indulge in fine clothes; but they had, it seems, a taste for wearing arms and bucklers, and for certain amusements. As, in 1388 (by the 12 Richard II., c. 4, made at Canterbury), it was enacted that "no servant of husbandrie or labourer shall henceforth wear any buckler, sword, or dagger; . . . but such servants shall have bowes and arrowes, and use the same the Sundayes and holy dayes, and leave off playing at tennis or football, and other games, called coytes, dice, casting of the stone, kailes, and other such importune games."

As time wore on—it became necessary to alter in some degree the wages of the rural population and to decide the length of their working hours. So the Parliament again interfered; and in 1513, by the 6 Henry VIII., cap. 3 (repealed very soon, however), the wages of a bailiff were slightly raised to 26s. 8d. per annum, and meat and drink, with 5s. for clothing; and a common farm labourer 16s. 8d., and meat and drink, and 7s. for clothing; but then the labourers of those days were evidently not very fond of their hard work, so it was resolved to try and stimulate them by a section of the Act, in

the following words: "And furthermore were divers artificers and labourers retained to work and serve, waste most part of the day and do not deserve their wages, sometimes in late coming to their work, early departing therefrom; long sitting at their breakefasts, at their dinner, and at their noone meate, and long time of sleeping at after-noon to the losse and hurt (of their masters.)" It then proceeds to enact, that from the middle of March to the middle of September every labourer "Shall bee at worke before five o'clock in the morning, and that he have but half an hour for his breakfast and an hour and a halfe for his dinner, at such time as he hath season for sleepe appointed him by the said statute, and at such time as it is herein appointed that he shall not sleepe; then he to have but an hour for his dinner, and that he depart not from his work till between the hour of seven and eight in the evening." And then the labourer was not to give up his service without due notice to his master. There was no provision, however, against the master suddenly discharging his labourer; but in 1444, by the Act 23 Henry VI., cap. 12, it was ordained that all servants in husbandry should give warning before they left their service, and that the wages of a bailiff should be 24s. 4d. by the yeare, and clothing price of five shillings, with meate and drinke; of a chiefe hind, a carter, or chief shepherd, 20s., and clothing 4s., with meate and drinke; a common servant of husbandry 15s., and clothing 3s. 4d.; a woman servant 10s., and clothing 4s., with meate and drinke."

Long before this time, even as early as the tenth century, the Laws of Wales regulated the Ploughman, placed a value upon his gear, and protected him at his work. One Law says, "There are three common protections: The protection of a session, or court of country; the protection of a place of worship; and the protection of a plough and team at work."—*Ancient Laws and Institutes of Wales*, p. 666.

By another law it was ordained that "the legal value of a yoke and its bows shall be one legal penny, a beam 1d., a coulter 4d., a cleansing hurdle 1d., a cleansing spud 1d., a harrow 1d., a thorn harrow 1d.—*Ibid*, p. 150.

By a third law it was declared that neither horses, mares, or cows were to be put to the plough; and, again, "No one is to undertake the work of a ploughman, unless he know how to make a plough, and nail it; for he ought to make it wholly from the first nail to the last, or from the smallest to the largest.—*Ibid*, p. 156.

The value of domestic animals was also fixed by the ancient laws of the Cymri (*ibid*, p. 128). A foal till fourteen days old was to be deemed worth 4d., afterwards 2s.; at a year, 4s. A working horse that shall draw a car and a harrow, 60 pence; a cow calf, 4d.; of a cow ready to calve, 40 pence; of a steer, 16d.; a lamb, 1d.; of a sheep, 4d.; of a sucking pig, 2d.; of a pig, 1s. 3d.; of a kitten, 1d.; of a cat, 2d.; of bees, an old stock, 24 pence; of a 1st swarm, 1s. 4d.; of a "bull-swarm," 1s.; of the 3rd swarm, 8d.

The old Welsh laws also limited the amount of grass land which a farmer should hold, and the trees he should cut down. By one law: "No one except a lord was to have more than two reserves of grass—a field and a meadow (land appropriated for hay only, and enclosed by a fence); and if he will to keep it, let him obtain a cross from the lord; and, under sanction of that, let him keep it."—(*Ant. Laws of Wales*, p. 160). Another declares that there are "three trees that it is not free to cut without the permission of the Countrey and the Lord an acorn tree or oak, and a birch tree, and a witch elm."—(*Ibid*, p. 676.)

The breadth of the ancient roads of our island, as fixed by the ruling powers, indicates the limited extent of the traffic they were then intended to

accommodate. One law declared that "The measure of a lawfull road is a fathom and a-half (9 feet); of a bye road, seven feet. Every habitation ought to have two footpaths, one to its church and one to its watering place."

I have continued my notices of these legislative interferences with the farmer and the labourer down to the time of Grotehead, Fitzherbert, and Henry the Eighth. Before their age there were no English writings on agriculture that can give us any material information with regard to the practice of our early husbandry. (Of Grotehead and Fitzherbert, I shall speak in a subsequent paper.) Those doings of our early Parliaments, which I have been endeavouring to trace, do not give us, it is true, a very elevated opinion of either the state of the tillers of the soil in the olden times of England, or of the wisdom of their Parliaments. These, however, yield us, not only considerable information with regard to some of the practices and habits of farmers at a distant period; but, moreover, they may well serve to warn the Parliaments of after and more enlightened times that the less the agriculturists of England are interfered with by Acts of Parliament, the better it will be for their prosperity, and that of the country they so admirably cultivate.

THE FARMERS' CLUBS.—OPENING OF THE SEASON.

No sooner has the curtain fallen on the Autumn meetings of the local Agricultural Societies, than it is almost immediately rung up again. The prompter barely gives his company time to fresh-set their wigs and their faces, but he has them once more before the public. It is true, we have a week or two yet to wait ere the Christmas fine sights fairly set in. But in the interim the audience are by no means allowed to yawn, grumble, scrape their feet, or otherwise manifest their indifference or impatience. The great aim is still to keep them amused, or at any rate employed; and with this laudable object many a man shifts his part and answers to his second call in an instant. The breeding stock exhibitions may be over, and the ploughing matches decided. The legitimate five-act play, with all its diversity of action and contrast of character, has been duly followed through, and we turn to the other side of our bill, to see what is to be the interlude. The tale is still one of rural life, although a scene or so of it may be laid in the metropolis. The moral, too, should be equally good, pointing as it does perhaps yet more directly to the force of the old fable, of how Fortune smiles on those who strive to help themselves.

During the first fortnight of our first winter month

this change in the performances has been very noticeable. As the meetings of the Societies died out, those of the Clubs came on. The Central Club re-opened the Session, in Bridge-street, on the first Monday in November, and the Oxford Club followed on the Wednesday. In the next week we have the new Club at Ipswich celebrating its establishment, and another far better known one in Suffolk, the Hadleigh, pursuing its useful career. As a rule, there is a very distinctive line to be drawn between the operation of a local society and a club. The latter is coming more and more to be considered the means for encouraging some profitable talk on matters agricultural; whereas the former would appear, alas! to depend less and less upon anything of the kind. No doubt the continued success of the discussion meetings of the London Club has acted as something of an example to other similar institutions; and a farmers' club is now seldom projected but with this as one of its main features. Still, "the London farmers" hardly began with their accustomed strength, and about the most remarkable point in the debate in no ways referred to the subject selected for the business of the evening. Many of our subscribers will probably have already noticed that the chairman, Mr. Thomas, in opening the meeting, expressed his regret

at not being able to congratulate his brother-farmers on their position, "believing as he did that the corn crops would be found deficient both in quality and quantity;" whereas, Mr. Marshall commenced reading his paper with an expression of "sincere and heartfelt gratitude to Providence for the blessing bestowed by a most abundant and productive harvest." One of our "readers," with his usual care, actually queried the two passages in his proof, questioning whether the reporter must not have made some serious mistake as to what one or the other could have really said.

The Ipswich Club, again, which has now just held its first annual meeting, is more to be congratulated on the strength of its support than for any great display of it on this occasion. The Club has quarterly gatherings—three for discussions, and the fourth "of a more social and general character," or, in other words, a dinner. This would seem to have had the common fate of agricultural dinners; that is, the greater part of what was said was said by those who had little or no practical acquaintance with agriculture. The Ipswich Club, for what reason we know not, takes one of the county members for its Chairman. Surely the Chairman of a working Farmers' Club should be himself a farmer, or the very character of the thing is impaired. However, Sir Fitzroy Kelly being pressed to preside, kindly consented to do so; and Sir Fitzroy is one of those able men, whose very profession it is to be able to talk about anything. So, Sir Fitzroy, having duly prepared himself, spoke to the length of some two or three columns, all about farming in general, and the Ipswich Farmers' Club in particular—admitting every now and then, as he did so, that he did not know much about it, and treading so closely at times on the non-political line as to make many of his hearers uneasy and others unruly. But the great object is achieved. Sir Fitzroy's address even gets into the London papers, and the Ipswich Club, as a consequence, merges into Sir Fitzroy Kelly; while Judges, Exhibitors, Committee-men, and others must come to be content with a few words or a few lines each; for there really is not time or room for them to say more. If the Ipswich Farmers' Club is to live on as a farmers' club, it must read a little more business-like than this, especially when it has members who can "deal as largely and practically with the subject" as Mr. Bond, —or who can deliver "an able speech," like Mr. Bid-dell— or respond in the "well-known happy style" of Mr. Allen Ransome—who all get burked by their own county Press, though the president is flourishing away for the hour together.

Certainly, so far, the best of such discussions as there have been was that at the Oxford Club, where the practical men have it all to themselves. Here they judiciously faced one of the greatest difficulties the farmers have lately had to contend against, while the remembrance of it was fresh upon them. However the yield may really turn out, whether we shall have to rejoice with Mr. Marshall in Lincolnshire, or mourn with Mr. Thomas at Bedford, it may be quite as well to look to what the harvesting of this enigmatical

crop may cost. Even at the best, can we afford again to pay a guinea or thirty shillings an acre for cutting? Very wisely, then, the members of the Oxford Farmers' Club have taken up the question of "the Agricultural Labour Market." They have not moreover, even yet, done with it; for the further consideration of the matter stands adjourned to the December Meeting of the Society. Let us, however, thus early avail ourselves of a word or two of what was said. Mr. Mein, who introduced the subject, thought "many collateral circumstances had occurred these few years past to make the scarcity of agricultural labour felt so much at harvest, viz., by the high condition the land generally is now kept in, whereby heavier crops are grown; consequently the same number of men cannot cut and carry it in the same time; one man cannot cut, pitch, or load so much per day; therefore one reason why better prices are requisite. Again, the two last harvests have been unusually hot; consequently the men could not work so many hours. He had seen it written that this season men were in the field from daylight to sunset. So they might; but in no harvest have they been able to work so short hours, and compelled to rest at so short intervals, owing to the heat of the last two seasons. Again, seeding is commenced so much sooner than it used to be, so much being sown in February now; and we must bear in mind that corn sown at intervals of three weeks in February and March ripens much nearer together than if sown at the same intervals in April and May, or, in other words, whatever interval you give it in sowing in April and May, it will ripen at nearly the same distance apart. Not so in the early planting: thereby so much of our harvest comes together. Again, there is less spring wheat sown; and more winter beans. The earlier the harvest (in reason) the better for the farmer, and the cheaper it is done if we can only get the hands to cut and carry it."

Then, as to the remedy, "we must improve the condition of the agricultural labourers generally in their dwellings, by giving them more regular employment during the winter, and giving them better wages; because it resolves itself into this question, Whether a farmer upon 300 or 400 acres had better spend £80 to £100 more in labour during the season, or lose £150 to £200 at harvest in shed and damaged corn? Able-bodied labourers have got tired of being offered the Union for the winter, and it is well known that they cannot subsist without work."

And for another means, "we should give the labourers more task work, and allow them to earn fair prices at it. If a man can earn 14s. in five days, so much the better; if the sixth is a wet one he can afford to lie idle, or stay at home and repair his children's shoes or clothes; and five days are as many dry days as we can count upon in the week during the winter months. In using the reaping machines, a very good method, and one adopted by some last harvest, is to find the machine and horses, and let the cutting, tying, stocking, &c., of the corn per acre, giving them good prices; because if there are pieces of the field so much laid that the machine will not work it, they will require

to use the hook ; but it is certainly discouraging to see one party of men getting the cutting of the standing-up corn by contract by machine, and another party called in to cut the laid corn by hook—what they could not manage ; certainly sufficient to make labourers discontented." We lack the space to follow Mr. Mein, who, however he might lament the scarcity of labour, never for a moment disputed the necessity for it. The concluding words of his paper are these : "I have one regret—had I my steps of the last twelve years to retrace I would spend double the money in labour. The more I spent in labour the better my farm paid me." Mr. Williams, of Northcourt, and other speakers, declared

themselves to the same effect ; but although well handled so far, there is a great deal more to come of the discussion, and we shall look with some interest to what is said in December. We are, indeed, inclined to think that it is a question that might be taken up with every advantage in different parts of the country, and that the Central Club may do well to place it on their New Year's card. Incidentally, there is a deal of "stuff" in such a text-word ; and the uses of machinery, and perhaps of the reapers more particularly, could only be argued with some good effect. It is surely for facing such difficulties as these that farmers' clubs were invented.

THE ECONOMIC WINTERING OF YOUNG STOCK.

Of all the departments of management connected with the breeding of cattle, few give the breeder so much anxiety as the rearing and subsequent care of his young stock. This is peculiarly the case in districts not altogether applicable to breeding purposes, and yet cannot well be appropriated to better uses : I mean those districts having grass lands not adapted for fattening, or such as those where the water is impure, or the climate is fickle and unsuited to young stock ; or again, undrained clayey soils possessing much swampy lairage, or poor marshy, sandy, or moory soils—these are not the precise localities I would choose for feeding and rearing young stock in. But can they be better or more profitably managed ? The occupiers of dry, gravelly, stony, or sandy lands, having pure water at command, know nothing of the difficulties experienced by breeders in those districts named. There is a truly difficult position, and it is to them I would first offer a word of advice and caution. I have often asserted that young cattle well reared are half-wintered. This is the main point after all. If young cattle come into the fold-yard or hovel fresh and healthy, it is not a little stormy and cold weather, or a less nutritious food, that will soon harm them. Every attention must be given to achieve this most desirable end. If the pastures are too succulent, or water bad, or any other hindrance to their well-doing is perceived during the summer or autumn, they should be taken into the yards or hovels, and fed with such proper food as the breeder may possess, and in such proportions as his best judgment dictates. They must, if possible, be kept in a thriving condition. These remarks do not apply much to the occupiers of real breeding farms ; they have for the most part merely to turn out the young calves into the customary fields, and if they fail to do well, it is quite exceptional. Dry and shady fields, pure water, and sweet sound herbage do it all.

Commencement of the Winter Management.—If the season is dry and mild, young cattle will thrive well in the fields to a late period, often till the month of December. In a season like the present, when we have been visited with a very intense frost so early in the month of October, much damage has, of course, been

done. Young cattle cannot endure cold rimy frosts for any length of time : it causes hoose and scouring, and many are the complaints already made throughout the country of the prevalence of these disorders. I have lately lost one yearling myself, although taken up to dry food, i. e., hay, corn, and cake, as soon as its state was perceived, and I have four others suffering from like causes. The loss of condition in a short time is often surprising. My usual remedy is the change of food as above, dry warm lair, and a few doses of thick wheaten-flour gruel, with a little laudanum in each. The issue is very precarious ; I always think it a poor prospect, when I am obliged to resort to medicinal treatment for any field animal. I am, however, wandering from my subject—the *economic wintering of young stock*.

Young stock should as a rule be safely housed in warm sheltered yards before cold or frosty weather sets in ; the youngest and most delicate must be provided for in covered hovels, airy, but well shut-in. Warmth to a young animal is equal to a moderate supply of food. The stronger animals may do well in the yards, provided the yards be warm, and have open hovels for them to retire to in wet and stormy weather. I do not name any particular time for taking them up. That must depend upon the season, but depend upon it, the breeder will rue if the young animals are caught in the fields by a severe frost, or a snow-storm, &c., &c. It is now, however, high time that all should be safely sheltered. The month of November upon the average of seasons is too late and too hazardous for young stock "to be a-field." I take it for granted, then, that all are in. The great question arises : How are they to be best and most profitably wintered ? There probably is no better way to promote condition and healthiness than to feed them on good well-got meadow hay, and to give with it a moderate allowance of cake. This will ensure progress and a healthy constitution ; but it is an expensive course, and one which but few comparatively are disposed to follow up. On arable farms it cannot be done. Hay is a very scarce article of food, and is greatly husbanded ; clover-hay, rye-grass-hay, sainfoin, and the like more abound, but neither is so well qualified for food for these youngsters.

We must, therefore, resort to various substitutes. The first I would name as a good and economical food is this :

Pulped Mangolds, Out Chaff, and Oilcake.—The mangolds should be pulped about thirty-six to forty-eight hours before the pulp is required for use, and it should be laid in separate heaps for successional service, and in order that it may undergo the requisite amount of fermentation to change its character and convert it into truly nutritious food. When fermentation is sufficiently advanced—i. e., when the heap becomes really warm—it may be mixed with finely-cut chaff, cut from oat, barley, pea, or even wheat straw (if a little hay could be spared to be cut and mingled with it, all the better), and in a few hours it will be fit for use, when it should be given sparingly in clean troughs. A small quantity of cake not exceeding two pounds' weight per day to be given after the evening feed. This process of feeding will require careful attention, as the food itself, the troughs, the scuttles, cribs, &c., soon become tainted, which of course makes the food unpalatable. Water should not be too freely supplied. This was my own course last winter with the older calves of my own rearing, amounting to about nineteen, and I have every reason to be satisfied with the result. Ten of them are thriving steers, and the heifers are almost ready for the bull. I might also add that few farms are less adapted for the breeding of cattle than mine; the grass is of a quick and much too succulent growth, and the water is brack and often stagnant, much better adapted for sheep than cattle. I fare no better with purchased cattle, so I continue to breed, as the least evil of the two, and almost as a necessity, for I feel it requisite to combine young cattle with my sheep, in grazing, to keep my pastures right. Another plan is to allow the Swedish turnip, and give about one bushel per day, divided into three equal feeds, for morning, noon, and night; cut chaff twice, and hay for a "suppering-up." Pulped Swedish turnips I do not find equal to pulped mangolds. Good cake is a great aid to the well-being of all young stock,

and on no account would I attempt to bring them through the winter without a moderate supply daily; with roots it is indispensable. The common white-fleshed turnip, when well grown and sliced, is excellent food in the early winter, and if a quantity of the leaves could be given along with the bulbs, all the better; the leaves promote the sounder and freer growth of the bone in all young animals. With this kind of food a little barley or oats should be daily given: of course, cut chaff or hay, or even a great and superabundance of good straw for the young stock to browse over, is to be included as food. Roots will never do alone; in all cases dry cereal food is desirable, if not absolutely necessary. Much has been written about the necessity of exercise for young animals. It certainly does appear to be right, if not necessary, to promote growth and vigour. It is, however, surprising to see how well these young animals thrive, although tied up by the neck, and well fed for several months together. I have always advocated either loose boxes or a run out daily, but my experience rather tends the other way; the run out makes them restless on being tied up again; the loose boxes give the stronger animal the best chance. The continuous tying up gives to each its own proper share of whatever food is administered, and keeps the stalls cleaner. Taking all into consideration, I prefer the plan of tying up, with an occasional run into the adjoining yard in suitable weather. I am well aware that with our first-class breeders it is a principal object to bring the animal to maturity at a very early age, and not unfrequently we see them brought to great perfection at the age of two years. I also know that this practice is obtaining great favour very generally; but I doubt much if this method of breeding and forcing is truly the best. If the breeder's object is twofold—i. e., to fatten his animal and making good manure—why I have not much to say against it. I am attempting to suggest some cheaper and safer way of rearing and wintering these young animals for market as stores; if I have done so in any degree, I am well satisfied.

THE LOIS WEEDON SYSTEM OF HUSBANDRY.—ITS IMPORTANCE TO THE FARMER.

A few numbers back a review appeared in this journal of a work on the Tullian system of husbandry, as revived and illustrated in the practice of the Rev. Samuel Smith, of Lois Weedon, Northamptonshire, despite the ridicule and abuse of those who, like the late Sir William Curtis, are "quite satisfied with things as they are." This gentleman has now given the system a trial of twelve consecutive years, during which, without a particle of manure, he has grown wheat, year after year, upon half the land, reaping an average produce of thirty-five bushels per acre. The method of Mr. Smith is well known to our readers; the land having been kept open by the spade to a subsoil depth, three rows of wheat are planted or drilled, at one foot distance between the rows, of course

occupying three feet. The next three feet of land being left vacant, three more rows are planted on the other side of the void spaces, and so on throughout the whole field. One great point in this husbandry is, keeping the intervening fallows well tilled with the spade, and clear of weeds, during the growth of the crops upon the planted parts, and using the horse hoe freely between the rows of growing corn. As soon as this is reaped, the vacant spaces are at once planted; and so on, year after year, without any change of crops, application of manure, or cessation in the course.

It is not a little remarkable, that after all the efforts that have been made, with the aid of modern science, capital, and skill, to raise the fertility of the earth to the highest pitch it is capable of—after all the money

expended in the manufacture and purchase of manure, in order to draw from the soil the greatest possible amount of produce—after the publication of innumerable books to prove that if you put nothing into the land you cannot expect to obtain anything out of it, and that for every cereal crop of grain grown, it is necessary to compensate the soil for the loss of elementary matters by a fresh supply in the form of manure;—it is, we say, remarkable that we are called upon, in the very zenith of our agricultural glory, to retrace our steps, and revert to the practice of a speculator, who, a century and a half ago, started a principle upon which, if true, the restoration of the fertility of the soil is based. Namely, that the atmosphere alone contains an abundant and everlasting supply of all the elements of fertility necessary for the growth and sustenance of plants.

This perfect competency of the atmosphere to furnish a supply of food for plants must be accompanied with an attractive power in the soil itself to absorb and modify these substances, and thus reduce them to a form in which their assimilation by the plants is promoted. On no other principle can a result so contrary to all the hitherto-received opinions and practice of agriculturists be accounted for. Every modern writer on agriculture, whether scientific or purely practical, has maintained the necessity of a constant application of manure, in order to compensate the soil for the exhaustion of a cereal crop. It is for this purpose that herds of cattle and flocks of sheep are kept on our farms, it being almost universally asserted by farmers that they only repay the expense of their maintenance by the manure they produce, by which the produce of cereal crops is increased. Without absolutely endorsing this assertion, we may safely assume, from all experience, that, on the present system of farming, it would be impossible to grow corn profitably without manure; and that a constant succession of cereal crops, without it, would exhaust the most fertile soil in the world. We must therefore conclude that the secret of the success of the Lois Weedon system, which is a copy of Tull's, lies in the constant stirring of the soil under fallow, in order to promote the absorption of the elements of fertility. And, moreover, the proportion of that success depends upon the degree and the depth to which the soil is stirred and comminuted. A remarkable corroboration of this opinion has occurred during the present season on the land laid down with Halkett's guideway-cultivator, at Wandsworth. This land had been deeply subsoiled, and comminuted with the Norwegian harrow, and planted with potatoes, without manure. On each side of it the land was tilled in the common way, and also planted with potatoes. The latter produced one bushel per rod; but the former yielded $2\frac{1}{2}$ bushels per rod, being an excess over the other of 240 bushels per acre. This amounts to $7\frac{1}{2}$ tons, which, at £5 per ton, is £37 10s. A similar result is obtained by Mr. Smith's spade-husbandry over that of the plough, as practised by seven other experimenters on the Tullian system. Their average produce was 24 bushels 3 pecks per acre, whilst Mr. Smith's

was 35 bushels. Their highest produce, also, was $27\frac{1}{2}$ bushels per acre, whilst Mr. Smith's was 40 bushels. It is further worthy of observation that this system is so far from impoverishing the soil, that it seems to improve it; and that the produce, after twelve consecutive years' trial, has increased rather than diminished, that of 1858 being 40 bushels per acre. This is a very remarkable feature in the system, as it demonstrates the fact that tillage alone, by stimulating the soil and promoting the absorption of elementary matters from the atmosphere, is sufficient to sustain its fertility.

It is evident that if the Lois Weedon or Tullian system is what it has been represented to be—and there is not the slightest reason to suppose that any deception or misrepresentation has been practised—the expense of farming upon it must be much less, and the profit much greater, than on the common system. Accordingly we find that whilst the profit upon a four-course rotation, according to Bayldon ("On Rents and Tillages"), does not exceed £1 5s. 3d. per acre per annum, that of the Tullian system is £4 2s. per acre per annum; being in excess of the other of £2 16s. 9d., or considerably more than double. This, too, is under plough culture; but Mr. Smith's spade culture is still more profitable: for whilst the average produce is 35 bushels per acre, which at 7s. per bushel (Mr. Smith's estimate) is £12 5s., his expenses amount to only £6 0s. 4½d., leaving a balance of £6 4s. 7½d. per acre, without reckoning the straw, which, as no manure is required, may be sold, to increase still more the profit.

The question, then, remains to be solved—can this system, which is so profitable on a small scale, be made applicable on a large one with an equally favourable result? We see no reason whatever to doubt the facts that are stated in the work we have referred to, derived as they are from sources beyond the suspicion of deception, and corroborating each other. It is a pity that the subject is not taken up seriously by the Royal Agricultural Society or the Central Farmers' Club, and experiments on a large scale instituted, in order to bring the system at once to the test as the most useful and profitable to the farmer, and consequently to the public.

There is one other question involved in these experiments, we think, worthy of notice—namely, whether manures do not act more *indirectly* as stimulants and absorbents of the alimentary matters in the atmosphere than *directly* as fertilizers *per se*? We know the affinity of many chemical substances, which causes them to unite when placed in juxta-position. Thus common salt, if placed on a reeking dunghill, or on any substance emitting ammoniacal matters, will be found to effervesce strongly. This is caused by the absorption of the ammonia; and it will continue until the salt is supersaturated, when it ceases, and the union thus formed is nothing less than the sal-ammoniac of the chemist. This is a subject worthy of the attention of the scientific farmer, who will know how to turn it to his advantage, by applying the principle to his everyday practice.

THE IMPLEMENT TRADE AT THE CAPE OF GOOD HOPE.

The energy of an Englishman is an old story. Crowded, crossed, and jostled though he may be at every step, if a point is to be attained he is seldom satisfied ere he reaches it. If a living is to be made on the old approved fashion, he will make it; or if not, he strikes out a new one. In no other people is the spirit of commercial enterprise so strongly developed. They deal and trade, they oppose and outsell each other, as long as there is a chance or an opening left. And, then, when nothing more is to be done here, they seek other shores and other markets for the employment of their capital and industry. They are continually breaking up fresh ground, and yet as eagerly craving for some still further opportunity. In one quarter of the world the briefless barrister of the Courts is himself wielding the axe and shovel in his very practical plan of seeking a fortune. In another the half-pay officer is hunting the elephant for his tuaks, or a duly organized Company tracking the beaver for his skin. The more successful of our home traders are by no means content with what they may do in so comparatively limited a circle; and while Mr. Bass is pushing his pale ale business in the Indies, the agent of Professor Holloway is inscribing the virtues of his ointment and the powers of his pills on the pyramids of Egypt.

Even the agriculturist is allowed to be gradually assuming to himself more and more of the national character. He is especially intent just now on making the most of it, and turning every available offer to some account. In accordance, too, with so approved a precedent, when his own market gets a little dull or overdone, he looks out for another. And, like his fellow-traders, if he care to provide for it, he need not look in vain. Brother Jonathan and his first cousin in the Colonies will buy his Shorthorns and Herefords at their hundreds or thousands each. The Emperor of the French will go to we hardly dare say how much a pound for his Southdown mutton, and Yorkshiresmen have audience with the crowned heads of other countries by the favour of a Cleveland stallion or a famous charger. The Reterhazy, and such leviathan cultivators of the Continent, have become as accredited purchasers of our prize implements; while Boydell's traction-engine winds its way through the sugar-fields of Cuba; and Crosskill's clod-crusher is in work on the plains of Athens. Despite, however, these many new openings, it is very evident, after all, that the easiest and safest of introductions should be to our own friends and relations. There is no doubt, either, that these are generally the outlets we are the most ready to avail ourselves of. At this very time Australia would seem to promise by the arrival of almost every mail to become a better and better customer for both agricultural stock and agricultural machinery. We are in no way disposed to say that the means are not taken to

meet this demand. On the contrary, we believe that both breeders and manufacturers are paying a great deal of anxious and proper attention to its supply. But, curiously enough, in our desire to "make a connection" thus distant, we appear to have quite overlooked other marts for our merchandise much nearer home. We use, as we shall show, the term merchandize advisedly; for it is the trader rather than the farmer who has neglected to make the most of his opportunity.

In the middle of last month the great Agricultural Society of the Cape of Good Hope held its annual exhibition at Cape Town. As with us, it was a show of both stock and implements, imported cattle and sheep valued at upwards of a thousand pounds being entered. Considering the prices at which animals leave England, this is not perhaps saying much. The display of machinery was more imposing, and estimated at least at four times the sum of that of the beasts. That is to say, there were four thousand pounds' worth of implements on the ground for the Cape farmers to pick and choose from. Amongst these there were no less than *forty-two* varieties of ploughs; and we can picture the colonists going through the old controversy of Howard, Ransome, or Hornsby; or Hornsby, Ransome, and Howard—Page, Ball, or Busby; Busby, Ball, and Page. We might even go so far as to imagine that the several representatives of these houses could have been spared for so agreeable an autumn trip, and that Mr. Sutton, Mr. Barrett, and Mr. Cole were on the scene, politely distributing their catalogues, and descanting on the premiums they had taken, and the wonders they had done. Alas! however, it is too well known that some of the finest flights of our poets, and some of the grandest efforts of our artists, have been to depict their heroes in actions that they really never took a part in. And so would it be with our peasant over what Grantham, Ipswich, or Bedford did at the Cape Town ploughing match—for there was not one of them there. Of these forty-two varieties of ploughs for the English colonists to purchase, every one of them was of American manufacture. In the whole four thousand pounds' worth of machinery there was scarcely anything whatever of English make. There were English horses of course, for the breeders out there are beginning to take to them very warmly at last, and, as we have already heard, there were English cattle and English sheep. But with all our knowledge of business, our different plans of pushing a trade, and more than this, with all our fierce opposition one to the other here at home, there was not an English plough on the ground! We begin to fear we shall yet have to qualify what we set out with, about there being no people so strongly imbued with the spirit of commercial enterprise, and to put America before them. It is almost incomprehensible how they can have so much

anticipated us in this direction; for if it was worth the while of the United States to send forty-two sorts of ploughs, it might certainly have been worth the attention of the United Kingdom to send a few. We can, indeed, very readily echo the commentary of the Judges on making their awards, and "the surprise they expressed at seeing English manufacturers so badly represented."

Surely, this is a matter worth looking to. With some of our best blood to go on, the Americans already declare that they shall soon "grow" better Shorthorns than we can. Their horses, by the same system, are often equal to our own, as it is. The first favourite for the Derby at this very time is a colt brought over by Mr. Ten Broeck; and a Yankee pugilist is coming to fight our man for the Championship. In some descriptions of machinery even, we only follow their lead, and the best of our reapers and mowers are either invented or improved upon by Americans. But they are too 'cute a people to slight any hint or wrinkle they might take from us. At the Agricultural Fair held at New York, just about the same time as this meeting at the Cape, the entries for implements were kept open to the very day previous to the show, with the especial view of allowing strangers every opportunity for attending. We gave the time and place of this gathering, one generally known as that of the American Institute, in our List of Meetings to come. We have not yet heard how it was responded to; but in due course we shall have the report from our own correspondent in those parts. There is, at any rate, scarcely a celebration of the kind on this side of the

water but a Transatlantic friend has some new discovery to show us; or, armed with a pencil and a letter of introduction, something "to remember to remember" when he gets home again.

It must not either be supposed that all our leading manufacturers are as much above, or simply as indifferent to the Cape market as our implement makers appear to be. It is only during this very week that we see that "the Messrs. Hawthorne, the celebrated engine-builders of Newcastle-on-Tyne, have just completed the first of a batch of eight locomotive engines which they have been commissioned to make for the railway at the Cape of Good Hope, the first sod of which was recently cut by Sir G. Grey. This engine has been making trial trips on the Newcastle and Carlisle Railway line, and it is built on a new principle," and so on. Might it not be worth the while of other celebrated engine-builders to ascertain what is wanted at the Cape? An agricultural meeting at this date rarely depends upon ploughs only, and there are all kinds of inventions which the Cape farmers might patronize if they only had the chance of doing so. We have been rather inclined to pride ourselves for some time past on having as a whole by far the best collection of agricultural machinery of any people in the world. We hold somewhat to this opinion still, and are so unwilling to see ourselves "cut out" in any quarter, but more especially amongst our own kith and kin. Depend upon it, if it will pay American houses to send forty specimens of ploughs to a Cape show, it might answer the purpose of an English firm to try a bout with them.

A CHAT ABOUT WINE.

Last month we had a few words to say upon water: we now propose turning to wine. Wine and water do not commingle well; at least they are better kept separate. The subject is forced upon our attention by the controversial discussion provoked in the daily journals, by those who favour and those who oppose the use of stimulants.

We are not about to enter into this dispute, because we believe common sense has long since carried the day in these controversial arguments, and experience has shown that it is utterly impossible to legislate stringently with effect upon this matter of the use of stimulants. Whenever and wherever it has been taken up with the strong hand of the law to legislate for the sale of strong drinks, with the view of suppressing excess, or to put a stop to liberty of action, more harm has been done than good.

Not that we deprecate the honesty or good motives of those who strive to check the baneful evils of drunkenness, for we believe they are actuated for the most part by pure, right-minded, and disinterested principles; but the teachings of chemistry tell us that man requires, and more especially in northern climates, a daily supply of carbon as well as of nitrogen. It matters little

whether fermented drinks are presented in the shape of beer, wine, or ardent spirits: the active principle in all alike is alcohol, which exists in variable proportions in each, and to a great extent they not only stimulate and invigorate, but they also partake of the exhilarating and soothing, hunger-stilling, and waste-retarding effects of tea.

"If wine is poison, so is tea,
Only in another shape;
What matters whether we be killed
By canister or grape?"

The moderate use of fermented drinks not only gains favour from the long usage of society, but we have also the authority of Holy Writ, which says, "Go thy way, eat thy bread with joy, and drink thy wine with a merry heart."

And in the words of the Bacchanalian song—

"In wine, mighty wine, many comforts I spy;
If you doubt what I say, take a bumper and try."

But it ought to be good wine—a very scarce article now-a-days, mainly because the manufacture and consumption of wine are kept down by the high price and duty charged; our consumption yearly seldom rising above 7,000,000 gallons a year, or about a gallon to

every four souls, while in the commencement of the century it was as high as one gallon to every two persons of the population. But there was more hard drinking in those days, and the wines were of a different character. Cape wines were unknown, and the light French wines but little drunk.

Jerupiga, arroppe, logwood, and other adulteratives were then not part of the stock-in-trade of the wine-dealer, although the wines may have been more highly branded. But education and civilization, a better class of amusements, the extension of the press, and other causes, are improving greatly the social and moral condition of the people; although it cannot be denied that ardent spirits are too much indulged in now by many of the lower classes. The remedy for this will be found in improved dwellings and houses for the working classes, and more free or cheap instructive evening amusements.

There are two articles among our foreign imports—"Liquorice paste" and "liquorice juice"—which yield a revenue to the Crown of £9,000 to £10,000 a-year. The large quantity of 500 tons of these consumed annually can scarcely be all for lozenges and black draughts; and it is said that there is a great demand for it in the manufacture of "fine crusted port," and in the brewing of porter and stout. How true this may be we will not undertake to assert.

We are not about to treat at all of the ordinary wines of commerce, which may form a subject another time. We propose now merely to give a running commentary upon some of those simple vinous beverages which find favour among the inhabitants of other countries, and are quite unknown here. The enumeration will serve at least to show how wide-spread is the love of pleasant drinks among savage and civilized. A beverage called "chica de mirtillo" is obtained in Chile, from a species of myrtle berries, probably the *Laurus caustica*. These are about the size of a large pea, of a deep red colour, and of a peculiarly sweet and delicious aromatic flavour. They are prepared by crushing them in water, and allowing them to ferment for a few days. The Indians of South America make a pleasant sub-acid drink called "mistan," by boiling a quantity of roasted ripe plantains, which, after being reduced to a pulp, are allowed to ferment for several days. In the months of February and March the Australian aborigines prepare a luscious drink from the locop, a sweet exudation from the leaf of the mallee. In Abyssinia his Shoon Majesty has tedge, or honey wine, prepared for him, even as metheglin or mead was held in repute in olden times.

An old French author speaks in warm terms of praise of the maby, an Indian beverage, which he describes as a red wine, superior to the best perry of Normandy. It is thus made: Into thirty quarts of water are put two of clarified syrup, twelve red sweet potatoes (*Batatas edulis*), and as many oranges, cut into quarters. The mixture is then allowed to ferment about thirty hours.

Orange wine might be made a profitable article of export in the West Indies, Brazil, Africa, the East

Indies, and other tropical regions, where the fruit is left to rot. A Sardinian pure orange wine—a valuable novelty, prepared by P. Gavassini, of Genoa, solely from oranges that would otherwise be wasted—was rewarded with a prize-medal at the Exhibition in 1851. It was reported on by the Jury as a remarkably agreeable beverage, strongly resembling fine Lunel, in flavour, aroma, and quality. Much might be said upon the manufacture of sweet or home-made wines in this country, which is, comparatively speaking, little attended to, except by a few manufacturers.

An excellent cider beverage may be obtained from the juice of the pine-apple by fermentation. Old Ligon, the early historian of Barbados, writing in 1657, speaks in raptures of it:

"The last and best sort of drinke that this island or the world affords, is," says he, "the incomparable wine of pines, and is certainly the nectar which the gods drunke; for on earth there is none like it; and that is made of the pine-juice of the fruit itself, without commixture of water or any other creature, having in itself a naturall compound of all tastes excellent that the world can yield. This drink is too pure to keep long; in three or four dayes it will be fine; 'tis made by pressing the fruit, and straining the liquor, and it is kept in bottles."

In Mexico, a most nourishing and refreshing beverage known as *tepaché*, is compounded of pine-apple juice, parched corn, and sugar.

The fresh sap of the maguey, or large American aloe, known as *aguamiel*, is often drunk unprepared, and much relished as a delightful beverage; but it is usually fermented, and made into the stronger drink called "pulque," which best suits the Spanish taste in Mexico. The sap of the *Bromelia Pinguin*, when properly prepared and allowed to ferment, makes a pleasant drink, which is considered little inferior to ordinary champagne.

The fermented juice of the sugar-cane contains chemically the same alcoholic principles as the apple, the pear, and the grape. In Normandy, in order to obtain good cider from different kinds of apples, it is customary to leave them in a garret for a certain time. So if the canes are left to themselves, after eight or ten days, they assume the same vinous smell as apples, and if used in that stage would produce a cider beverage. But at the end of about twelve days the canes will be in a fit state to produce wine. They must be pressed in a mill, and the juice received into a cask partially open at the top, and little exposed to the air. After being left for some time, that the fermentation may proceed, it can be bottled, and will in a short time sparkle and pop like champagne. The longer the wine remains in bottle, if well secured, the more it will improve, until it becomes exquisite. By adding to the must or sweet wine the juice of some fruit—such as the pineapple, orange, lime, guava, or mammy-sapota—a wine is obtained possessing the aroma and flavour of the fruit employed; or advantage may be taken of the perfume of the pomeroose, granadilla-flowers, or orange-flowers, &c., to obtain scented wines. It may also be

coloured red with the juice of the cactus fruit, or prickly pear.

It is thus seen that Nature, very far from having deprived the torrid zone of fruits and plants adapted to the production of an agreeable vinous drink, capable of alleviating the thirst which is felt by the inhabitants of

those burning countries, has enriched it with several, especially the cane, which presents in its sugar the purest aliment, and in its fermented juice the most abundant source of a wholesome drink. The cane lends itself to every taste; like the apple or grape, it is made optionally to yield cider, wine, or brandy.

M A L T W I N E.

SIR,—In often reviewing your excellent medium of public information, containing so many valuable remarks on the various improvements in agricultural implements and tillage of the soil, I feel surprised to find in it so few substantial practical suggestions how to hit upon some improved method to extend the sale of the produce of the soil. Now, in this manufacturing district, by our ingenuity, industry, improved machinery, free open markets for sale, and unshackled production, we get riches, and we rank with the first in the world in that pursuit, because we work free from the restraint of monopoly or any old-fashioned crotchet of law to bind us down. This freedom enables us to carry on the sale of our manufactures to a boundless extent throughout the world. But the position of the British agriculturist is quite different. He stands simply and patiently bearing the shackles of monopoly, particularly that of the brewer and the Inland Revenue restraint in not giving him a free and proper trade to manufacture for exportation or home use a superior malt wine.

It is not generally known that a portion of proof French brandy is generally added to foreign wine previous to exportation to the extent of about 25 per cent. to that sent to hot climates and about 10 per cent. to that sent to England, in order to prevent its becoming acid by the action of the voyage, and if deemed necessary a few gallons more of French brandy may be added to it when in a bonded stores free from duty.

But the British wine maker is charged 16s. per gallon the duty on French brandy and 8s. per gallon on British proof spirit, if added to the wine, thus rendering it impossible to fortify the wine with spirit at the full duty, and then compete successfully with the foreign wine manufacturer, either for home use or for exportation. If the Government would allow 10 per cent. of proof French brandy, or 10 per cent. of British spirits, to be added to the British wine, the former at 6s. per gallon and the latter at 4s. per gallon duty, and 10 or 15 per cent. of foreign wine at half-duty to produce a smatch of fruit flavour (and on exportation of the said wine, the whole of the spirit and foreign wine duty not to be charged), then a successful competition and a very extended trade would, I feel confident, result in the manufacture of British wine, the quality of which we can show by practice is more wholesome to the British constitution than the foreign wine, whether consumed at home or abroad. This is accounted for by the much superior fermentation; and consequently a much cleaner wine or beverage can be produced from malt extract at a proper season of the year, in this country, than can possibly be produced from the grape in hot wine-growing countries at a higher atmospheric temperature.

To show the difficulties that the sale of agricultural products in beer and British spirits (each wholesome malt extracts) has to contend with, I would instance the conduct of the magistrates at the Brewer's sessions. In the year 1851 there were twenty-five applications at Blackburn for new licences, out of which only four were granted, and three of those were shown to the public brewers without any tangible reason being given

why the remaining twenty-one were refused. Again, the Kent magistrates, recently at Greenwich (29th September, 1859), sat eight hours hearing solicitors pro and con, and then came to the determination to grant only one, and refused the remaining fifty applicants for new victuallers' licences. These two instances, without mentioning many more of a similar nature throughout the United Kingdom, cast a direct insult upon the liberal and right feelings of a most important and respectable section of the public, whose pecuniary interests would evidently be much improved by an immediate removal of that contracting and obnoxious control. I think the only legitimate interference in the trade by the magistrates is that of punishing such delinquents who suffer excessive drunkenness and disorder to be practised on their premises by suspending their licences. But let a licence for those important articles of home produce be given to respectable parties when asked for, or at farthest within the period of two months. I think it would be much more sensible and justifiable if the magistrates were to be empowered to control the sale of deadly poisons, the notoriously adulterated food, and actively patronise the temperance movement, in lieu of the things that are perfectly wholesome and beneficial to health, when used in moderation. If the manufacturers of this populous district were to be impeded in extending their business by any old law that ran counter to the spirit of any improvement of the day, they would soon try to remove the obstruction by the aid of an intelligent Member of Parliament to vigorously grasp hold of any modern improvement, and drive forward on the best principle. I sincerely trust the British agriculturist will, without delay, have the good sense to follow their example; for I think he deserves quite as much respect from Government as the unshackled manufacturer, or the foreign merchant who is allowed free trade in corn with our home markets. I see no articles of beverage exported into hot climates, that stand sound for ultimate use, but wine properly brandied, porter well charcoaled in the high-drying of the malt, and Burton ale, whose water contains 45 grains per imperial gallon of the sulphate of lime, which is more by at least 30 grains per imperial gallon than the average class of water in England (this powerful sulphate of lime, no doubt, arrests the acid fermentation of the ale), with a prodigious quantity of hop bitter added to each of the last. From these facts I should infer that none of the above-mentioned articles are so wholesome as good malt wine prepared in the form I have suggested, or, when used, diluted with pure water to please the palate.

In the year 1854 the liberal and business-like Government of the Earl of Aberdeen suggested to Parliament the form of a bill to change the present system of granting victuallers' licences, and to throw the trade more open, which, if adopted, would certainly have been the means of extending the consumption of barley. The Palmerston Government, who succeeded it for the space of about four years, passed away without noticing the said bill, which now remains shelved in its dusty mantle, still under the control of the Palmerston Govern-

ment, by whom, I fear, it will remain unnoticed, unless vigilantly reluctant out from its slumber, and at once made into a substantial fabric by the influence of the party so much interested in its adoption.

It naturally follows that an illiberal Government will feel very reluctant and shy in meddling with the present licensing system, for the fear of provoking that influential body of parliamentary electors who now hold licences. On such ground, the radical cure for such corruption would be the disfranchisement of both the licensed victuallers and retail beer-sellers, by which means the present system would be easily changed and the number of licences increased, adding several hundred thousand

pounds to the public revenue, from a source of luxury ready and willing to yield to it when judiciously handled.

PROBABLE COST OF SUPERIOR BRITISH MALT WINE.

21 bushels of malt, at 7s. 6d. per bushel, to produce	
108 gallons	£7 18 0
10 gallons proof malt spirit (without duty), at 4s. . .	2 0 0
Ditto, half usual duty, at 4s. . .	2 0 0
	£11 18 0

Or 2s. per gallon.

Ten gallons of foreign wine, if added extra, would cost about 1s. 2d. per gallon on the total. Yours, &c., R. J. Blackburn, Oct. 10th. A PRACTICAL BREWER, &c.

THE ANGORA GOAT—ITS BREED AND VALUE.

Fashion has its influence even on commercial operations, and many a revolution in trade transactions has been effected by some change of taste. A run upon any peculiar fabric necessarily creates an increased demand for the raw material. At one time alpaca is the rage, at another mohair; but both these substances maintain their favour with the public. The raw material for each of these has hitherto been obtained exclusively from one district. With the increasing demand, however, and higher price obtained for them, there is no reason why the production should not be more widely diffused. There are other climates suited to the animals than those where they have hitherto been chiefly reared, and we are glad to see increased attention being given to their extension. The opinions entertained as to the breed of the Angora goat degenerating if taken out of the peculiar locality where it has hitherto thrived, has been proved to be erroneous. Of course there are certain conditions of climate and food essential to their perfect health and to the superior quality of their fleeces.

Apart from its value in an agricultural point of view, the Angora goat is a remarkably handsome and interesting animal. Its curls of pure glossy white, together with the fine symmetry and gallant bearing of the animal, mark its high caste. Tournefort in his *Levant Voyage*, A.D. 1700-1-2, vol. ii, observes:—"They rear the most beautiful goats in the world in the country of Angora. They dazzle by their whiteness, and their hair, which is as fine as silk, curling naturally in tresses, eight or nine inches long, is the material of many beautiful stuffs, especially CAMLET; yet but little of this fleece is allowed to be exported, unless spun, because by it the people of the country gain their living. It would appear that Strabo speaks of these beautiful goats. 'In the neighbourhood of the river Halys,' says he, 'they cultivate sheep whose wool is very thick and very soft; and, moreover, they have there goats which are not found elsewhere.' Be that as it may, these beautiful goats are not to be seen at present more than four or five days' journey from Angora and Belbasar." Capt. Arthur Conolly, too, thus speaks of the animal:—"The long-famed silvery-white-hair goat of Angora, is peculiar to the province of Angora, and certain ad-

joining districts. It is *invariably white*, and its coat is of one sort, viz., a silky hair which hangs in long curly locks. The country within which it is found was thus described to us: Take Angora as a centre, then the Halys, Changere, and thirty miles beyond; Beybozar to the same distance beyond, to near Nalahan, Seyree Hissar, Yoorrook, Tosiah, Castambool, Geredeh, and Cherkish, from the whole of which tract the common bristly goat is excluded. Kinnler did not see a long-haired goat east of the Halys; we marked the disappearance of this animal on the westward, a little before Nalahan. Our Angora informants agreed that the boundary is decided on all sides, and remarked that, if taken out of their natural districts, these goats deteriorate, in point of coat especially, till scarcely recognizable; adding, that it is difficult even to keep them alive elsewhere. The fleece of the white Angora is called *Tifték*, after the goats have completed their first year: they are clipped annually in April or May, and yield progressively, until they attain full growth, from 150 dirhems to 1½ oke of Tifték (or from 1 lb. to 4 lbs.—one oke or 400 dirhems being equal to about 2½ lbs. English.)" This subject, it may be remembered, was brought under discussion a few years ago by the exertions of H.R.H. Prince Albert, and much valuable information elicited. But it ought not to be allowed to die out, for it has since increased in interest and importance by the enlarged demand.

The Angora has been introduced successfully into the Cape colony. The sheep runs of that colony have been deemed very suitable for this goat. A member of the firm of Messrs. W. R. Thompson and Co., of Cape Town, went recently to Beyrout, where, at some sacrifice of time, trouble, and money, he procured a small lot of these. Another firm, Messrs. Mosenthal, introduced a lot, and crossed them with the native goat of South Africa. Samples of the produce of this cross are well spoken of, but we think it will be found desirable to keep up the purity of the breed. The Angora, by neglect of blood, degenerates, and the hair becomes mixed with kemp, which refuses the dye, and is injurious to the manufacture of the finer fabrics. The chief local objection urged against the Angora is the size, which is inferior to the African goat. It is

stated, however, that the pasturage of the eastern province of the Cape has a sensible effect in increasing the size of those bred from the imported stock. The Angora is stated to be harder than the colonial goat, being able to sustain exposure to cold and rain much better than the common one: This might be inferred from its thick fleece or hairy covering. The wool of the first cross fetches, in the colony, 1s. to 1s. 6d. a pound, and the skin of a half-bred Angora realizes more than a pound sterling in the Cape Town market.

The following shows the importation of Turkey goats' hair or wool into the United Kingdom, from 1843 to 1858 inclusive:

1843	..	575,513 lbs.	1851	..	193,046 lbs.
1844	..	1,290,771 "	1852	..	222,239 "
1845	..	1,241,613 "	1853	..	2,916,500 "
1846	..	1,287,320 "	1854	..	1,189,147 "
1847	..	1,300,400 "	1855	..	2,928,411 "
1848	..	88,853 "	1856	..	2,912,838 "
1849	..	253,037 "	1857	..	3,255,010 "
1850	..	267,650 "	1858	..	3,312,012 "

In the past ten years the price of this hair or wool has gradually increased with the extended consumption. In 1849 it advanced to 1s. 8d. per lb.; in 1850 and 1851 it reached 2s.; in 1852 and 1853, 2s. 4d.; in 1855 and 1856 it was again lower, at 2s. to 2s. 2d.; in 1857 and 1858 it was rather firmer, at 2s. 2d. to 2s. 4d.; while in the present year it advanced to 2s. 10d. to 3s. 2d.

Looking at the increased demand for this long, fine silky hair, there is no doubt that the propagation of the Angora goat should be promoted as much as possible; for we have many colonies well suited to its pasturage. It has been successfully introduced into South Australia; and parts of New Zealand, New South Wales and Tasmania would be well fitted for this animal. It has been carried into several parts of the United States. When we remember what has been done with the fine Merino breed in Australia, similar success and profit might result from greater attention to the Angora and Cashmere or Thibet goats and the Alpaca.

Messrs. Hughes and Ronald, wool-brokers, of Liverpool, in a recent report, thus speak of Angora goats' hair:—"The importation of Mohair is of comparatively recent date; and it is scarcely a quarter of a century since it was first introduced into this country. It was for some time chiefly used for the list-ends of woollen cloths, and commanded little attention; but for some years past it had been greatly gaining in favour for the fancy trade, and has now become an article of considerable importance, our annual import being upwards of three million pounds' weight. It is particularly adapted for damasks, velvet for coach-linings and curtains, and ladies' dresses mixed with cotton and silk, and produces a most agreeable texture. A large quantity of the yarn spun in this country is exported to France and also to Germany, where it is chiefly manufactured into velvet. The fashion has this year run thus much upon Mohair fabrics for ladies' dresses, that the wool has reached the unheard-of price of

3s. 2d. per lb., and everything on the spot and for arrival has been bought up for home consumption." And, Mr. P. L. Simmonds, in his descriptive "Catalogue of the Animal Products in the South Kensington Museum," thus alludes to it, and to the kindred tribes of goats yielding other valuable commercial products:—"Mohair is perfectly free from 'undown'; unlike the Thibet or Cashmere fleece, which has a downy covering on the pelt, with long coarse hair, or kemp at the top, the separation of which is both tedious and expensive. In sorting Mohair, about one-sixth part is taken out, which is too short in the staple, and not applicable for combing purposes; and in the process of combing about one-fifth part is made into 'noils:' these, together, are bought by woollen manufacturers, for making into cloth of different kinds, and other materials. The common domestic goat of Thibet (*Capra chandra*) is distinguished by the uniform abundance of its long flowing straight hair, which descends below the knees and hocks, and covers the whole animal pretty uniformly. This and the Kirghis breed are closely allied to the celebrated shawl goat; and their exquisite sub-fleece, or abundant outer coat, might be turned to good account—if not immediately, yet after crossing the breed with some nearer appropriate stock, such as the Angora or Whidah. The natives of Thibet manufacture ropes, caps, and coarse overalls out of the long hairs, and a fine woollen cloth out of the sub-fleece, mixed occasionally with the wool of the Silingia sheep. The Cashmere, or shawl goat, also highly prized for its fleece, is descended from the goat of Thibet, which pastures on the Himalayas. When picked, the wool is soft, rich, and lustrous; indeed, superior to any lambs' wool that possibly can be produced, and afterwards divisible into two or three qualities. The kemp is a coarse and harsh straight hair, and when the animal has not been shorn for some time, the spiral points out top the rest of the fleece. Goats producing the shawl wool are common in the countries west of the Caspian."

RHUBARB WINE.—We find in the *New York Tribune* a receipt for making "pie plant wine," as furnished by Mr. B. P. Cahoon, of Kenosha, Wis., the originator of the system; "The juice of the rhubarb is extracted by the same process as that of currant, elderberry, or any other juices; and mixing with the juice an equal quantity of water, to each gallon add three and a-half pounds of fair quality of New Orleans sugar. Put into barrels or casks, filled full, and fined with isinglass; being allowed to remain in the casks until Spring, and then bottled. By adding or diminishing the quantity of sugar, it will vary the strength of the wine in the same proportion. Rhubarb is said to afford a greater quantity of juice than any other plant, and it is also considered a better quality than any but grape juice to make domestic wine. The process is simple and has this to recommend it, moreover, it is said by those who have tested the merits of rhubarb wine, that it is equal to American sherry.

LECTURES ON PLANTS

Applied to Useful Purposes throughout the World, or otherwise fulfilling obvious offices in the Economy of Nature, commencing with those which are the Principal Objects of Cultivation, as furnishing Food, Fibre for Manufacture, Medicine, Colouring, Astringent and other Properties applicable to the Arts.

BY CHARLES JOHNSON, PROFESSOR OF BOTANY AT GUY'S HOSPITAL.

LECTURE II.

Grasses, distinguished from all other plants by a structure so peculiar, occupy the land to an extent of so much importance in the aggregate, that they may be regarded as constituting one of the most remarkable features of the earth's surface. In species alone they comprise more than one-twentieth part of the whole vegetable kingdom; and, like the human race, with the history of which in every age and country they are associated, this form of organic being seems capable of maintaining existence under almost every extreme of climate and physical circumstance. The ocean alone affords no range for grass development, though even this vast medium yields so far its exception, that certain species will only flourish upon its shores, a situation in which they fulfil important offices ministering to the general government of the world. Under the most scorching beams of the tropical sun, and growing from the crevices of rocks beyond the limits of perpetual snow, grasses are found; obeying, in each and in every intermediate habitat, the Divine command, "Increase and multiply and replenish." Wherever the footstep of man can tread, wherever even the glance of his eye can penetrate on land beneath the light of Heaven, he is reminded of the presence of this vast group of vegetation—a group upon which terrestrial animal life is chiefly dependent. Flesh is grass. Grasses are everywhere, where root can penetrate, or leaf find nourishment. The inhospitable shores of Spitzbergen and New South Shetland share their distribution with both the temperate and torrid zones.

As covering surface, the predominance of the grasses is too vast to admit of comparison with that of any other great natural family, whose increase they limit when the individuals are diminutive and weak, while they emulate and contest against the encroachments of the larger and more powerful.

The fanciful but far-seeing and inquiring Swedish philosopher, Linnæus, styled our grasses the "plebeians of the vegetable kingdom." Such they truly are, and, plebeian-like, seek to occupy every vacancy, even treading upon the heels of its patricians. They are lower in complexity of structure than their prouder brethren, but there are many lower than themselves—groups of flowerless plants, which when the same imaginative genius, marking his close observance of organic nature, styled in their respective grades *bond-slaves* and *servants*, he assigned to their proper rank below our plebeians. These, in all soils and situations, prepare

the way for the grasses, and having done so yield before them. Possession once obtained, the latter take up the unfinished task from their labourers, making the earth green and beautiful, and continuing their course until it teems with food for all its living creatures, and their human lords among the rest.

It is no whim of the enthusiast that inspires this exordium; matter of fact, the sternest monitor of civilized man, the most unceremoniously subversive of all his unsubstantial and merely speculative theories, and the youngest of his aims in science, regarding its application to the general concerns of life—*statistics*—support this all but apotheosis of grass. A glance at one series of its details, that concerning its supply of food, will be sufficient to illustrate a point that few perhaps take into consideration. The direct consumption of any medium of support may be appreciated, the indirect remain unnoticed. Founded on commercial records and returns, about the commencement of the present century, Mr. McCulloch, and other statistical writers and compilers, have given us some useful confirmatory statements that will aid us in forming some idea of the vast expenditure of grass and grass products in our island, in which, it ought to be remarked, less vegetable food is employed than among many of our continental neighbours. Thus, the average quantity of corn consumed by each individual in this country is computed to be eight bushels annually, while in France it amounts to ten. In either case, this estimate is loosely calculated from the native growth and importation in the respective countries of European grain; but rice, a similar production, of which about 400,000 cwt. are brought to us yearly; maize, millet, and others received in smaller proportion, and less generally used—all contribute to increase the average of direct human consumption of grass in no trifling degree, while an annual supply and home distribution of 450,000,000 lbs. of sugar add to it still more enormously. Our indirect employment of this group of vegetation as a life-supporting medium is no less enormous, though it may be difficult, nay perhaps impossible, fairly to estimate its extent: it is in its form of pasturage for the maintenance of sheep and cattle, through which it becomes human food, as mutton, beef, veal, milk, butter, and cheese. The most moderate computation assigns to every individual, young and old, rich and poor, taken in the aggregate, an average yearly consumption of one hundred weight of

butcher's meat, estimating the same from the number of cattle disposed of at markets throughout the kingdom for immediate slaughter; an average doubled by some statistical reporters, but here selected to avoid the exaggeration that might ensue where the means of calculation are at the best imperfect. The stock of animals constantly maintained for this supply in Great Britain alone may be stated in round numbers at five million head of cattle, and thirty million of sheep.

The artificial system of cattle farming as now practised may warrant some deduction from the general assertion that all this is grass meat; but grass and grass produce are still its leading composition, and consequently that of all the articles enumerated above—namely, meat, milk, cheese, and butter—in consuming which we are, as expressed by a late writer on the subject, really only eating “grass in disguise.” Our pork, poultry, and game are more or less dependent upon the same source; and upwards of a million of horses, chiefly employed for the necessities of conveyance and traffic in this busy land, subsist almost entirely on the produce of the meadow and the corn field.

The proportion of the food-elaborating grasses, though considerable, is not surpassing, when the vast extent of the group is taken into the account. Like that of their human parallels, their allotment of business in the commonwealth of Nature is great, and much diversified; circumstances that induce me to divide and classify them according to their natural adaptations. A few preliminary remarks may, however, be necessary to place such arrangement in its proper light, and at the same time be serviceable in explaining the views I am desirous of inculcating on the study of nature on the broad scale.

It occurs among the grasses, as with the species of other great natural families, that while some are immediately subservient to the necessities of animal life, from the animalcule and insect upward to mankind, the office of others is simply that of preparing the conditions requisite for the existence of those which follow them. This is a natural law pervading the entire economy of the vegetable kingdom, and traceable to a certain extent in that of the animal; but the functions of many appear to be wholly dedicated to its fulfilment, and to cease when that is attained, so far at least as our very limited observation enables us to determine; while with the remainder a succession of offices is provided, through which alone they arrive at the termination of their existence. We may illustrate this fact by selecting a few out of many circumstances associated with the history of a single tree.

Let our tree stand in the middle of a forest. On its trunk grow lichens and mosses, plants which are not either of them capable of affording subsistence to insects, or to any of the higher or lower forms of animal life. These little plants, however, elaborate the elements of air and water, as well as of those materials that in the form of imperceptible dust, or even vapour, lodge upon the rough and slowly-disorganizing external bark to which they adhere, eventually to be cast upon the earth to undergo another phase of that per-

petually-recurring change of matter so essentially connected with the birth and maintenance of organic being. But the tree itself has a more extended field of operation. Its leaves, necessary to its own life as are lungs or gills to the quadruped or the fish, act chemically upon the surrounding atmosphere, aiding more or less to the maintenance of its salubrity, while at the same time innumerable insect forms are supported by their juices and tender tissue; its fruits and seeds feed the birds and squirrels, independent of the destiny of the latter to the propagation of their kind; man lops its branches for lighting and recruiting his fires, and finally fells its stalwart trunk for the purposes of building and manufacture. If man came not to destroy, and nature be left to her own secret workings, the drama of tree endurance and usefulness is lengthened until it falls, hollowed by age, and borne down by tempest. Then the gigantic stem, bored through and through by previous predators, and lying apparently a useless mass, is still in requisition under the grand ordinance which summoned it at first into existence, reared it to maturity, and compelled its overthrow—one kind of grub or beetle gnaws its loosening bark, another feeds on the yet hard wood, each to be succeeded by different species, through all the stages from incipient to final decay, until form is utterly annihilated, and its remnants mingled with the soil. The lichen and the moss had long before finished their career: theirs was a single office only, fulfilled and closed; the tree had a more extended, a more complicated purpose to effect. All the three were pioneers to those which might follow in their course, but their means and capabilities differed. There is a similar variation between those of different grasses, notwithstanding the close structural resemblance which they bear to each other: one lives and flourishes that another may live and flourish afterwards; but one, like the moss and the lichen, may terminate its existence, having lived to no other end; while another, fulfilling its correspondent mission from the first, may, like the tree, prolong or multiply its labours and their results until they become associated with the history of a world of life and reason.

Pursuing this idea, we may, I think, with advantage adopt the proposed classification. It has the merit of being philosophical, and at the same time familiar. The mere student of system and arranger of species might dispute its value even for the purpose before us, as being opposed to all rules technical, and ignoring the generic characters which he has been taught to consider founded on laws as unalterable as those of heraldic emblazonry, but which are really so arbitrary in this family of vegetation, as to render them next to useless for all practical purposes, and only tolerated in abstract science from our present incapability to substitute others more correct and decisive.

Our divisions are few, and characteristic solely of association with end, purpose, or application—

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| 1. Colonizing grasses. | 4. Cereals. |
| 2. Land-forming grasses. | 5 Sugar-producing grasses. |
| 3. Pasture grasses. | |

To complete the history of the tribe, our plan must

of necessity embrace various other topics; but as regards the simple classification of species, and the order in which they will come before us, this arrangement will be sufficient.

By colonizers must be understood those grasses that naturally vegetate on rocks, striking their roots into the fissures or crevices, or on sand and other media which contain little or no assimilative organic matter, and are hence unfitted for the growth of plants requiring much nutrition through the root, subsisting indeed almost exclusively upon air and water, aided perhaps by the slow decomposition of the mineral substances among which they grow. Such grasses are generally distinguished by the very rigid texture of their stems and foliage, and the slender, incurved, and pointed character of the latter, which is often almost hair or thread-like, especially in those belonging to very elevated and mountain regions. In such situations, too, a peculiar light-grey or whitish hue occasionally supplants, or rather conceals, the natural green colour of the leaves. This is due to the lodgment of secretory matter upon the surface, and being likewise observed upon the leaves and other parts of such plants as grow near the sea-shore, or within reach of the driving spray; the appearance is termed "glaucous," or sea-green. The object of this covering is apparently, in the one instance, protection from cold or damp; and in the other, from the spray, which by its saltness would be injurious to the vital tissue beneath. The glaucous hue is not always characteristic of the same species, as, though in certain cases retained, it is frequently absent in such plants when growing in lower or inland habitats.

The land-forming grasses are strictly speaking colonizers likewise, but the distinction between the two is necessary, on account of the difference of the offices they individually fulfil. The colonizers operate in the production of soil on land already serving as a solid basis for its reception. They are usually perennial, forming more or less dense wiry tufts; but many are only of annual duration, scattering their seeds abundantly to renew and maintain unceasingly the process of assimilation, that is to terminate in their eventual expulsion, so soon as others of more succulent and nutritive quality can find upon the site food for their support, that food having been accumulated there by the alternate growth and decay of their predecessors. But of those which we are to regard as land-formers, one series fixes on loose, drifting sand, extending through the same by long, undermining, horizontal stems, that branch and cross each other until they form a strong, coarse network below, that binds the mass together. Every joint sends out roots, by which the stem maintains position while it creeps onward indefinitely, sending up at intervals tufts of leaves and flowering stems, around which the wind accumulates the sand in hillocks. In a second series, the horizontal stems creep over the surface chiefly, which they cover with a dense matting, rooting with even greater firmness and solidifying the unstable mass with a rapidity and a certainty that bid defiance to any future disturbance. In

both instances the tenure of such grasses is temporary. In fixing and forming firm ground, they render it a fitting habitation for the colonizers, that quickly arrive to aid them in their work, and carry forward another step the conversion of the desert into a pasture. A third series may be conveniently subjoined, consisting of certain grasses of aquatic habit, which, assisting in the gradual transformation of lakes and pools successively to bog, and heath, and meadow, may be considered as land-formers. Such species, however, are often fodder grasses of considerable nutritive importance, and hence bear no natural resemblance to those of the previous series, which are universally rejected by herbivorous animals.

Our third division, pasture or fodder grasses, consist of species exceedingly various in aspect, usefulness, and adaptation to all diversities of soil and situation, but they will only flourish where that soil exists; without the presence of the necessary organic elements accumulated by their predecessors, where their seeds alight they vegetate in miniature and die. The knowledge of their several grades of fitness for nutrition, and of adaptation to the land, is, or ought to be, one of the most important items of agricultural education; but it is a problem few have even sought to master. Nature sends them where they ought to grow, but man often endeavours to improve upon her plan, and fails. They constitute an extensive group, the species of which, individually accommodated by structure to abstract certain proximate principles from the soil in which they vegetate, are only found where those predominate; if such are wanting, or in smaller proportion than required, other grasses with different affinities and powers of assimilation overpower or exclude them. They are never found isolated, or occupying the land as solitary species, but always mingled in variable numbers with each other, five or six to twenty or thirty species composing the vegetation of the meadow or pasture; their combination being apparently equally necessary to the welfare of the animals feeding upon them, as change of food is to mankind, of whom it has been recorded that "they shall not live upon bread alone."

As pasture grasses feed the brute, the cereal or corn grasses are the support of the man. Their annual character, added to the necessities of the latter, renders their preservation dependent upon the cultivation, of which, in almost every instance, they have been the objects time out of mind—a circumstance that has apparently so changed their superficial and even their structural condition, that they are no longer capable of being recognised in the wild state.

The fifth group is altogether an artificial assemblage, of which only one species at present possesses immediate claim to our notice as associated with European economy, though not individually, as we shall find, an exclusive elaborator of the saccharine principle among grasses.

A wide page opens beyond these in the study of the remainder.

ON AGRICULTURAL IMPROVEMENTS.

Mr. W. Chouler, at the Collingham Farmers' Club meeting, said it was his pleasing duty to congratulate them on the success of the Society generally. All entries, especially the ploughing, were on the increase, and he was more happy to name that, because this was essentially a farmer's club, never having been a society much fostered by aristocratic influence. It was a club of their own, established for the purpose of disseminating knowledge, rewarding merit amongst their labourers, and to create discussion on those topics which were so beneficial and serviceable to the agricultural interests. They seemed almost to have arrived at a time when there would be a contest between the ploughs as to which were the most beneficial, whether wood or iron ones. Mr. Hornsby, he said, had succeeded in bringing out a light plough, which had taken the head prize that day. Still he had some doubts whether the light wood plough could be generally used in this neighbourhood. He was not of opinion, however, that they would be thrown out of use altogether. They wanted to try the draught of them, whether in work or out of work, and the difference of draught between swing ploughs and two-wheel ploughs, particularly in dirty weather. Whether there was more for the horses to do with two wheels and a man less, or without the wheels, but with another man—this he was at a loss to know with any degree of certainty, as these matches did not afford a sufficient opportunity of testing. He then noticed the new traction engine, which he had lately seen at work at Grantham, but he was sorry to say that there was no probability of it shortly becoming generally used. It was a weighty implement, and with the action on the ground it had as much as it could do to draw a common dray. It did not go any length of distance without stopping. Therefore, as far as they saw, they were decidedly of opinion that in its present state it was altogether useless for general purposes. There was one thing, however, which they might be of service to the farmers generally. If a nice light iron cart body was made, then the traction engine might be of service. They might be made useful and durable at probably very little expense. They had many iron wheels, but iron carts were not much seen. He would now go on to notice what the chairman had said respecting the use of machinery for farming purposes becoming general. With regard to reaping machines, he said he had worked one to very considerable advantage. He was happy to say that he was not of opinion that it would be likely to displace the work of the English labourer: but it would have the tendency to render the occupiers of land in the masters more independent of Irish labourers. The reaping machine did the heaviest part of the work, and where crops were adapted it did it in such a way that no hand labour could do it so regularly nor lay it so level. Though he had a high opinion of the general utility of the reaping machine, he knew that it would not succeed in every instance. There were some crops which it might be adapted to cut, and providing it was properly worked in proper land there were few crops but what it would cut; but the chief success depended on the men who worked it, and the manner in which it was worked. By judicious management, and by taking the crops as they lay, as a scythe does, if it was not adapted to all, it

was a beautiful implement to accelerate labour, saving the English labourers the heaviest part of their work, and rendering the farmer independent of the Irish. They were the most troublesome class of persons they had to deal with. The reaping machine would cut, on ordinary days, from 10 to 20 acres, and sometimes exceed that. Mr. Chouler then proceeded to give his opinion respecting the hiring of servants at the common statutes. About a year ago there was an attempt made at Lincoln to do away with the system altogether. Although the custom had a tendency to demoralize both the male and female of our servants, yet he had very great doubts whether they could adopt any other general principle where they could all join in doing away with what some call the nuisance of the market statutes or hirings. It had been tried in Worcestershire. He (Mr. Chouler) was not of opinion himself that it could be done without. There was also another description of labour to which he would allude. Machines had come out lately for the purpose of pulping roots for mixing with cut stuff. With respect to it he was unable to give a decided opinion in any way. Some said it was good, and others that labour beats it. Whether it was pulping machines, reaping machines, or steam ploughs, he had no hesitation in saying that nothing would decrease the amount of labour for the poor man. He had found out that whether it be an individual, or whether it be a parish, the greater the quantity of machinery there was employed, and the more there was done by it, the more labour there was employed, because the land was in a better state of cultivation, and there was more work to be done. It would have the tendency of enabling the farmers to produce more food. More wheat would be grown; and the more stock they could keep in the Winter, the more meat there would be for the people at large—the more manure they would make, and, as a natural consequence, they would be able to grow more corn and produce more bread. With regard to the harvest, he was sorry to say that those who had not thrashed would find out the yield soon enough; and those who had, had found it out already. Farmers had two things to contend against—neither of them very pleasant—an insufficient yield and low prices. The barley crop was worse than he had ever known it. What was to be done with inferior barley he knew not. If the malt law were to be relaxed they could malt their inferior stock. But in the present state of the national expenditure he was sorry to say that it did not appear likely that the malt duty would either be removed or properly relaxed. He would not let down the army or navy, but he would keep them up to what they were; but he would not throw millions away in trying useless experiments. He was sorry to say that he had seen in the *Times* a sneering article against these kinds of meetings, and against the reward they gave for long service. It seemed to him (Mr. Chouler) that if the writer of these articles had been present that day, and had seen the cheerful manner in which the labourers had received their prizes, he would form a very different opinion to what they had published. He would be happy to see some of them there. It would give him pleasure to show them how the men contest for these prizes, and with what thankfulness they had received them.

IMPROVE THE HOUSES OF YOUR LABOURERS, AND EDUCATE THEM TO KEEP PACE WITH THE IMPROVEMENT IN AGRICULTURE.

We cull the following remarks, on these important matters for the attentive consideration of all interested in the advancement of agriculture. At the Dunmow Labourers' Friend Society, CHARLES DU CANE, Esq., M.P., said: The objects of this and similar associations are too well understood, and happily at the present time too highly appreciated, to render it necessary for me to dwell upon them, or doubt that this toast will meet at your hands with a cordial reception. The experience of both ancient and modern history has taught us that a sound and healthy state of agriculture, and the prosperity of all classes connected with the land, is a sure index of the well-doing of the whole nation; and that a country whose agriculture is depressed, and whose native productive resources are not developed, has rarely been able to sustain its position in the onward march of progress and of civilisation. That I believe is a truth which is fully recognised in this country at the present period; and the result has been that during the past few years a complete revolution has been effected in the agriculture of England—we have availed ourselves to the utmost of scientific inventions, of the application of steam-power, and of chemical discoveries; but, like wise and judicious workmen, we resolve, while we rear in our English agriculture a structure at which the world may gaze in admiration, that the foundations of our building shall not be neglected. We know that in the great cause of agricultural improvement the discoveries of the engineer and the chemist would advance us but little, had we not labourers upon whose integrity and whose intelligence we could rely; men endowed with both brains to learn their work, and hands skilled to execute that which they have learnt by the use of their brains. We might cover the country with monster gatherings like those of the Royal Agricultural Society, or the Essex Agricultural Association; we might amuse the eye with the most ingenious inventions of the machinist, and we might startle the ear with the most elaborate and scientific lectures of the chemist or the geologist; but I think you will agree with me that our work would be but half done had we not humble Labourers' Friend Societies, by which to endeavour to solve the great problem of the amelioration in the social scale of the labourer's condition, by which we seek to increase his skill, and render him a fitting instrument to work out that path on which we are lit by the lamp of scientific discovery. This is, as I take it, the object we have set before us in the formation of these associations—and we may depend upon it that the seed we have thus sown is bringing its fruit in due season. It is impossible, I think, for any one to cast his eye over this county at the present moment, and not acknowledge that our labouring-classes have improved of late years in tone and condition. We may view that improvement generally in the cheerful look and manner of the man himself, in the increased anxiety to avail himself of all opportunities of mental and practical improvement; and I do think we may see it, especially at the present moment, not merely in the entire absence of that awful amount of crime of the worst order which but a few years since made the name of Essex a byword and a reproach among the counties of England, but, as compared with the former years, I had almost said, the non-existence of crime at all. I do not know how you may be in this respect in Dunmow and the vicinity, but in the district of Witham the Bench of magistrates, one of

whom I have the honour to be, hold offices which may almost be said to be entire sinecures. We meet only for a few minutes, chat about the weather, or read the newspapers: in fact, we have nothing to do. Besides, the gaol at Chelmsford was found by the magistrates, at their recent visit, never to have contained at any former period so small a number of prisoners. These are signs of the times that we must all look upon with feelings of satisfaction. I do not say that this change has been entirely effected by the establishment of Labourers' Friend Societies, but I say that they have borne no inglorious part in the good work: still less do I say that there is not much remaining for us yet to do. We have it in our power as employers to devote ourselves still more energetically to this work. *We have it in our power as landlords to lay the corner stone of the fabric, by doing all that our means will enable us to effect towards the improvement of the dwelling-places of the poor, and the providing them with sound and religious instruction.* But I think we may gather encouragement from the past and the present, as we look towards the future, and we may be sure that the more we thus join all classes together in a common bond of union and of interest, the more we can show to the labourer that we recognise the just and proper duties our position entails upon us, the better we are lending our assistance towards the increase of our country's happiness and the spread of our national civilisation.

Mr. WADDE considered that great benefit was conferred on the neighbourhood by the system of garden allotments, which enabled the admirers of the young and old systems of cultivation to compete in a friendly spirit with respect to the produce. The prizes to lads for excellence in ploughing were most justly entitled to praise; for they had seen that day a lad who could scarcely reach the handles of the plough gaining a prize, and doubtless the other lads tried their best to gain the laurels which this lad had won. A generous healthy spirit of rivalry in skill was a good thing to promote amongst the rising generation. The landlords in the neighbourhood deserved great thanks, for there was scarcely a deserving labourer in Dunmow who had not an allotment of land. And the labourer almost looked upon these allotments in the nature of an inheritance; for as long as he performed his compact with his landlord, he never stood a chance of being turned out of his holding, and if he died his son succeeded to it, so that his labour and his means might be safely expended upon his allotment. The specimens exhibited that day were very good, especially the potatoes, and quite equalled the produce of land under higher and more expensive cultivation. The encouragement which this and kindred societies afforded to the young was best exemplified by the fact that a mere child had to be lifted up that day to receive one of the prizes. Doubtless her fellow-scholars, hearing of her success, would try and emulate her, and each other, another year. *It was perfectly true that the estate of the Lord-Lieutenant was spangled with labourers' cottages, not built simply to let or to sell, but substantial brick buildings, with slated roofs, and a good yard with a pump, and were let to the labourers at the small rent of 1s. per week—a sum quite within their means.* He should be glad to see his lordship's example followed in other counties.

At the Worcester Society's Show Mr. E. Holland said: Farmers must now depend upon the moral character as well as

the strength of their labourers. A man could not be made moral in a day: it must be by habits and by practice of those habits that he became at last a good member of society. Hitherto, in the previous generation, as well even as at the present time in some parts of the country, the labourers were not treated as men worthy of trust; and therefore, partly from that cause, and partly from their own ignorance, they did not become worthy of trust. It was, however, in the present day necessary for the capital expended upon the land, much of which was at his mercy, that the labourer should be a trustworthy person; and how was that object to be achieved? Partly by a good example being set him by his employer, which he might copy, and it was essential that the individual who was to lead a moral life should lead a happy life. *For that purpose the dwellings of the labourer must be improved, that he might have an opportunity of exercising those habits of decency and comfort which his employers practised in their own homes.* Without any great exertion on the part of the farmers, a better system of hiring was now being adopted, which would benefit both themselves and the labourers. It so happened that the farmers of that part of the county, and in a neighbouring county, were paying more particular attention to the question of hiring; and those who had taken an active part in the matter found to their satisfaction that, although mops still existed, the system had very much altered from what it used to be at those places. The older servants were new men of a higher character than formerly: they were hired previous to the mops taking place, and only attended those places as a holiday. Those who really were hired there were labourers of a lower grade, and the young of both sexes, with respect to whom arose the principal evil of mops. Many and many a young lad was there taught his first lesson of iniquity; and many and many a girl might trace the commencement of her ruin to those meetings. Therefore it was that he considered a change in the system so desirable—a change which, without much exertion on their parts, or which

would at all interfere in the positions of masters and man, might tend to their mutual welfare and best interests. If farmers generally throughout the country would adopt the system of hiring their older servants on other occasions than mops, and afford to their younger servants a better system of amusement, he was quite sure much good would result. He had alluded to the subject thus fully because, as he had said before, the amount of capital which farmers had now exposed to the mercy of their labourers was so large and so increasing, that it was to their own interests and most essential that some change should be made.

Mr. ROYDS said that he scarce knew which to thank the company for most—for the kind manner in which they had drunk his health, or for having attended to witness his steam-cultivator. Twelve months ago that machine was barely thought of; but at the last anniversary meeting of the society some observations were made which caused him to determine on having a steam-plough. Next morning he and his engineer planned the apparatus which they had seen at work, and which, with several alterations that had been made in it, cost £500. He hoped the time would come when, either by shares or by the assistance of large landowners, the use of such machines might become general amongst those small farmers who could not afford the expense of purchasing one, and that agricultural improvement would continue to progress. He must say he had found the labourers of this neighbourhood anything but as sharp as he could wish them; but he knew they were warm-hearted. In his opinion the greatest curse of the Worcestershire agricultural labourer was having his wages paid part in money and part in cider; and so convinced was he upon the matter, that he had determined even in the most fruitful cider season not to pay one sixpence of wages therein. The labourers ought to be paid all in money, that they might spend their wages with their families. If that system was adopted, and the evil he had spoken of removed, they would strike deep at the roots of the curse of this neighbourhood.

LANDLORD AND TENANT.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I feel greatly obliged by your publishing in your *Express* of the 3rd instant the remarks which I made from that excellent speech by John Tollemache, Esq., M.P. for the County of Cheshire, at the Chester Agricultural Meeting. I was desirous to give publicity to the liberal system established by the Hon. Member, and to caution the tenant farmers not to invest their capital in the land unless they were guaranteed ample security for all unexhausted improvements in such land on giving up the possession.

I consider that publicity should be given to the acts of such liberal landlords, in order that others may follow such praiseworthy and judicious examples, rendering unto the tenant farmers a fair value for all their property which they may have invested in the land for the benefit of their landlords on quitting such land.

With such provisions there cannot be any plea for bad farming. But in the present day the tenant farmers, speaking generally, are prevented through fear from investing their capital, knowing that by a six months' notice they may be deprived of their property.

I have known in my experience many cases of great injustice, indeed I may say great cruelty, in which tenants had invested nearly the whole of their property in improving their holdings, sad to relate, compelled by a six months' notice to give up the whole to a mercenary landlord.

It must be evident that so long as such a system is practised the land cannot be properly cultivated. It is truly gratifying to me, as an old retired farmer, to find that there are many excellent landlords, who feel an interest in the welfare of their tenants, who act up to that principle of "Live and let live." But I have never heard of a landlord coming forward at an agricultural meeting to express such liberal views as the worthy member for Cheshire. His advice is praiseworthy in every sense of the word, and his conduct to his tenantry is in accordance, which his agreement with them will testify, which has been sent me by some unknown hand. I will, therefore, Sir, forward the same to you if you can find space to publish it, or even a part. It will convey at once the system carried out by this liberal landlord, to repeat again his own

observations, in which he stated that "to carry on long and extensive improvements, it was necessary for the landlords and tenants to work together, as they were the important parts of a whole that was for the benefit of the public." No doubt this patriotic landlord has long entertained such views, that the landlords and tenants must work together—the one finding the land, and the other the skill and capital for the cultivation. And with a desire that they should use their best energies and invest their capital freely, a proper and safe agreement should be given the tenants for security.

With such an example before us, I would say to landed proprietors, who are desirous to see their estates improved and the public benefited thereby, go and do likewise.

I have never seen an agreement or lease of land quite perfect. Covenants are often inserted by the profession, who are inexperienced in agriculture. There are three or four provisos, but only two I consider rather objectionable in the agreement of the Cheshire estate, which I will take the liberty of naming.

The tenant farmer's position is very different to persons renting a house, who can remove their goods without any great difficulty. But it is not so with the agricultural tenants, who, by a six months' notice, may be compelled to sell their stock and crops by a forced sale, consequently often at a great sacrifice. I have long entertained the opinion that in justice to those who cultivate the land, they should receive at least a twelve months' notice previous to giving up possession; and I cannot but conclude, from the liberal terms held out by Mr. Tollemache to encourage his tenants to improve their holdings, that if advised by his agent he would readily extend the six months' notice to twelve.

In the 6th clause on tillages, I find the tenants are not allowed to grow more than one white straw crop in succession. Such a restriction I cannot understand; indeed, I am at a loss to conjecture the injury the land would sustain by a crop of barley or oats after wheat, which is the usual practice in most counties after part of the wheat crop. There are two or three minor items rather unusual in the agreement; but when compared with the security held out to the tenants on the Cheshire estate, they are comparatively of little consequence. I should conclude that the tenantry on this estate farm first-rate—desirous to outvie each other, giving a convincing proof to their liberal landlord that, although he may have to remunerate them for their outlay, his estate will be improved in proportion.

CHAS. NEWMAN.

Woodland-place, Ealing, Oct. 18, 1859.

CHESHIRE ESTATE.

MEMORANDUM of an Agreement made this day of One Thousand Eight Hundred and between JOHN TOLLEMACHE, of Pectorton Castle, in the County of Chester, Esquire (Landlord), his Heirs and Assigns on the one part; and in the township of , in the County of Chester (Tenant), on the other part.

First—The said John Tollemache doth hereby agree to let, and the said to hire, all that messuage or tenement, and farm, with houses, out-houses, buildings, gardens,

lands, hereditaments and appurtenances thereto belonging, situate in the township of as hereinafter mentioned, and described, in the schedules hereto annexed; all of which lands contain, by admeasurement, statute acres, or thereabouts, be the same more or less, for the term of one year, commencing the ; and so on from year to year, until the same shall be determined by six months' notice, prior to the 2nd February, given, in any year, by either party; yielding, and paying yearly unto the said John Tollemache, his heirs, or assigns, the rent, or sum of of lawful money as used in Great Britain, by four equal quarterly payments in the year, namely on the 25th of March, the 24th of June, the 29th of September, and the 21st of December, which quarterly payments shall be considered as due and payable in advance, and if not then, and so paid, shall and may be recoverable, as well by distress in the usual manner, as by action at law.

And it is further agreed that the said shall give up possession to the said John Tollemache, his heirs or assigns, or his or their incoming tenant, of the arable land, on the 21st of November: the meadow and mowing lands, on the 21st December: the garden and all other lands (except a booby pasture numbered on schedule) on the 2nd of February: and the messuage or dwelling house, and out-buildings, &c., and the said booby pasture, on the 1st of May, after due notice to quit be given, by either party.

And it is hereby agreed that the said John Tollemache, his heirs or assigns, shall have power at all times, by himself and all persons authorised by him, or his agent, to enter upon the said lands and premises for the purpose of getting, working, or removing any mineral, stone, sand, marl, clay, or gravel, and for carrying away the same, the said being paid reasonable compensation for surface damage, by the getting, working, or removing such mineral, stone, sand, marl, clay, or gravel, which are reserved for landlord's use.

And it is further agreed that the said John Tollemache, his heirs or assigns, shall have power at all times, by himself, his servants, or friends, to enter upon the said lands, or premises, for all purposes of sporting or fishing, and the said shall, and will preserve all fish, and game (with the exception of rabbits and hares, as hereinafter mentioned upon the said lands, and premises, for the sole use and pleasure of the said John Tollemache and his heirs, and will forbid, and warn off, all persons from fishing, or sporting, or otherwise trespassing on the said lands, or premises. The said shall, and will, at his own expense, keep a dog for the use of the said John Tollemache, his heirs or assigns.

And it is further agreed that the said shall be allowed to ferret, and destroy all rabbits, on the said lands, and to shoot hares, from the 1st of February, to the 1st of May, in every year.

And the said John Tollemache, his heirs or assigns, shall have power at all times, by himself, or his agent, to authorize any person, or persons, to enter upon the said premises, to fell and carry away timber, wood, and trees, and for planting trees in the hedge-rows, and for all other reasonable purposes, doing as little damage as may be.

Provided always, that if the said , his executors, or administrators, shall not duly pay the said rents, or shall assign over, or part with the possession of the said premises, or any part thereof, or shall not constantly reside in the said dwelling house, or shall become bankrupt, or insolvent, or shall assign over his effects for the benefit of, or compound with, his creditors, or if his goods shall be seized by virtue of any private security, or be imprisoned by any civil or criminal process for the space of fifteen days, or if he shall make default in performance of any of the agreements herein mentioned, it shall be lawful for the said John Tollemache, his heirs, or assigns, to re-enter, to possess, and enjoy, as of his former estate, the said and all occupiers of the same premises, from thence utterly to expel, put out, or remove; the said or his administrators, being paid a fair valuation for all crops, tenant right, and proper acts of husbandry performed, over and above the sum due for rent, or arrears of rent, or penalties.

And it is further agreed, that any receipt for rent shall be no discharge for any sum, or sums of money, which shall become due and payable for any breach, or non-performance

of any covenant, or agreement as hereafter mentioned, unless in such receipt it shall be so expressed.

And furthermore, the said hereby undertakes and agrees, as follows, (that is to say,)

1st—To pay the rent of according to the accompanying reservations, and to pay all tithe rent charges, land tax, county rates, poor rates, highway rates, church, and all other parish rates.

2nd—To pay an additional rent of £10 per annum for every acre, and so in proportion for any less quantity than an acre of the said premises, that may be assigned or underlet. To pay £20 for every acre of permanent pasture, and mowing land, described in schedule Nos. 1 and 2, and so in proportion for any less quantity than an acre, that be broken up, or converted into tillage land. Not to mow any of the pasture or meadow land, except that mentioned in schedule 2, under a penalty of £10 per acre. And not to mow any field, described in schedule 2, more than twice in succession without manuring the same, under the penalty of £3 per acre, unless it shall be irrigated, or manured with bone dust, at the rate, at least, of 12 cwt. per acre.

3rd—To pay an additional rent of £5, for every day he shall over-hold the premises, or any part thereof, after the legal time for quitting, or giving up the same, as herein before mentioned.

4th—Not to carry off the premises any straw (except what may be required for the landlord's use), hay, clover, seeds, grass, dung, or turnips, produced from the said farm, or premises, but to consume with stock all such produce, and spread upon the said lands all such dung as shall arise therefrom, under a penalty of £5 per ton, except in the last year, as hereinafter mentioned, unless with the written consent of the landlord.

5th—Not to make cheese on the Lord's day during the continuance of this agreement.

6th—To manage the arable land in a good course of husbandry, and never on any account to take two white straw crops in immediate succession, and not to have in tillage in any one year, more than

A.	R.	P.
statute measure, of the land allowed for tillage, exclusive of		
clover leys of first year's lying.		

7th—Not to put any cattle or live stock on the clover roots, after the 10th of October next following the giving of notice to quit, the said receiving the cost price of the clover and other seeds, and three shillings per acre for sowing and harrowing the same, provided the work be done thoroughly well, according to the best rules of husbandry.

8th—To do, if called upon, days' team work every year for the landlord.

9th—To keep, and leave in good repair, at his own cost, the said messuage, house, outbuildings, gates, stiles, pumps, and bridges, and keep all drains and water courses in a clear and proper manner, being allowed materials in the rough for such repairs.

10th—To lay down on an average bell-mouthed pipe tiles annually, at least three feet deep; to drain such lands that most require it, the landlord finding tiles; the tenant paying $3\frac{1}{2}$ per cent. per annum on the cost price.

11th—To spread not less than cwt. of good bone manure on the permanent pasture every year, during the continuance of this agreement.

And lastly—The said doth agree to pay any additional rents or penalties, if claimed within two years, such underletting, breaking or ploughing up pasture, or mowing as aforesaid; and if not forthwith paid, shall be recoverable as rent in arrear, as well by distress as by action at law.

It is hereby further agreed, by the said landlord, John Tollemahe, his heirs, or assigns, to allow and pay the said tenant at the end of this tenancy, for certain improvements, after the following manner, (that is to say,)

1st—For having improved the said lands or any part thereof, by tile draining, and the same shall have been approved before commenced, and whilst in progress, by the said landlord, and such approval, together with a certificate, signed by the said landlord, then, and in such case, but not otherwise, the said tenant, on quitting the said farm, or his representatives in case of his death, shall be allowed the amount stated in such certificate, after deducting therefrom a tenth part thereof, in respect of each entire period of twelve months that shall have expired since the date of such certificate.

2nd—For having improved the said lands, or any part thereof, by mole-plough draining, and the same shall have been approved of by the said landlord, and such approval, together with a certificate signed by the said landlord, then, and in such case, but not otherwise, the said tenant, on quitting the said farm, or his representatives in case of his death, shall be allowed the amount stated in such certificate, after deducting therefrom a fifth part thereof, for each entire period of twelve months that shall have expired since the date of such certificate.

3rd—For having reared new quick-set fences, the same having been previously approved of, and the said fences planted with a sufficient quantity of quick-sets, and kept clear of weeds, to the satisfaction of the said landlord; then, and in such case, but not otherwise, the said tenant, on quitting the said farm, or his representatives, in case of his death, shall be allowed the cost, after deducting therefrom one-eighth part thereof in respect of each entire period of twelve months that shall have expired since the date of the certificate, which will be given when the work is completed.

4th—For having improved, at his own cost and expense, the said lands, or any part thereof, by the application of good pure bone manure, on the permanent pasture land, at the rate of not less than 12 cwt., but under 20 cwt. to the statute acre; the same being approved of by the said landlord, and such approval together with a certificate signed by the said landlord, for the amount, then, and in such case, but not otherwise, the said tenant, on quitting the said farm, or his representatives, in case of his death, shall be allowed the amount stated in such certificate, after deducting therefrom a tenth part thereof in respect of each entire period of twelve months that shall have expired since the date of such certificate.

5th—For having improved, at his own cost and expense, the said lands, or any part thereof, by the application of good pure bone manure, on the permanent pasture land, at the rate of not less than 20 cwt., and under 30 cwt. per statute acre, the same being approved of by the said landlord, and such approval, together with a certificate signed by the said landlord, for the value of such bone manure, then, and in such case, but not otherwise, the said tenant, on quitting the said farm, or his representatives, in case of his death, shall be allowed the amount stated in such certificate, after deducting therefrom a twelfth part thereof, in respect of each entire period of twelve months that shall have expired since the date of such certificate.

6th—For having improved at his own cost and expense the said lands, or any part thereof, by the application of good pure bone manure, to the permanent pasture lands, at the rate of not less than 30 cwt. per statute acre, the same being approved of by the said landlord, and such approval together with a certificate signed by the said landlord, for the value of such bone manure, then, and in such case, but not otherwise, the said tenant on quitting the said farm, or his representatives, in case of his death, shall be allowed the amount stated in such certificate, after deducting therefrom one-fifteenth part thereof, in respect of each entire period of twelve months that shall have expired since the date of such certificate.

7th—For having improved at his own cost and expense any of the mowing or meadow land by the application of bone manure, at the rate of not less than 12 cwt. per acre, the same being approved of by the said landlord, and such approval, together with a certificate, signed by the said landlord, for the value of such bone manure, then, and in such case, but not otherwise, the said tenant on quitting the said farm, or his representatives, in case of his death, shall be allowed the amount stated in such certificate, after deducting one-fourth part thereof, in respect of each entire period of twelve months that shall have expired since the date of such certificate.

8th—For bone manure proved to have been applied to arable land, the cost price to be allowed after deducting one-third of that cost price for each crop taken afterwards.

9th—For having improved the said lands, or any part thereof, by the application of good marl, at the rate of loads per acre, the same being approved by the said landlord, and such approval, together with a certificate signed by the said landlord, for the value of such team work and labour, then, and in such case, but not otherwise, the said tenant on quitting the said farm, or his representatives, in case of his death, shall be allowed and paid the amount stated in such certificate, after deducting therefrom one-seventh part thereof, in respect of

each entire period of twelve months that shall have expired since the date of such certificate.

10th.—For guano proved to be used within twelve calendar months before the end of such tenancy, one-third the cost price to be allowed.

11th.—For oilcake proved to be given to cattle and sheep, within twelve calendar months before the end of this tenancy, one-third the cost price to be allowed.

12th.—For all hay and clover that may be on the premises at the expiration of this tenancy, the same being of the previous Summer's growth only, a consuming price of two-thirds the value to be allowed.

13th.—For all straw not converted into manure, that may be on the premises at the expiration of this tenancy, the same being of the last Summer's growth only, a consuming price of one-third the value to be allowed.

14th.—For all dung and manure left on the premises at the expiration of this tenancy, the same being made from the last year's produce only, the value to be allowed, without reference to the use of oil cake.

15th.—For all buildings erected at the entire cost of the said tenant, a fair sum to be paid, at the expiration of this tenancy, or the said tenant, or his representatives, in case of his death, to be allowed to remove, and sell the materials.

IN WITNESS whereof, the said parties have hereunto set their hands and seals, the day and year first above-written.

Witness to the signing hereof by the
said John Tollemaache.

Witness to the signing hereof by the
said

N.B.—In the valuation of dung and manure, no reference is to be made to the use of oil cake, as allowance for the latter is provided for in clause 10.

. No allowance is made for lime, as its use interferes with the application of bone manure.

THE CHESHIRE TENANT-RIGHT AGREEMENT.

SIR,—I could not help being pleased with the perusal of a letter contained in your valuable Journal of this week's issue, written by Mr. Charles Newman, and which contains some excellent remarks on the relation subsisting between landlord and tenant, which, if duly carried out by the gentleman of whom such honourable mention is made, would perhaps be calculated directly or indirectly so to influence both the great and small landowners of our country, as that a very considerable advance might be made towards improving the condition of the tenant-farmer, by securing to him those privileges of which the exercise of his skill, the labour of his hands, and the investment of his capital render him so highly worthy. Viewing his observations in this light, I could not help hastily leaving the shadow for the supposed substance, and at once turn my attention to his specimen of high-toned liberality exhibited in the agreement which, in accordance with his wish, you kindly inserted in connection with his letter. But, sir, how sadly was I disappointed as I went on to read the terms of that wonderful production of an English landlord's benevolence and liberty-loving good-will towards his tenantry! and I verily thought that Mr. Newman must have read it either with a blindfolded understanding, or with a very prejudiced mind towards one side of the question; or, instead of lauding in the way he has, he would have denounced it as one of the most stringent, illiberal, and oppressive instruments that ever dropped from a steward's pen, in the shape of negative and positive stipulations, to be duly attended to by a poor serf of a tenant. And I would ask your correspondent carefully to read, mark, learn, and inwardly digest it once more, and try if he can find in it, with the exception of the guarantee of which he so much boasts, and which forms the basis of his remarks, one single redeeming feature to save it from the merited lash of the severest criticism.

Now, having taken the liberty, candidly and fearlessly, to express my sentiments on this marvellously generous agreement, I will notice in review some of its exceptional clauses, with the advantages they confer. First, then, one cannot help being struck with the elevated position of the favoured tenant; for, forsooth, he is raised to the honourable post of being game and dog-keeper to his landlord—of course wearing the green coat, decorated with the buttons of his order—and in the exercise of his office “forbid and warn off all persons from fishing and sporting and otherwise trespassing on the said lands.” Also, here is the privilege of keeping the beautiful dog; he comes, we presume a puppy, is fed and reared for nought, and brought up to setterhood, or pointerhood, or greyhoundhood, as the case may be; “for he shall and will do this at his own expense,” when he is transferred to his rightful owner, and another takes his place to be brought up to doghood in the same way. Now comes, for this the great favour conferred as compensation for any little inconvenience and hinderance to business which looking after trespassers and dog-keeping may occasion, and “It is further agreed, that he shall be allowed to ferret rabbits and shoot hares from the (mark this!) 1st of February to the 1st of May.” This needs no comment, the shooting and hunting season are all but over, and besides, every sportsman or otherwise knows the worthlessness of these filthy devourers between the periods mentioned. “And, furthermore, the said, &c.,” 1st, to this clause there can be no objection. But the most of the penalties mentioned in the 2nd merit the anathemas of the holy father, and deserve excommunication. Clause 4: Of this we will not complain; let every man quit when his term expires, though the tenant should have some safeguard to unavoidable contingencies as well as the landlord. Clause 5: May be good, but whether it may be more sin to convert milk into cheese when the hot weather is sure to spoil it before Monday, than it is to pull an ox or an ass out of the ditch on the Sabbath-day, is a question which the great teacher has not solved; but having laid it down as a rule, “that it is lawful to do good on the Sabbath-day,” He has left it with his creatures to determine as to the particular matters to which that doing good is intended to extend, whether it be taking an ox out of the pit to save its life, or to making milk into cheese to save it from spoiling, to its owner's loss; hence, let every man be persuaded in his own mind, and let no man, whatever may be his station, tyrannize over another man's conscience, and bind him to do or not to do what he conceives to be lawful and right, or *visa versa*. Clause 6: No objection, except the prohibition of two white straw crops, which is preposterously absurd. Clause 8: “To do if called upon (of course), in any season, and at any time, 40, 50, 60, or more days' work, &c.,” for nothing, we presume. Will this help him to pay his rent? Clause 9: This, in the estimation of every right-minded man, must carry with it its own condemnation; disease may kill his cattle, thunder-storms may destroy his crops, the loss is all to him, and his rent must be kept up, and—woeful!—the four winds of heaven may unroof his house, and strike its four corners, and kill his children with death, but he must at all events repair the house as well as bury his children, for so his landlord will have it. Other things might be noticed, but we turn from them, and for relief direct our eye over a beautiful property, with which I am surrounded, belonging to noblemen and gentlemen whose motto is unmistakably the one quoted in Mr. Newman's letter,—“Live and let live.” Here the game is given to the tenant, and if he keeps a dog, it is for himself and his own use; here dwellings are made commodious and convenient; new dairies rise, out-buildings are erected suitable for all kinds of

stock; and for all repairs, allowance is made at the rent audit. Then the tenant farms according to his own will, not taxed with any prohibition, as to white straw or green grass: he is allowed to suit his mode of management to his circumstances and the requirements of his stock, &c.; his landlord has confidence enough in him to trust to his honour; and why should not the tenant or occupier of the farm be as honourable as the proprietor? His honesty and skill, for doing what is right and just towards him in the tillage and management of his land—this is how it should be; and when that confidence, which ever must bind the agricultural, as well as

the commercial interests of our country together, is extended and established, landlord and tenant, master and servant, will work well together, and prosperity and peace will be the stability of the times. Here I end. You are the tenant farmer's tried friend; if, after reading this, you think it worthy of a little space in your excellent paper, please to let it see the light, and meet the sight of those whose interests it is intended to serve; if you think otherwise, send it to the fire,

And believe me yours faithfully,

An old subscriber and constant
Oct. 17, 1859.

READER.

THE NORTH WALSHAM AGRICULTURAL SOCIETY.

This society held its annual meeting on Wednesday, Oct. 26, in the pleasant little town of North Walsham, which welcomed its visitors with open arms. The weather was quite in keeping with the extraordinary game which the clerk of that department has been playing during the past fortnight, being cold and lowering; but British farmers do not mind a little cold, and a goodly muster was made from all parts of the surrounding neighbourhood. The show, considering it was confined to a district of Norfolk, was highly creditable both as regards quantity and quality. In the class of fat stock there was indeed some falling off, but this was explained by the fact that pleuro pneumonia has prevailed to a lamentable extent in the neighbourhood, many beasts which were intended for exhibition having been sacrificed. Still, the class of fat steers was highly commended, and excited general notice. The horse stock, both for agricultural and harness purposes, was exceedingly good, and there was a tolerable competition for several of the prizes, although this was not the case throughout the various departments. Samples of wheat and other grain, and also of hay and roots, were shown, and some of the latter were of considerable weight, the prize mangold being at the rate of 43 tons per acre, while the second best reached 40½ tons. The land in this part of the country is very good, or it could not yield such results as these; results which obtain in a similar degree with regard to wheat, 24 coombs per acre having been obtained at Stalham on one occasion.

As regards the prizes, Mr. Christopher was awarded £4 for the best cart-stallion under four years; Mr. J. B. Porritt, £2 for the best under four year old; Mr. Beare, £4 for the best cart-mare; Mr. Bond, £2 for the second best; Mr. W. Burroughes, £2 (given by Mr. Mott), for the best cart-gelding; Mr. B. Betts, £2 for the best two-year-old cart filly; Mr. W. M. Bond, £1 for the best yearling colt or filly; Mr. W. M. Bond, £1 10s. for the best cart-foal; Mr. Horsfield, £1 for the second best do.; Mr. T. Dolphin, £5 (given by Lord Suffield), for the best hackney for riding or harness purposes, and Mr. T. Flavell's entry highly commended; Mr. J. A. Storey, £2 (given by Mr. W. L. Jex Blake) for the horse or mare between four and eight years old, and best calculated for harness purposes; Mr. Downing, £3 for the best hackney stallion; Mr. C. Cozens Hardy, £2 for the best hackney brood

mare; Mr. J. G. Betts, £1 for the best hackney foal, and £1 10s. for the best riding colt (Mr. Wortley's entry highly commended); and Mr. Coote, £1 (given by Mr. T. Dolphin) for the best pony under 14 hands. It should be observed that in nearly every case the animals shown were bred in the district, and in very many instances by the exhibitor. In cattle, Mr. J. T. Mott was awarded £2 for the best bull; Mr. T. Dolphin, £2 10s. for the best horned cow; Mr. Storey, £1 for the second best; Mr. Ash Rudd, £2 10s. for the best polled cow; the Hon. W. R. Rows, £2 for the best horned heifer; Mr. R. Wortley, £1 for the best yearling heifer, and £4 for the best fat steer of any breed bred by the exhibitor; Mr. Mott, £2 for the second best do.; Mr. R. Wortley, £2 10s. for the best fat steer grazed by the exhibitor; Mr. Beare, £1 10s. for the second best do.; Mr. R. Wortley, £1 10s. for the best fat steer or heifer under three years old; and Mr. Neave, £1 for the second best. In sheep, Mr. Page Bleakley carried off all the prizes both for hoggets and shearlings. In swine, Mr. R. Wortley was awarded £1 10s. for the best boar; Mr. Page Bleakley, £1 for the second best; Mr. R. Wortley, £2 and £1 for the best and second best breeding-sow; Mr. T. Dolphin, £1 10s. for the best litter of pigs on the sow; Mr. R. Wortley (given by Mr. W. Burroughes), £1 for the second best ditto; and Mr. M. Neave's premium of £1 for the best fat pig was awarded to himself. Mr. R. Wortley received £1 10s. for the best two acres of mangold-wurtzel, and Mr. Salmon £1 for the second best. The prize of £1 10s. for the best five acres of Swedish turnips was divided between Mr. W. Postle and Mr. R. Wortley, each of whom produced 25 tons per acre, Mr. Christopher being awarded £1 as second best (24 tons per acre); and Sir T. F. Burton's prize of £5 for the best crop of roots grown on a farm of not less than 100 acres, taking the quality of the soil and cultivation into consideration, was divided between Mr. E. Ling and Mr. R. Wortley. Mr. B. Betts was awarded £1 for the best wheat; Mr. R. Wortley, £1 10s. and £1 for the best and second best barley; Mr. Christopher, £1 for the best three coombs of oats; Mr. R. Wortley, £1 (given by Mr. H. Wright) for the best 5 cwt. of trefoil-hay; and Mr. H. Wright, for the best 5 cwt. of clover.

The speaking at the dinner, at which Lord Suffield

presided, was above the average; although Colonel Coke, as one of the county members, rather set his foot in it by disclaiming politics, and then observing that the county did not want the "stand-still opinions" of his hon. friend Mr. Hawes, who represents East Norfolk in the Conservative interest. At this there was a loud outburst of disapprobation, and the gallant colonel was obliged to get out of the scrape as well as he could by saying that the company appeared rather dull, and he thought that he would stir them up a bit. But, this little escapade apart, the proceedings were really of an instructive character. Mr. Mott, in proposing the health of the judges of stock, said all present were old enough to remember the grumbling which followed the abolition of protection; but where was it now, notwithstanding the present low price of wheat? To this Mr. W. Burroughes rejoined, that the farmers had given up their complaints "because there was no remedy." This observation elicited loud applause; but did not satisfy Mr. Mott, who said the real secret was that the farmers had learnt that the true basis of success was the grazing of stock. Mr. Mott then passed on to speak of the state of agriculture in France (which he had visited in the course of the summer), describing it as most wretched. Mr. Mott forcibly exposed the effects of the excessive subdivision of landed property, which there is little doubt is a leading cause of the want of stability which has characterized French society since the first Revolution, and said everything was in the most primitive state. He had seen crops being threshed in the open air, there being no barns and no yards: the haymaking was the most ridiculous and tedious proceeding imaginable; the sheep all looked as if they were dying of consumption, and were as hard and tough as a piece of leather; and during a stay of a month he never saw a fat animal of any kind. Mr. Pitman, in proposing the "Successful competitors," also urged the necessity of increased attention to the production of beef and mutton, and suggested the formation in the eastern district of a kind of agri-

cultural "synod," such as that supplied by the Bath and West of England Society, from which, he said, great benefits had been derived: among other advantages being a reduction in the price of some implements. Increased attention must also, Mr. Pitman urged, be paid to the welfare and comfort of the agricultural labourers, who appeared to be every year becoming more scarce. This last remark induced Mr. Mott to observe that he hoped before long the reaping machine would be much improved. At present it did its work in so unsatisfactory a manner, that no one would invest money in it; it would not, in fact, cut barley. Mr. Kemp denied that this was the case, and said he would guarantee to cut Mr. Mott's barley with his machine. Mr. Beare, who may perhaps be styled the "father of the society," spoke in reply to the toast, and said he believed there was now a growing spirit of improvement among the farmers. A few years since a stupid class of men told the country they could buy corn cheaper from foreigners, and tried to upset altogether the agricultural interest, which did not then receive due support from Government; but the farmers had now so greatly improved themselves, that they were not only able to compete with their neighbours, but with all the world, and those who were once their opponents were now great supporters of agriculture, for they saw what a blessing it was to England to be able to raise food for her own population.

It is not a little singular that the argument, which now seems to find increased favour, that farmers must depend more upon the grazing of stock for the future, is urged by a recent official writer on American agriculture, in a report issued by the authority of the United States Government. The reason, in the case of our Yankee brethren, is different. Their land has become so exhausted by constant cropping that it requires to be recruited by the manure of sheep and stock. The American farmer, it is urged with great apparent force, must either do this in the old settled States, or be "off to fresh fields and pastures new."

THE LATE FROST.

THE HARVESTING OF THE MANGOLD CROP.

The harvesting of this crop met with a severe check, owing to the sharp frost in the nights towards the end of October. A frost so intense, and at such an early date, has not been experienced for some years. The crop has suffered much from its severity. The utmost care will now be requisite, and no little judgment must be exercised to effect its safe preservation. The roots have been so much frost-bitten as to deprive them of their mottled colour, and till this returns it is unsafe to lead them. I have examined the remaining of my crops unharvested this morning, Tuesday, Oct. 25th. There is scarcely a root which I should consider to be in a fit

state to put into grave. I therefore take the earliest opportunity I have to call attention to it, with the view of offering a few suggestions, which, if carefully attended to, will, I think, contribute much to its future safety, and cause it to be preserved in that condition and quality so essential to the improvement of the stock consuming it.

This crop has now become of paramount importance in many districts, nearly one-fourth of the fallow crop being mangolds; and the weight grown per acre is enormous, amounting to something like an average of forty tons per acre of roots only, besides an excellent crop of leaves, which should be carefully fed off by

aged ewes having short teeth, in doing which they will be readily fatted, and the roots remain uninjured; or they may be plucked or twisted off (not cut), and led off to the breeding ewes or store sheep, upon which they will feed satisfactorily, and thrive well. The roots must, if possible, be secured in that safe manner which shall prevent fermentation in the grave; if not, great loss in saccharine matter and nutritive value results, and not infrequently the crop itself is lost by rotting.

The proper and advantageous harvesting of this crop, then, is of great importance; and to those who have not fully secured their crops, I offer a few suggestions and remarks.

My first and most important suggestion is—to let them alone. Do not, on any account, commence taking up at present. The roots must stand till they recover their former healthy appearance, or as nearly so as circumstances will admit. It is almost certain destruction to grave them as they are. The season is an early one; and a few fine days will suffice, not only to thaw them thoroughly, but to cause the vegetating process to be renewed in almost every root. As soon as this has taken place in any great degree, they will then again be fit for harvesting, when all hands must be set to work to get them up speedily. This suggestion is the result of experience; my own crops have been in this way safely secured many a time, when they have been caught by a like early frost. I have been a considerable grower for more than thirty years, and, as an old grower, most confidently recommend this course in the present crisis.

It cannot be expected that all the roots will be perfectly healthy, therefore all decayed or decaying ones must be thrown aside; otherwise, if carted up with the rest, they will soon set the whole grave in a fermentation, which of all things must be avoided. In order to prevent this, the grave should be left open so long as the weather will permit; but if it is variable, the sooner it is nicely thatched down the better. This is best done by drawing straw or stubble into yelms, as for thatching, and laying them in order on the grave, so as to shoot the rains off, and thick enough to prevent injury from a slight frost, the whole to be fastened on by spits of earth at intervals. In this way the grave may, in open weather and a mild season, remain for two or three weeks, when it will be desirable to make it permanently safe by either earthing-up, or further thick layers of straw or stubble; the latter is the safest for these frost-bitten crops, as permitting greater ventilation throughout.

We shall of course be greatly disappointed and sorely perplexed if this frost should continue. Happily, while writing I hear the rain pattering against the window pane. Should it, however, return before the crop is secured, what is to be done? I still repeat, let it alone. It is to no purpose to grave frozen roots, or roots but recently thawed. They must be left standing, and be brought into consumption as the best judgment of the farmer may dictate. They may not constitute very nutritive food, but they may be thus used with advantage

in conjunction with hay, straw, cut chaff, &c., &c. Of course, if at any time during open weather a chance arises for leading, by all means take advantage of it; but even then its consumption should be proceeded with: it cannot be expected to keep well. All kinds of stock, including horses, may be fed with it; and as affording a means of economising and saving other food, it may not be attended with any great loss in the end, and thus the disappointment and inconvenience may be but little felt.

Unquestionably this early and almost unexampled frost has taken us all by surprise, and very few growers have been fortunate enough to secure their crops. Those who have may rest satisfied that it had arrived at maturity, and no loss need be apprehended from early harvesting. The crop perhaps may be said to have ripened prematurely; but notwithstanding it was ripe for gathering, and although this premature ripening might be detrimental to the crop, it will not interfere with its keeping in grave, or injure its quality to any extent. Much, we are happy to know, has been safely secured, and will constitute a food supply when all other fails. In this respect, it now stands at the head of our root crops, and bids fair ultimately to change the whole order of spring grazing, because it furnishes a good supply at the very time when none but the earliest grass pastures are ready, and before early cabbage or early tares, clovers, &c., are in sufficient growth to be stocked freely.

It surely cannot be requisite, after so much has been written on the storing of mangolds, to reiterate well-known facts, *i. e.*, that it is desirable to put them into a grave in a dry and clean state: the grave not to exceed eight feet in breadth, and carried up into a narrow ridge at a corresponding height; that it should then be immediately thatched down by straw or stubble yelms, and so remain until all evaporation ceases, provided the season will permit; otherwise, if frosty, then to be slightly earthed up to within a foot or two of the top, and finally the top to be covered with stubble as thickly as it will lie. This is the safest course; but they will generally keep well if thickly covered with earth, provided time has been given to allow any fermentation to pass away. In the latter case it is requisite to uncover the top in the early spring months, or the growth of the roots in grave will soon cause them to rot. For immediate use they may be put together in any reasonable quantity or bulk. I have some in hovels now lying from twelve to fifteen feet in thickness, in which state they take no hurt for several months, provided they are put in clean and dry. I would further remark, that the roots are much sooner fit food for cattle from the hovels than from the closed-up graves. In fact, they are not at all proper food in any quantity till a portion of their watery nature has been dissipated; when this has been sufficiently extracted, and without any fermentation having taken place since they were stored, no food the farmer can grow is superior, and scarcely any is equal to it for feeding purposes. It is an invaluable root, and cannot be cultivated too largely.

P. F.

CABBAGES.

The best variety of the cabbage plant is known in the common white or Yorkshire drumhead cabbage, so called from the top of the head of the plant resembling the upper part of the drum. The vegetable grows with a fibrous root, a branched, smooth, and leafy stem, upright and fleshy, carrying a number of smooth, alternate leaves, oblong and roundish, which are closely gathered into large, compact heads, oval or globular. The inner leaves lie closely over one another, curling inwards, till by degrees the heads are formed in many cases of a very large size. The tribe of plants yield an abundance of seeds, which is easily managed in practical use. Cabbages tend strongly to putrefaction, and run into that state sooner than almost any other vegetable. The putrid smell is most offensive, greatly resembling that of putrid animal substances. White cabbages are most foetid, and the red the most emollient or laxative. An endless variety of hybrids has been produced, and kinds of cabbages are almost undistinguishable, arising from accidental impregnation by means of bees carrying the pollen from one place to another in search of honey. The seeds are sown in August, on warm beds of ground, well manured and pulverized; where the plants remain during winter, and are pulled for being planted in the field in the following April or May. An over-luxuriance in the plants, arising from a very favourable autumn, may be checked by transplanting. One pound of cabbage-seed will produce about 24,000 plants, and about 8,000 plants are sufficient for an acre of ground in drills.

Cabbages require the strongest loamy soils, tenacious and friable, deep, earthy, and moist. The climate must be damp, with frequent and abundant rains, and the dry seasons not long, nor attended with an aridity of a parched continuation. These lands are heavy in the composition, and stiff in the subsoil, and require the strength of three or four horses in ploughing the winter-furrow, which is done in the months of November and December. It is essential that the winter ploughing is deeply done in seven or eight inches, in order to afford soil for the future processes of working the land; and as early as possible, that the soil may have the benefit of frosts and thaws, for the purpose of reducing the texture. An early winter-ploughing is very beneficial to soils of every kind. Clay lands are penetrated by rains and burst by frosts, which break the texture by the alternations; and light soils of every kind acquire, by lying during the winter, a firmness and consolidation, which gives a necessary cohesion of particles that is observed during the summer, and a moisture is usefully maintained. So soon as the dry weather of spring permits the land to be ploughed, the operation is done across the winter-ploughing by means of deep and narrow furrows, which cut the earth into thin slices that are easily broken, and also raises soil from beneath that serves for a loose pulverization of the ground. A severe harrowing

is applied, which tears the clods and separates the weeds. A cast-iron roller of a ton in weight follows the harrowing, crushes the lumps of soil, and consolidates the ground; another harrowing pulverizes the broken clods, and drags the weeds into view. The stones and weeds that now lie on the surface of the ground are gathered by hand, and removed from the field. This first operation of preparing the land for cabbages will be done some time in the month of March; and within two after, the same process is repeated by ploughing the land lengthwise, harrowing, rolling, and gathering stones and weeds from the surface. Another operation of the same kind will, in most cases, prepare the land by the 1st of May to be planted with cabbages. A furrow is drawn by the swing plough in the direction in which the drills are wished to lie, as deeply and widely as can be done by the strength of two horses. The plough returns in the same furrow, and throws the earth to the opposite side, forming two ridglets, one on each side of the furrow, with the horses walking on the sides of the first furrow, and widely apart; the plough travels up and down the sides of the first furrow, and makes a trench thirty inches distant, the left-hand horse walking in the furrow, and the right-hand horse travelling on the level ground, with a maintree of five feet in length, to enable the walking two drills apart. In this continuous way the land is formed into ridglets; and when the space becomes wide, a parallel furrow is drawn, and the same operations performed till the whole field is formed into drills, which are made deep and wide by the utmost power of the horses. Depth and width of drills are essential, the latter not less than thirty inches; and the previous ploughings must be deeply done in narrow furrows, the last ploughing across the field. So that the drilling, being lengthwise, crosses the last ploughing, which makes the best performance in every operation of drilling.

During the winter the farm-yard dung has been laid in a heap in a corner of the field, or in the lane outside the gate, and in a compressed and sloping shape by the carts passing over it to deposit the loads. Being turned over a few days before being used, an active fermentation takes place, and it will be in a state of vigorous advancement when laid in the drills to be planted with cabbages. Single-horse carts carry the dung, which is deposited in heaps, and regularly spread along the hollows of the drills in the quantity of thirty loads to an acre. The drills are split and reversed over the dung by the common plough throwing to the right hand the larger half of the ridglet, the right-hand horse walking in the furrow of the right-side drill, and the left-hand horse travelling on the top of the left-hand drill, the intervening ridglet being split by the plough, which is provided by a main tree of five feet in length, to allow the horses to walk widely apart over two drills. In returning the plough moves in a hollow, and throws a

heavy furrow of loose earth over the drill from the opposite side, the horses walking each in a hollow two drills apart, with the plough moving in the middle interval. The dung is thus widely and deeply covered with loose damp earth thrown over it from both sides, the plough working in every drill as deeply as the horses are able to move the implement. A light roll passes along and levels the top of the drills, which consolidates the loose earth into a firm position.

The cabbage plants freshly drawn from the nursery-bed, with the extreme end of the slender fibrous root cut off, are brought to the field, and immersed in tubs of water with the roots downwards, and taken from the vessels as the plants are required for use. Persons provided with dibbles insert the plants on the top of the drills, at the distance of two feet from each other, making a hole with the dibble for the insertion of the plant to the depth it has stood in the nursery-bed, and pushing with the dibble the sides of the hole together, in order to give the plant a firm position. It must be very carefully observed not to insert the plants deeper or more shallow than they stood in the nursery-bed, as a transformation of the exposed or earthed-up skin is the consequence, and a necessary delay in the onward progress of the plant. All plants with a large foliage require much moisture, and the dung that is used for cabbages must be thoroughly moist, and even very wet, whether it be cool or fermented; the plants immersed in water, and the insertion in the ground should be performed in the wettest weather in which the work is possible to be done. When any plants are seen to be dead, the places must be immediately filled with fresh plants, in order to ensure a full crop all over the field.

When the plants of cabbages have attained a rising growth, and weeds have appeared in the quantity that may be expected from the kind of soil, the hollows of the drills are deeply ploughed by the miniature plough drawn by one horse, which lays a furrow to the centre of the interval from the side of each drill, in the closeness not to disturb the dung or shake the position of the plant. A miniature plough is the best scuffler yet found for stiff-bottomed lands. The narrow point of the share takes a better hold of the ground than any knives or cutting shares; and the double time spent in going twice in one hollow is economically expended in doing work well, instead of cheaply and slightly. Two ploughs are joined by slant bars over the beams, and placed one drill apart. Two horses walk in the furrows, and draw the implement, which bestrides a drill and lays a furrow from each side of the ridglet, finishing a drill by one movement with the power of two horses. After all the ingenuity in devising horse-hoes for drilled root crops, this very simple implement has not yet been equalled. The light scuffler with posterior knives will afterwards move the intervals, cut the weeds, and pulverize the soil, but always preceded by a ploughing of the hollows to move the earth for the operation of the lighter implement. The hand-hoe follows the first ploughing of the drills, cuts the weeds, breaks the clods, and moves the earth between the plants by passing the hoe crosswise between them. A careful hand-hoeing is equally neces-

sary for the success of green crops with the efficient scuffling of the hollows of the drills, as both processes effect the same purpose, by provoking reciprocal combinations between the air and the soil for the benefit of the plants. Frequent stirring of the intervals has a very useful effect, and the drier the weather the better. The loosening of the earth allows the roots to spread, encourages evaporation, of which the moisture is imbibed by the leaves of the plants; and the last, but not least benefit conferred, is the pulverization of the soil for the advantage of the succeeding crops. Two or three performances of the operations of scuffling and hoeing will be sufficient for most soils—the miniature plough acting twice, and the lighter scuffler working so long as any weeds remain to grow. The lands adapted for cabbages are not the most productive of weeds, which are soon destroyed; but the ploughing and scuffling of the intervals, with the hand-hoeing of the rows of plants, are to be repeatedly done, for the purpose of moving and pulverizing the soil, raising moisture, and provoking combinations of sëriferous matters. The drills are earthed up in the end of summer by the double mould-board plough, moving once in the hollow, and drawn by two horses walking apart at five feet or two-drill intervals. The furrow must be as deep as the plough can penetrate. Any tall weeds that may afterwards arise are pulled by hand.

Cabbages form the head in autumn, and by the end of October the plants will have attained the full size of the year. The outer leaves are liable to premature decay, and fall off, previous to which they may be gathered by pulling away the loose leaves, which are very useful food for swine and young cattle. In November the stools are cut from the stems by hand-sickle, and cleaned from the outside decayed leaves, carried to the homestead, and piled up in a dry situation in the manner of cannon balls, and ending in a ridge of a single stool. The longitudinal pile is thatched over with straw, which is held down by ropes of the same materials. The round form of the stools leaves many interstices in the pile for the admission of air, and materially prevents putrefaction. Cabbages are preserved in this way for use throughout the winter and during the spring months. The stems of cabbages are pulled by hand from the ground, the fibrous roots with the adhering earth cut away, the stalks cut into small pieces, and strewed in the store-yard of young swine, to be chewed and eaten, or reduced into manure. The stalks are very indecomposable, and if left in an entire condition, the destruction is tedious and long.

Cabbages are very generally used in the early winter by being drawn from the fields as wanted for use, without storing being practised. The roots are very beneficially given to milch cows, store cattle, sheep and swine, and are invaluable in the spring along with man-gold for the lambing ewes. The taste said to be given to milk by cows fed on cabbages is effectually prevented by most scrupulously removing from the stools when given to the cattle, all leaves that show the least appearance of an incipient decay, as experience has most amply and satisfactorily shown that the offensive taste

of the milk is communicated from this state of the leaves.

The average weight of a crop of cabbages may be stated at 25 tons on an acre. One pound of drum-headed cabbages, or 7,000 grains, consists of

	Grains.
Nutritive matter	430
Woody fibre	280
Water	6,290
	7,000

Cabbages contain 93 per cent. of water, and the composition on the nutritive scale is as follows :

Nitrogenous or flesh-forming ingredients	1.75
Non-nitrogenous or heat-giving	4.05
Mineral matter	0.80
Water	93.40
	100.00

The quantity of nitrogen is 0.28 per cent., and that of carbon 8.63 per cent. The proportion is large between the flesh-forming principles and those fitted for the support of respiration. In the potato the quantity exceeds 20 of the latter to 1 of the former : in the cabbage it does not reach 3.1.

Swedish turnips are superior to cabbages in nutritive matter contained in the bulbs in the proportion of 110 to 107½, and cabbages are superior to the common white turnip in the proportion of 107½ to 80, and inferior to carrots in the proportion of 107½ to 187.

The advantageous cultivation of cabbages is much more limited in the range than that of turnips. The plant must have a humid climate, a deep rich moist soil, and a large allowance of farm-yard dung. All green crop plants require these conditions, but cabbages must enjoy them in the superlative degree; and, consequently, the range of utility is more contracted. But on all deep clayey loams that enjoy a humid climate there is not a more profitable crop than cabbages in yielding a weight of crop per acre, and in the useful purposes to which that produce can be applied. The comparison, in point of utility, comes to lie between cabbages and Swedish turnips, as both plants are raised on the most similar soils. Taking the expense of cultivating the two plants to be in all points equal, the superiority is usually granted to the turnip, as it is more nutritive, and can be managed and stored with less trouble; and from better withstanding the severity of winter, it can be used in a fresher state. The turnip is better calculated to yield fat and muscular fibre in animals, and the cabbage to afford milk and the juicy fluids; they are also more laxative, and from whatever cause these qualities may arise, experience shows that the fact is certain. Hence the great value of cabbages for milch cows and to lambing ewes; and the stools are best given whole and uncut, as the animal has a beneficial pleasure in biting the lump, and in exercising its jaws, sunk to the ears in a cabbage stool, which engenders a quantity of saliva very useful in promoting the digestion of the food, and for the secretion of the nutritious juices. The best use of cabbages may be in being consumed in

the early winter, from October to February; and being thus used fresh daily from the field, the mustiness will be avoided that is always found to adhere to a large body of succulent matters in confinement. But a portion of the stools may be preserved for spring use in feeding the lambing ewes, the great value of the juicy food that is yielded to the animals being more than equal to the distasteful mouldiness that has formed matter of complaint against the storing of cabbages. But if even the one-half of the crop of cabbages can be preserved in a fresh and succulent state the benefit is almost incalculable, in having a quantity of juicy food at that most critical season of the year, and the most precarious time to the animal. On the whole, if Swedish turnips are generally preferred, cabbages will grow on soils beyond the production of turnips. The plant yields to none in value and utility when used under the necessary circumstances of soil and climate, and the means of a profitable consumption.

The roots of the cabbage-plant are thickly fibrous, and creep along the surface of the ground without any tap-root to penetrate and divide the soil, as is done by turnips, carrots, and parsnips, or dividing and heaving the earth as by the tubers of potatoes. There is no umbrageous foliage of the cabbage to shade the ground and retain moisture, as with mangold wurzel, potatoes, and turnips, which prevents exsiccation and hardening of the surface. When the cabbage heads are formed, the ground is wholly uncovered. On these points of great value to the land the cabbage fails in comparison with the other roots of cultivation; hence the necessity of superior advantages to produce a crop of the plant.

DORKING AGRICULTURAL ASSOCIATION.

The prizes have been awarded as follows:

MANGEL WURZEL.—For the best four acres, on farms of not less than 200 acres, the silver tankard, to Mr. R. Clutton, Hartwood, Reigate. For the best two acres, on farms of not less than 100 acres, the silver tankard, to Mr. J. Holmes, Pleystowe, Capel. For the best acre, on farms of not less than 40 acres, the silver tankard, to A. K. Barclay, Esq., Bury Hill, Dorking. Highly commended: Mr. Harvey Nunn.

SWEDEN.—For the best 10 acres, on farms of not less than 200 acres, the silver tankard, to Mr. R. Clutton, Hartwood, Reigate. Highly commended: Mr. H. Wise, Feltons. For the best five acres, on farms of not less than 100 acres, the silver tankard, to Mr. Caleb Ede, Betchworth. Highly commended: Mr. Holmes, Pleystowe, Capel, and Mr. J. Rose, West Lees, Dorking. For the best two acres, on farms of not less than 40 acres, the silver tankard, to G. A. Fuller, Esq., Rookery, Westcott. Highly commended: Mr. T. Page, Holmwood Farm.

TURNIPS.—For the best ten acres, on farms of not less than 200 acres, the silver tankard, to Mr. T. Wells, Phenice Farm, Great Bookham. Highly commended: Mr. Karm King, Shere. For the best five acres, on farms of not less than 100 acres, the silver tankard, to Mr. C. Ede, Betchworth. Highly commended: Mr. E. Charman.

ANNUAL INSPECTION OF STOKE EDITH ESTATE.

This interesting event came off on Tuesday, Oct. 16th, and as the weather was favourable, a large party of invited guests, besides the goodly band of tenants of the Lady Emily Foley, assembled in the morning at the Leys Farm, and proceeded to pay a visit to each of the well-cultivated farms upon this fine estate. The various improvements were noted, the faults (where there were any) were freely canvassed, and the "progress" was one of combined pleasure and instruction; for no agriculturist, however practical and experienced, can make the tour of the farms on the Stoke Edith Estate, and see the high state of cultivation to which they are brought, and the judicious management adopted on most of them, without adding many a "wrinkle" to his previously-acquired knowledge. It is well known that the noble proprietress of Stoke Edith is herself a practical farmer of no mean repute, at least so far as having under her management a very excellent farm, where her bailiff, Mr. Wallace, presides in an exemplary style; and it is proverbial on the estates that her Ladyship not only takes great interest in agricultural pursuits, but understands the details of cultivation and feeding more thoroughly than many a country squire who derives his income from the soil, but does not know a mangold from a turnip, and has no more knowledge of the practice of husbandry than that mythical individual "the man in the moon." It is under the influence of such a stimulating example, and such equitable arrangements as here exist between landlady and tenantry, that a state of things has grown up on this estate which would hardly be credited by the outside world; and without saying that there are any "model farms," or that perfection has been in any one instance attained, we may fearlessly assert that the Stoke Edith Estates will honourably compete with any of similar extent in all this fair kingdom.

Mr. Mathews, of Edgbaston, Birmingham, and Mr. C. A. Mason, her Ladyship's confidential agent, led the company on their tour. Lady Emily Foley each year gives two liberal prizes to her tenants for the best cultivated farms. Mr. Mathews is the yearly judge, and the errand upon which he was this day so numerously attended was to make observations upon which to ground his awards. The expedition terminated in the usual agreeable way, with a banquet at Stoke House, over which Mr. Mason presided, Mr. Wallace occupying his accustomed place in the vice-chair. After the bountiful repast, the company was joined by the Lady Emily Foley, her brother, Lord Wm. Graham, M.P., and a party of visitors.

Lord WILLIAM GRAHAM took the chair, with her Ladyship seated on his right. After the usual introductory toasts had been proposed from the chair,

Mr. R. BIDDULPH proposed the health of the Lady Emily Foley, whose name was received with great enthusiasm. He had pleasure in availing himself of that opportunity of expressing the great gratification he had in going over the estates that day. He had seen some most excellent farms; some green crops which he thought could not be surpassed; he had witnessed great neatness in the hedges; in point of fact, he had seen a rich and wealthy country, which had done his heart good to look upon; and, in addition to that, he believed he had seen a happy, prosperous, and contented tenantry (applause). He expressed his conviction that the premiums offered by her Ladyship, for the best cultivated farms, had been of most essential service, not simply to the tenant farmers

upon the estate, but also to the whole neighbourhood (Hear, hear, and applause). These were times in which a man did not look over his neighbour's hedge without in some measure following the example before him; and when it was known that all the neighbours would come and look, each man would take especial care to have everything done in the best way. These things must be carried on by the expenditure of a certain sum of money, and he was satisfied that it not only contributed to the welfare and prosperity of the tenant, but also to the prosperity of the landowner (applause). It had been too much the practice to think that the interests of those two classes were antagonistic, but that was not the case, for what was a benefit to the one was also a benefit to the other.

Lord WM. GRAHAM returned thanks on behalf of his sister, and especially thanked Mr. Biddulph for the kind terms in which he proposed her health. Looking at the great competition amongst the tenants on the estate, he should say that Mr. Mathews must have had a very difficult task to award the prizes on that occasion (applause).

Mr. JANCY, of Nunnington, proposed the health of Lord WM. GRAHAM, who congratulated them upon the way in which the harvest had been got in this year, although he believed the difficulty in obtaining hands had been felt to some extent in this part of the country, as in other parts of England, though not perhaps in the same degree; but he apprehended that if this difficulty of obtaining labour should continue, it must lead to some extent to the gradual introduction of agricultural machinery. During the harvest he had seen a reaping machine in full operation; it performed its work in a most satisfactory manner, cutting the corn even where it was laid, not in a large flat field, but where there were undulations, so that it had to work both up and down hill. It was the American machine of McCormick's patent, made by Burgess and Key. It cut about 10 acres a day, and was calculated to save the labour of 12 reapers. The price was 40 guineas, and if they took the work of 12 labourers throughout a harvest at the price paid this year, they would almost save half the price of a machine in the first year. Perhaps one of the best ways would be for some individual to purchase a machine, and let it out to farmers, as they did the threshing machines; or an individual might contract to cut a field, and bring his labourers with him. Under any circumstances, if the scarcity of labour continued some such measures must be adopted, and he thought the reaping machine might be put to a satisfactory use.

Mr. W. TAYLOR proposed the health of the Rev. W. H. Lambert, who briefly responded.

Mr. MATHEWS then proposed the health of Mr. John Hodgetts Foley, one of the Members of Parliament for East Worcestershire. For many years after Mr. Foley went to live at his beautiful seat of Preetwood, he was in the habit of dining twice a year with his tenants. He found that the rent-day dinners were not exactly that sort of jollification affair which his generous nature admired, and that there was always a sort of grumble associated with it; for it was pretty well understood that a man with empty pockets is not inclined to be in the best mood, and that tenants sometimes looked upon the rent day as a sort of institution that would be much better abolished (laughter). To ameliorate that state of feeling as much as possible he originated these inspections of estates,

and had continued them for twenty-five years, the last fifteen of which he (Mr. M.) had had the honour of being his judge. He could safely say that no landlord in the world (of course excepting her ladyship at Stoke) met his tenants with greater cordiality than he did, and that the tenants no longer wished the rent days to be abolished, but rather wished them to continue, as the pleasure of the inspection was more than equivalent to the two rent days (laughter and cheers).

Lord W. GRAHAM proposed the health of Mr. Biddulph.

Mr. ROBERT BIDDULPH said he had had great pleasure in meeting them at the meetings of the Ledbury Agricultural Society, in which he took great interest, believing that these societies have a vast deal to do with the agricultural improvements going on in the kingdom. He was very sure that a meeting like this must tend much to the improvement of a district. A few words had fallen from Mr. Mathews in proposing the health of Mr. Hodgetts Foley, as the founder of those meetings, in regard to their beneficial effects, and he must repeat that the more they could get the agricultural class to mix, the more their feelings would be drawn together, and much more interest would be taken in each other than would under the old system. Mr. Mathews had also said that a tenant farmer had some objections to rent day. Now he happened to be connected as trustee with one of the largest properties in the kingdom, and had there met with large parties of tenantry, and had heard many exclaim, that they were never so happy as when they had paid their money, because then they were independent men.

Mr. MATHEWS then read the following:—

MY LADY,—I beg to report to your Ladyship that I have awarded the prize for the best cultivated farm of the 1st class to Mr. J. B. Ververs; and that of the second class, to Mr. Richard Sexty.

I cannot refrain from expressing my admiration of the persevering exertions of Mr. Sexty. For several years he has laboured hard to convert one of the worst cultivated farms to the best of its class; and I am not clear that, taking into consideration the disadvantages which the character and situation of the farm involve, his is not in the most perfect state of cultivation of any upon your Ladyship's estate.

I am unwilling at all times to speak of individual merit, except so far as it relates to successful competitors, lest I should unfortunately incur the imputation of making invidious comparisons, and thereby engender jealousy and dissension; but, in the present case, I feel I should not do that justice to Mr. Hall which is especially due to him, if I did not remark to your Ladyship upon the excellent cultivation in all the branches of good husbandry which his farm exhibits. I have the honour to be, my Lady, Your Ladyship's obedient faithful Servant,
J. MATHEWS.

The Lady Emily Foley.

Her Ladyship then distributed the handsome certificates which entitle the successful competitors to receive the prizes.

Mr. MASON then remarked that they had a small society on the Stoke estate for promoting good ploughing and other agricultural matters, and to which it had been then thought advisable for the future to add a premium for thatching; for good thatchers were exceedingly scarce in that neighbourhood, and those who could thatch would not attend to it, although it was a branch of husbandry at which they could earn good wages. Indeed the state of the ricks on the estate had been remarked by some friend present as not being so creditable as the advanced state of cultivation visible on the farms. This little society was not intended to interfere with other local societies, but simply to endeavour to promote that which lies at the root of good husbandry—good ploughing. They also considered it better that in future years, the person winning the first prize should not be eligible to take it the following year, with a view of not discouraging other competitors. He then read the list of awards for ploughing, after which,

Mr. BIDDULPH proposed the health of Mr. MATHEWS, who said his greatest pleasure on these occasions was to have his

name received among the competitors for the prizes with good feeling and good-natured forbearance (Hear, hear). He had no cause to favour anybody, and wished to do what was strictly fair and equitable to all. He believed that where the wish to do honestly existed, a very little judgment went a long way in doing what was right. Reverting to the subject of fencing, he said he thought, when first he came among them, that many persons considered good fencing to be all very well, but not absolutely necessary as a part of agriculture. But he had seen within the last few years that the opinion was altered. There were not many fences now 12 feet high, but there used to be, and if they had one of 4 feet high by the side of one 12 feet high, they would see the difference: for every yard forward in the 12 feet fence they would have about six superficial yards, and about one-third of that in the other, and while a man was working up 100 yards of the high one, a man would do 300 yards of the other. There was an economisation of labour well worthy the attention of any man. Besides that, there were not a tithe of the sparrows on the estate as there were some years ago. There was a time when 2d. a dozen was given by the overseers of the parish for sparrows' heads, and a good deal of money they had to pay. The sparrows had good roosting and building places in the high hedges, but now both were gone, the hedges were brought into a modern condition, and in the course of the next two years he thought they would be much better done. They had heard a good deal with regard to steam ploughing. He always observed that no implement was superseded until it had arrived at perfection; and when a thing had arrived at that pitch, the ingenuity of man devised something that would supersede it. When the coach had arrived at the greatest possible pitch of speed, the locomotive stepped in and drove it out of use. The same would be the case with the plough. He apprehended it would be a long time before they would have the steam plough upon those estates, although it had recently been most materially improved. In Birmingham, when an order came from abroad for some piece of machinery, and they did not know how to set about it, the manufacturer called in a machinist, who dealt with the scientific part of the subject, and who best could tell how to accomplish the work. Proper tools were procured, and the manufacturer realised more by the order than if he had worked with improper tools. The plough a few years since was a very rude implement, though now it was in some instances as nearly perfect as possible. Ransome's, Howard's, and other ploughs were very celebrated over the country, but not perfect. He did not know that he could render those gentlemen agriculturists around him greater service than by calling their attention to the plough used by Mr. Wallace. So long as that plough was put in competition with the rest on the field, so long would that plough gain the prize, notwithstanding that the workman might be an indifferent workman. He did not care what the ability of the ploughman might be, if he had not the plough to do the work with. He thanked the gentlemen on the estate for the considerate manner in which they received his hints, for he found they were paying a little more attention to their green crops than formerly, and he could assure them there was no branch of agriculture that would turn in more money than their grass lands, if properly managed. Mr. Mathews then paid a high compliment to Mr. Sexty as a farmer, and to his hedger as a workman, and requested to be allowed to present the latter with an improved tool for such work. It was comparatively easy to dress a well-formed hedge, but it required a great deal of skill, a great deal of patience, and a great deal of cleverness too, to convert some ragged hedges into good formed ones. He thanked them for receiving his decisions in the kind manner they had, and hoped

the day was not far distant when they would not cavil with his judgment upon certain matters of husbandry (applause).

Lord W. GRAHAM proposed the health of Mr. MASON, the agent of that estate, who thanked his Lordship for the compliment, and the tenantry for the kind reception they had given it.

Lord W. GRAHAM, in proposing the health of the successful competitors, congratulated Mr. VEVERS upon having won the prize for the fourth time. As long as they had such good farmers as Mr. VEVERS, Mr. Hall, Mr. Taylor of Showle, and others whom he might name, the tenants on the Stoke Edith estate need not fear competition with any district of Herefordshire. He congratulated them on the continued improvement visible in the cultivation of their farms, which must be satisfactory to the tenants as well as the owner of the property, for it proved that they were an intelligent body of men, who kept their eyes and ears open, and were willing to adopt any measure calculated for the real improvement of agriculture (cheers).

Mr. VEVERS responded.

Mr. MATHEWS revived the vexed question of early planting. We had had three consecutive dry seasons, such as the oldest amongst us could scarcely remember, and 26 inches of water were now due to the land, a quantity equal to the average of a whole year's rain. That might or might not occur again, but he did not think that they should entirely come to the conclusion that he was wrong with regard to the early planting of turnips, because they had had three exceptionable years. There was an old saying,

"Let it be dry or let it be wet,
The weather always pays its debt,"

and he was certain that in one of the coming years they would be inundated, so that if they postponed the planting of their turnips until the middle of June, they would not be able to get them in at all. He did not mean that they should sow in January or February, but unless they got their roots in before the end of May the crop would not be so good. He was sure they had all been late with their mangolds. Those he had seen were small in size, and exhibited the fact of their not having been in the ground long enough, but large or small they must be stored. An astute and intelligent man in Birmingham said, with great confidence and emphasis, that the introduction of artificial manures will ruin the soil, and that in a series of years the ground upon which it is used will become almost sterile. In that doctrine he (Mr. Mathews) had no faith. No doubt the person had ample grounds for his opinion; but one thing must be manifest to all, that they were growing swedish turnips too thick. The crops obtained on freshly-broken land so far exceeded the others as to prove that they might grow turnips too frequently. If they attempted to grow two crops in succession, the second was an utter failure, because the first crop deprived the soil of its phosphates, and until they were returned, swedes could not be grown again. The question was, how often could they grow them? He thought that turnips, like clover, should not be grown so frequently as was attempted to be done. That was not the case with mangold wurzel, which had been grown for 25 consecutive years on the same ground, and therefore did not deprive the soil of that which was essential to their growth. It was a great blessing to know this, because if they failed in growing swedes, as they might in the course of the next twenty years, they could fall back upon mangolds. Then if they said mangolds were not so useful, because they did not come in so early, and were injurious to cattle unless they had been kept a certain time, the question arose whether they knew exactly how to use them. The more they knew the root the more

they would be prepared to use it, and the better they would understand it. Some gentlemen might doubt whether he was right in this. Mr. Hollings, Mr. Pitt, Mr. Morris, Mr. Hall, and others, had got excellent swedes, considering the season, and they might be contented to go on growing such swedes. He would put them on their guard not to depend entirely upon swedes, but grow some mangolds every year. He did not know much about the new sugar cane (*holcus saccharatus*); but that he saw at Mr. VEVERS's did not seem to have been cut, and could not have been of much use. [Mr. VEVERS: Not yet.] If left in the frost, it would not yield much "sugar," but in these days no green crops were unworthy of consideration, for as population and the demand for meat were increasing, they must pay attention to everything that offered.

Mr. BAKER said he had planted some of the Chinese sugarcane in January, had cut it three times, and it was still growing. He used it as green fodder for horses, and had no idea of the weight it would produce per acre.

Mr. BIDDULPH thought they had not lately succeeded in growing swedes so well as they had in other matters. The mangolds were comparatively a new crop in this country, but in the Lothians and Northumberland the people were convinced that they could not grow swedes to advantage without a longer time between the crops. The swedes he had seen that day were beautiful, and the number of tons per acre must be very good indeed; but other green crops were worthy of every attention. Mangolds were good in summer, after the swedes were gone. He had some in July of last year, perfectly good and sound, and it must be to their advantage to grow more of them. He was glad Mr. Mathews had broached this subject, and he hoped they would all pay serious attention to it. He did not know how far Mr. Mathews's friend was right, but he confessed his fear that it would turn out that artificial manures would not have a permanent effect. They were stimulating, but he was doubtful whether they would always continue to act.

Mr. MATHEWS said he was one of the judges at the Birmingham show of roots last year, and found that some roots were exhibited two years successively. He did not disqualify them on that account: on the contrary, it showed the value of the root. The roots he referred to were Yellow Globe turnips, and weighed about 28 lbs. each.

Mr. W. TAYLOR, in the course of some remarks, said draining had been a hobby of late years, but it was a question whether it had not carried off the moisture they wanted. Mr. Mathews had said that if he (Mr. Taylor) would produce three good turnip crops in five years, he would acknowledge himself to be wrong about the advisability of early planting. He had already grown two, and he thought the third was now coming on (Hear, hear). The way to grow turnips was to put the land in good order, and grow them quickly, like cucumbers; they must never be checked. If put in too early, all roots had a tendency to run to seed. On some land it was beneficial to plant earlier than on others, but those who attempted to plant very early would surely be beaten.

Mr. JANCY said it struck him that we had much more rain in the latter part of April and May than in June, and as summer progressed we expected more dry weather. If Mr. Mathews inquired when the swedes were put in, he would find the early swedes suffering from the blight and mildew, while the late sown were in a flourishing state. As long as he could remember, early-sown swedes suffered much from mildew, and, unless in an extraordinary year, had never come to such maturity as those planted in the last week in May or the beginning of June.

Mr. MATHEWS admitted that a great deal of rain fell in

April, but he never advocated April planting. He said they should be put in before the expiration of the month of May.

Mr. McCANN, being appealed to for an account of the farming improvements at Malvern, and especially the growth of the holcus saccharatus, said he believed it would prove to be a valuable crop. He had cut it three times this season, and had some now fit to mow again. He believed it to be so prolific that much of it would be an incumbrance on a farmer; but every animal would eat it with a keen appetite, especially the pig. They must find a substitute for swedes, and he pointed out the great merits of the carrot as a feeding root. He planted his turnips early, and they had the mildew very badly, but the rain came and they got on; and as regards weight, he believed he could compete with his Herefordshire friends. Carrots were a profitable crop, and could be grown to a heavy weight. The carrot required deep ploughing, and at Malvern they were obliged to use a subsoil plough, as they were on the gravel. He put his seed in early in April, on a six or seven-acres piece, and the frost and snow came on them; but a better crop he had hardly ever seen. Subsoil ploughing had more to do with the goodness of the crop than artificial manures, of which there was not a handful in the whole piece. He put on ten cart-loads of rotten dung, and as much decomposed road scraping, which he had found to be beneficial. He showed some "long reds" at the Worcestershire show last week, averaging 24½ lbs. each. In answer to Mr. Mason, Mr. McCann said he used the holcus saccharatus green, and did not know whether any of his neighbours had harvested it like oats.

Mr. MATHEWS said he had grown carrots to some extent, and believed that if swedes failed we might fall back upon them with great success. The making of railways would aid them much, for if they found the land got tired of one description of carrot they could get another, and if they were too expensive to be used on the farm, they could be sent away into the more populous districts with great advantage. He planted 15 acres of red Altringham carrots 3 feet apart, and spent £25 10s. per acre in labour; he grew the carrots without manure, and

sold them at 50s. per ton to people who fetched them away. If this could always be done, there was no question about the advantage of growing the crop. He did not mean to say it would be prudent for any person to spend that amount in labour, because the carrot crop might fail, and then there would be a considerable loss. He had grown 40 tons of white Belgian carrots to the acre. If Mr. Taylor was to give his land a good depth he would have thirty tons per acre from his carrots. Carrots would grow quite as well without manure as with it; they only required a good depth of soil, and they would grow as straight as a walking stick, and come up as thick as a man's arm. Manure was rather detrimental than advantageous to them.

Mr. McCANN said that where he dug deeply he had not less than 40 tons per acre.

Mr. TAYLOR asked Mr. Mathews how he spent £25 per acre on the land?

Mr. MATHEWS said he penetrated it thirty-six inches, and from the fifteen acres he took 600 tons of pebbles.

Mr. TAYLOR: Then you were quarrying (laughter).

The toast of "The Strangers" was acknowledged by Mr. CADLE, of Westbury-on-Severn, who was in favour of early planting, and said they might have mildew in the late-sown crops. He was surprised to see manure standing in the fold-yards when it would be better on the land. When carried out, the sooner it was spread the better, but he had seen some that must have lain there for months. The best thatching he saw was on the Lays farm, from which they started. In his district they had plenty of good thatching, and taught the labourers to do it.

Mr. MATHEWS said a stranger to the county should remember that here the farmers had work to do which was unknown in other parts; they had just finished their hops, and were engaged with their apples, &c.

Mr. MASON concurred in this view.

The pleasant party then broke up, having loyally sung the National Anthem, and drunk a parting glass to "Our next merry meeting."

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a Monthly Council, held November 2, present the Right Hon. Lord Walsingham, President, in the chair, Earl Powis, Lord Berners, Lord Southampton, Lord Feversham, Lord Egmont, Lord Leigh, Lord Tredegar, Sir Watkin Williams Wynn, Bart., M.P., Sir William Miles, Bart., M.P., The Hon. Colonel Hood, The Hon. W. G. Cavendish, M.P., The Hon. Augustus Vernon, Mr. Amos, Mr. Raymond Barker, Mr. C. Barnett, Mr. Barthropp, Mr. Bramston, M.P., Mr. Brandreth, Mr. Caldwell, Colonel Challoner, Mr. Exall, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Humberston, M.P., Mr. Howard, Mr. Jonas, Mr. Kinder, Mr. Lawrence, Mr. Milward, Mr. Pain, Mr. Pope, Professor Simonds, Mr. Robert Smith, Mr. Banks Stanhope, M.P., Mr. H. S. Thompson, Mr. Torr, Mr. George Turner, Professor Voelcker, Mr. Jonas Webb, Mr. Wilson (of Stowlangtoft), and Professor Wilson;

Reports were received from the Finance Committee, from which it appeared that the present current cash balance in the hands of the Society's bankers is £2,206 12s. 10d.; also from the Journal Committee and the

Veterinary Committee, and from Mr. Humberston, M.P., the Steward of Refreshments at Warwick.

On the motion of Mr. H. S. Thompson, a Committee was appointed to consider and report on the future editorship of the Journal.

The following new Members were elected—

Calcott, Charles, Belton, Shrewsbury.
 Edwards, Henry, Broadward, Leominster.
 Field, Henry, Tulse Hill, Surrey.
 Goodwin, Josiah, Millman-street, London.
 Harman, The Hon. King, Newcastle, Co. Longford, Ireland.
 Hobson, John George, Long Sutton.
 Hill, Lord Edwin, 24, Belgrave-square.
 James, Richard, Llanrwst, North Wales.
 Johnson, Thomas, The Hermitage, Frodsham.
 Leggett, H. B., Brownish, Titchfield, Hants.
 Leggett, S.B., Crofton, Titchfield.
 Lewes, Colonel John, Llanleian, Lampeter.
 Milward, Dawson A., Tullogher, Co. Kilkenny.
 Rudyerd, Henry, Charlwood, Crawley.
 Scarsdale, Lord, Kedleston Hall, Derby.
 Sheldon, John, Durham.
 Smithers, William, Soudes Place Farm, Dorling.
 Spill, George, Old Farm House, Stepney Green.
 Williams, G., Buckland, Faringdon.
 Wing, Thomas Twining, Goldington, Bedford.

The Honorary Secretary reported and laid before the

Council the applications and testimonials he had received from candidates for the vacant office of Secretary to the Society. The Council appointed a Committee of 13 to take into consideration the testimonials of the different candidates who have come forward, and to place before the Council such names as they may think eligible (not less than 10), from which list the Council shall choose the secretary.

The Council then determined the method in which the election should take place.

The Honorary Secretary reported that the agreement with the city of Canterbury relative to the Society's country meeting in 1860 had been duly signed by the Mayor, and the corporate seal affixed. The Council authorised the Honorary Secretary to sign and affix the Society's seal to the same.

A communication was received from Mr. Smith relative to steam cultivators.

The Council appointed the General Canterbury Committee, his Grace the Duke of Marlborough being the Chairman.

A communication was received from the Honorary Secretary of the Local Committee at Canterbury, rela-

tive to Local Prizes which they propose to offer. The subject was referred to the General Canterbury Committee to report on.

A communication having been received from Mr. Richard Stratton, stating that he had made an unintentional error of twelve days in the age of the bull-calf to which the second prize at Warwick had been adjudged, the Council decided that the prize should go to the "Reserve Number," given in the judges' award, viz., No. 91, Lieut.-Col. Towneley, of Towneley Park, for his bull calf "Bow Bearer," by Baron Hopewell, out of Frederick's Victoria.

A communication was received from the Foreign Office by direction of Lord John Russell, accompanied by an album (containing portraits of horned cattle shown at the Vienna Exhibition in 1857), the Imperial Ministry having transmitted the album for presentation to the Society. The Council ordered thanks to be returned for this and other presents of books which were laid on the table.

The Council adjourned to its monthly meeting on Wednesday, the 7th December.

LANDED TITLE INSURANCE COMPANY.

It is not with much surprise that one hears of any proposition for the establishment of another new Company. In fact, the only difficulty would seem to be in hitting on anything that has not already become the care of such an associated interest. We have Companies for building our houses, and for baking our bread, for supplying us with water, or for brewing us beer. We have one Company that is anxious to offer us substantial consolation should we break an arm or even damage a shin; many others that will be happy to guarantee our lives outright; and a third which, if, despite all this provision, we ever should die, will be delighted to bury us on the best and most economical terms. It would be hard to say what a man might not have shares in, or what duly-registered Company he is not unwittingly benefiting by eating, drinking, or sleeping; by working, playing, or positively doing nothing at all. The most curious calculations have been applied to all these various phases of existence, and the law of chances estimated accordingly.

But it is not merely the keen City man that is engaged in this kind of business. The country gentleman and well-to-do farmer have also a turn for it, and figure over and over again as managing directors, trustees, presidents, vice-chairmen, and so on. There are Companies for improving estates, or with the more direct object of draining the land. There is one Association insures your homestead against fire, and another your stock against disease. This will supply you with the best of artificial manures, and that is just about to do as much with the choice of machinery. Nowhere, indeed, has the speculator of late years looked with a more anxious eye than to

the pursuits of agriculture. There are few of our readers but who can readily remember some wild scheme or other they have been solicited to take a part in. One or two good names were only wanting to set the thing going, and the benefit to the rural districts, and to the shareholders more especially, would be something extraordinary. Just at present, however, there is nothing very particular stirring. It is true, as we have hinted, that the long-talked-of Implement Depot is about to be opened by such a means; while the Smithfield Club appears to be inclined to build on the same terms, and shares in the Islington Show-yard already begin to be talked of. Either of these, though, must be necessarily somewhat circumscribed in its action. There is not that unlimited range and general bearing so essential to the development of a really great or national scheme. A few magnate manufacturers may start the one, and the very Club, of its own strength, the other. Like, then, the monarch in classic story, we are still on the look-out for a new pursuit; a business, however, rather than a pleasure, and one in which we may make the most of our spare time and capital.

At this opportune juncture Mr. Wren Hoskyns turns up. Mr. Hoskyns is essentially what our American friends would call "a smart man." He was one of the first, in modern times at any rate, to invest the sober, serious, plodding subject of agriculture with a liveliness and humour as unusual as it was successful. He dared to publish a book upon farming, with illustrations by George Cruikshank; and, although the letter-press and the woodcuts were admirably adapted to each other, everybody allowed that it was not only

an amusing but really a very instructive work. Since then, Mr. Hoskyns' connection with the Royal Agricultural Society has brought him more continually before us. He has been a Steward of the Yard, a joint-editor of the Journal, and is still a Member of the Council; and, if during this apprenticeship he has gradually lost some of his fun and quaintness, it is no doubt from his seeing, the further he goes, what a very serious business this really is. As something of a consequence of his position, Mr. Hoskyns now rarely speaks or writes without referring to the national Society. The point of his speech in his native county the other day still turned to Hanover-square; and a letter he has addressed to the *Times*—and which follows here—is armed with a similar introduction or recommendation. In plain truth, the progress and present state of the Royal Agricultural Society come somehow or other to be strangely mixed up with some very liberal notions on the influence of free trade, the rights of labour, and the absurdities of "the Old Families." All this of course must have additional weight as proceeding from a member of Council, who ushers himself in under the shadow of so important an institution. But still the argument is nicely balanced. If we have the Agricultural Society at one end of it, we have a new Society or Company at the other; and these are certainly the two points of a long letter. In a rather discursive discussion, Mr. Hoskyns gradually draws on to the insurmountable difficulties that yet oppose the transfer of landed property. It might be trying to offer anything very novel on this subject, and Mr. Hoskyns adds little to the argument that Parliamentary Committees, Law Societies, and Farmers' Clubs have already said on it. In fact, one goes on and on through the letter, with an increasing feeling of disappointment that a gentleman, generally so entertaining, has here so little to tell us. It is only in the last few sentences that the reader is repaid for his trouble. Mr. Hoskyns not only denounces these difficulties of transfer, but he is prepared to remedy them. His recipe, moreover, is as novel and original as the abuse itself is old and worn. In all the discussions we have listened to, in all the papers we have read, we remember nothing in any way referring to Mr. Hoskyns' plan. He asks for no registrations of properties. He insists on no simplification of titles. He looks to little or no further aid from the Legislature. Indeed, he rather defies so cumbrous an authority altogether, and boldly cuts through at once, rather than stays to unravel, the Gordian knot before him. If people wish to buy land, let them buy it; or, if others have property to sell, by all means let them do so. Never mind about partial powers of sale, imperfect titles, or the hundred-and-one other hindrances obsolete custom or enactment would offer. At worst, these are seldom little more than make-believe bogies that the lawyers talk of to clients, as nurses do to children, merely for the sake of making them do as they wish. But "commercial prudence and sagacity" are terrible enemies to ghosts and fays and imps and goblins of

all sorts, and to commercial prudence and sagacity must the buyers and sellers of landed property betake themselves, to defend them from the hobgoblins and imps conjured up by the law's delays and doubts. Let Mr. Hoskyns put the case in his own way:—"Why should not landowners take a leaf out of the ledger of commercial prudence and sagacity, and by a Landed Title Insurance Company free themselves for ever from the tyranny of the shadowy doubts upon their titles that have such fearful power for mischief, yet no reality or substance, except for the benefit of those who raise them?"

Had Mr. Hoskyns but profited by the precedent of the Roman Sibyl, and burned half he had written ere we read the other—had his letter been but half its length, we are quite sure it would have been proportionately more effective. In the suggestion itself there is at least something to think and to talk over. We are by no means prepared to say that it does away with all the difficulties that encompass so difficult a question. But while these are becoming more and more unbearable, the legislature and the lawyers are doing little—and that little very tardily—to encounter them. The time may be come when we must really act for ourselves, and when we shall have to play off commercial prudence and sagacity against legislative indifference and delay. Mr. Hoskyns, like Sir Charles Coldstream in the play, at once turns to a union of interests. "If we want anything here in England," says the used-up baronet, "we get up a Company, and the thing is done!" And Mr. Hoskyns says so too.

TO THE EDITOR OF THE TIMES.

SIR.—Some degree of public interest has attached itself to the approaching election of a secretary to the Royal Agricultural Society of England. It is, however, scarcely known beyond the landowning and farming world that the election falls almost contemporaneously with the commencement of a second twenty years' campaign of this great association of English agriculturists, whose late re-opening at Warwick—almost the central town of the kingdom—offered perhaps the largest exhibition of the kind ever seen in Europe, probably in the world. Their first campaign commenced at Oxford, in 1839, and terminated last year at Chester.

This long course of "Practice with Science" divides itself, somewhat singularly on review, into two equal periods—the former having been received by British husbandry under protection, and the latter under free trade. It is not necessary to draw any comparison. The relative progress during the two periods, and under the two systems, is matter of familiar knowledge to almost all classes of the public.

But I would ask your aid to give expression to a want which the Royal Agricultural Society cannot supply for the soil of England—a want which presses upon it with increasing severity every year, and that now meets the ear directly or inferentially in every conversation among thinking men upon the future of agriculture in this country. It may be stated very briefly. It does not broach complicated questions of steam-ploughing machinery, or elaborate systems of cultivation; it does not plunge into schemes of education for farmers' sons, or of the equitable wages of a class of labourers who never

strikes. It shapes the one thing wanted in this short phrase—freedom for the land.

It is not too much to say that the actual bearing of this question upon the whole community is not known, not suspected by one man out of ten thousand in it. Hardly a better proof of this could be given than the very terms of the welcome with which the late Solicitor-General, Sir Hugh Cairns's Bill was received by the greater portion of the press. It was chiefly characterised as a boon to the owners of land, which they ought to have long ago used their Parliamentary influence to obtain; and, for the rest, crumbs of comfort were thrown to the lawyers in the prospect of an increased, though altered business.

If the 70,000,000 acres of the United Kingdom existed solely for the benefit of landowners and conveyancers, there would be little left to say; and I would not attempt to say it, for who can help those who will not help themselves? But this, which is so commonly taken as the whole of the question, is its narrowest and least deserving side.

The land of this country, and of every other country in the world, however it may pass from hand to hand as property, is in one sense, and a very obvious sense, the birthright of labour. It is the ultimate source of all production, all wealth, and the origin of all employment and investment. No country, much less such a one as this, can measure what it loses by the denial or stagnation of the commerce in land. It stops or contracts the arteries that supply the whole system of trade, internal and external. It is a "strike," indeed, of the most fundamental and fearful kind, affecting thousands upon thousands who have no means of knowledge, no suspicion whatever of the source of the evil that insidiously reaches their own hearth. If an iron-master be compelled to blow out half his furnaces, or a mill-owner to turn off half his hands, we may lament the cause for his sake; but our sympathies do not begin or end with him. We think of the thousands who are thrown out of employment, and the other thousands whose trade is thus affected directly and indirectly. But what shall be said of a system of established law, or custom having the force of law, which deliberately closes the most natural, most wholesome, and most extensive field of labour that we know, from the labourer, and its produce from the community, by tying up the hands of its proprietors from the employment of the full complement of labour it is capable of employing? The owner himself, like any other capitalist, is perhaps the least sufferer, and the last. He may be idle enough to care but little, or to even prefer half labour, half crops, half investments of capital or time; but the labourer's family are increasing around him meanwhile. Has he no vested interest in the employment which the soil should afford?

Now, it happens in this otherwise improved and well-ordered England that the capitalist cannot buy land, and the embarrassed owner cannot sell it, and the improving owner cannot borrow on it without the torture of expenses and delays that every one who knows anything of business knows to be a virtual denial of that free action, and destructive of the motives which lead men to act at all. Who would fatten an ox or sheep, or print a yard of calico, if, before he could sell it, it had to go through a third pair of hands, coming in between the seller and the buyer, that nipped off that little increment of value that men call profit? The carcass price is not the thing men bargain about; it is that addition which skill or labour puts upon it. Confiscate this, and all markets may as well be closed. The gist of the whole matter lies in this. Our system of conveyancing, the obsolete coinage of an age when the investment of capital in land was almost a thing unknown, operates as a deterring influence, paralyzes the motive

which should be the mainspring of all traffic in land, compelling its retention in the hands that are unable to make the best use of it, and would willingly part with it, and denying it to those who have capital to invest in it and are able to employ labour in its improvement. This might be of less moment if no one but the buyer and seller were concerned; but let any one say if that be so, who has seen the condition of a landed estate whose owner was too poor to improve it, and that same estate when it has been at length dragged through the fiery ordeal of the conveyancer's office into the hands of a wealthy purchaser. One sight of this is worth a hundred arguments.

There is a kind of toadyism that is fond of coining imaginary pleas for the "ancient owners," the "old aristocracy" of the soil, cheating the ear with the false assumption that a slow and costly transfer of land has a tendency to keep estates in old families. They forget, kind advocates! that the same impediments which shackle a seller embarrass an owner wishing to improve and save his property; that the high price of money to the owners of "green-field security"—though allowed by the best of all—is due to that very complexity and delay which make the sale so troublesome. For, what is mortgage but a sale with power of redemption? Make that power short, simple, certain, and inexpensive, and many an owner of land would be able to hold and improve, partially or entirely, who under the present system is ultimately driven to sell under every disadvantage. An assumption more perniciously erroneous than that dear conveyancing keeps land in old families it would be difficult to conceive. It is more like the joke of an enemy than the error of a friend.

The truth lies grievously the other way. Not only are the owners of land restrained from the power to employ labour by the dearth of capital on their particular class of security, even where the ownership is untrammelled by entail or settlement (a subject on which I should like to address you again), but the continued operation of this impediment begets a kind of generic or class idleness. A landed estate is a business; and for one improvement that will pay 10 per cent. on the outlay 100 will pay five: and, were capital for agricultural enterprise obtainable at the rates of interest that the merchant pays on bills of lading, dock warrants, and Government securities, and which thus govern his investments, it would produce a revolution in the employment of agricultural and estate labour, the building of cottages, and the application of capital to every permanent improvement of the soil. Of all the taxes that can press upon land, that of expensive and protracted transfer is the most extensively injurious. It impoverishes the labourer first, the public who would benefit by his labour second, the capitalist (both large and small) seeking investment third, and, lastly, the landowner himself. For what? Not to aid the public exchequer, but to support an obsolete system of fiction and quackery in the so-called "practice of conveyancers," whose conveying lies in the whole art and ingenuity of obstruction, by virtue of the assumption that every title to land is bad until the ransacking of all the incidents of 60 years' possession has enabled them to prove a negative—that, after all, it is not bad; therefore the conveyance may proceed! Will such a thing be believed hereafter, when the present "system" has been consigned to the limbo of "fines and recoveries," and "outstanding terms," and its supporters are walking hand-in-hand with John Doe and Richard Roe in the plains of Elysium?

But it is only justice to a noble profession to say that its most eminent members have been among the first advocates of a reform of this greatest unreformed abuse in this country.

Conveyancers of the highest standing and experience admit that a really bad title to land is a thing of the most infrequent occurrence; that the risk is, to use the language of insurance, so small, taking one title with another, that it would be a matter of scarcely calculable appreciation. Yet by the very same authorities the doubt is often expressed whether (speaking professionally) any effectual remedy will ever come from within.

Every experience is in favour of that belief. Already the practice is obtaining among the wealthier class of buyers, in the case of small purchases, to take a simple conveyance, and be their own insurers of the title. Why should not this hint be acted on? We have insurance-offices in abundance, ready to undertake every species of risk, and not too full of business at present; and here is a risk declared by the best authorities to be, not, like life insurance, a mere question as to the time when an event, certain in itself, will take place, but the infinitesimal risk of a thing which rarely ever happens at all. The Great Eastern is a floating property of tolerable magnitude, yet she can be insured.

The poor Royal Charter, so lately lost, will cost each of her insurance-offices the price of a handsome landed estate. Why should not landowners take a leaf out of the ledger of commercial prudence and sagacity, and by a Landed Title Insurance Company free themselves for ever from the tyranny of shadowy doubts upon their titles that have such fearful power for mischief, yet no reality or substance, except for the benefit of those who raise them?

By such an association, composed of landowners themselves, this question might be set at rest, and every transfer of land in the kingdom be reduced to the simplest form a conveyance can assume; not by an elaborate and vexatious investigation of title-deeds, such as that proposed by the bill of last session, but by enabling every vendor and purchaser to make at once the conveyance they have agreed upon, and to insure the title, at a trifling cost, until the lapse of a statutorily-determined period shall have rendered it indefeasible.

I have the honour to be, sir, your obedient servant,
C. WRAN HOSKINS.

ON FARM IMPLEMENTS.

It was observed by the late Earl of Leicester, who is better remembered as Mr. Coke of Holkham, that for the purpose of cultivating land scarcely any implements were required beyond the plough, the harrow, and the roll; and that these tools, being duly provided and properly applied, were capable of accomplishing every object of cultivation. To this short and most comprehensive list of farm implements, our long and very extensive practice in farming in the most celebrated turnip-growing counties of Britain, and also on the marine and alluvial clays, makes very little addition, an implement for working the intervals of green-crop drills being the only tool that is thought necessary beyond the very just estimate that was formed by the Earl of Leicester. An explanation will show the grounds on which this opinion is founded.

THE PLOUGH

In the most approved swing form, as used in the South of Scotland, is, of all implements yet devised, by far the most generally useful, and can be applied to the greatest number of purposes, and hence its value. It performs every operation of ploughing, in leys, stubbles, and in the fallowing of lands. The drills for green crops are made by the swing plough in a manner superior to the double mould-board plough, of which the two-winged share is not fitted to pierce the stiff subsoils, but is borne upwards, and assisted to rise from the ground by the two mould-boards which float on the bottoms and run as a ledge. The two wings push into a drill the upper dried surface of the land in which moisture is deficient. The narrow-pointed share of the swing plough penetrates the subsoil, and raises fresh soil over the dung, on which moisture the safety of the turnip crop very much depends. This advantage is inestimable. The water-furrowing of wheat lands is done by the swing plough, with one furrow laying the earth to one

side, or with two furrows which part to both sides. In wet seasons, on clay lands the work is best done by the common plough, and with one furrow, as with two mould-boards the wet soil adheres and impedes the work. The mould-board may be removed from the swing plough, and the skeleton ploughs the intervals of green-crop drills; two mould-boards can be attached to it, and the drills of potatoes are earthed up with it as by the double mould-board plough. In all these cases of use the swing plough has no equal. The prime cost of the implement is small, the repairs are easy, and to replace it the cost is not large.

For the cultivation of the marine clays of England the turnwrest plough of Kent is indispensable; in that case all other ploughs are useless. These lands, and all soils that require above the power of two horses to cultivate them, are much best used in grass, being relaid with a choice mixture of best perennial grasses, thoroughly cleaned and pulverized by fallowing, and filled with dung and lime, and repeated for several times with lenient cropping between the operations.

In cases of gravelly bottoms, compact gritty earths, dry hard clays, and indurated subsoils of every kind, the plough with two wheels on the point of the beam, and the wheel plough with high galleys, are seen to take and retain a better hold of the ground than the swing plough, owing to the intervention of a body between the draught power and the share, which destroys the uplifting action from the horse's shoulder, and allows the share to go forward undisturbed. A cast-iron share being used on the swing plough would much assist the hold in such cases, as it wears evenly on the under and upper sides of the point, and preserves a straight point; whereas wrought-iron wears round on the under side, and becomes unfit to pierce the subsoil. These cases are not many, and bear a diminished ratio to the range of the swing plough, which extends all over turnip soils and

most of the wheat lands in Britain. The one process of ploughing one furrow on lea or stubble, done by wheel ploughs, is not any comparison with the number of purposes acted by the swing plough, for which the wheels are incumbrances and altogether useless. On the ground of general utility the superiority of the swing plough is established.

GRUBBERS,

Of any kind, do not perform operations that are not better done by the plough; and if the cost is thought to be lessened in any case, the result will be proportionally

decreased. The tools are costly and complicated, and execute only one operation, of which the value is not equal to the interest and repayment of the capital expended. The implement stands idle in the shed, and is employed in one use of a certain season.

Coleman's Grubber

Performs a good purpose in skimming the lands of bean and pea-stubbles to be sown with wheat. The weeds are cut and collected, and the surface-ground is pulverised. The cases of use are not many; but the implement is cheap and simple. J. D.

THE SUPPLY OF MILK—NATURAL AND ARTIFICIAL.

The most important of all the dairy productions is certainly milk, whether considered in its pure form as a beverage for domestic use, or in its prepared products, of cream, butter, and cheese. The aggregate consumption of milk, in the United Kingdom, excluding the other dairy products obtained from it, has been roundly estimated at something like 1,300 million gallons per annum, which would require, to supply it, half-a-million milch cows. The demand for milk in London, Liverpool, and other large towns is very great; and, if we could arrive with any accuracy at the extent of the metropolitan consumption, it would be a curious and instructive investigation. Taking the resident and floating population of London at 3,000,000, and assuming that they use a quarter of a pint each a day, this would require a weekly supply of 636,250 gallons, or 17,062,500 barn gallons a year.

The great proportion of the London supply now comes up by railway from the country from considerable distances, and the country milk trade is daily increasing. Scarcely one-fifth of the London supply is furnished by the cows kept in the metropolitan lay-stalls, and no doubt are long the whole will come from the suburban districts and the home-counties. According to the *London Directory* there are about 2,900 dairymen for the supply of the metropolis; what number of itinerant milk-vendors there may be it would be difficult to say. There are also four professed vendors of asses' milk.

In this country we depend entirely upon cows' milk, if we except an occasional resort to asses' milk for invalids. But in other countries the milk of the goat, sheep, mare, camel, and rein-deer are utilized. Sheep's milk is a common beverage in Toorkistan, where the sheep are milked regularly three times a day. It is also used in Sweden and Denmark. Goats' milk is used in Switzerland, rein-deer's milk in Lapland. The milk of the camel is a very favourite drink in all countries where the animal is used. The quantity given by the camel, without green food, does not usually exceed a quart; but the Bactrian, which enjoys a more succulent diet, yields twice that quantity. Some of the pastoral tribes possessing large herds live almost wholly upon camels' milk during a great part of the year, and it is frequently given to favourite horses, which are extremely fond of it.

From 80 to 90 per cent. of cows' milk consists of water. This quantity may be increased by special feeding for this purpose. Some sellers of milk in the neighbourhood of large cities, who are too conscientious to add water to their milk, but who still desire to dilute it, contrive to effect their purpose by feeding their cows on juicy succulent food, containing much water. Such watered milk they are able to sell with a safe conscience, though it may be doubted if the true morality of the case is much better than if the pump or water-can had been called directly into action. The large breeds of cows, which are remarkable for giving very great quantities of poor watery milk, are kept in many parts of the country around London for supplying the metropolis with milk. The seasons have their effect upon milk. The milk in spring is supposed to be the best for drinking; hence it would be the best for calves. In summer it is best suited for cheese; and in autumn, the butter keeping, it is better than that of summer. The cows less frequently milked give richer milk, and consequently more butter. The morning's milk is richer than the evening's. The last drawn milk of each milking, at all times and seasons, is richer than the first drawn, which is the poorest. Both the quality and quantity of milk will depend on many circumstances. The breed of cows is important. Small breeds give less milk, but it is of a rich quality. The kind of food also exercises no inconsiderable influence. Fed on grass and brewers' grains, cows give great quantities of milk; but the grains are an unnatural food, and have an injurious influence on the health of the cows and the quality of the milk.

Various plans for the production of artificial milk, solidified milk, &c., have been brought before the public from time to time, a few of which may be alluded to. The addition of sugar and evaporation by heat appear to be the plans pursued by most. Thus the process followed by M. Delignac, and which has been pronounced perfect by the Paris Academy of Science, is to mix with good milk a certain quantity of sugar, and then subject it to evaporation at a temperature below 100 deg. centigrade, by continued agitation: when reduced to two-tenths, the thickened liquid is put into a tin box hermetically sealed, and subjected to further heat.

In the United States several plans are used for con-

centrating and solidifying milk. Mr. Gail Borden, of Connecticut, prepares a concentrated milk by boiling in vacuo, at a temperature of less than 140 deg. Fahr., and thus removing 75 or 80 per cent. of water. It is intended for general use by diluting with water, and keeps a little longer than common milk. But it can be preserved for months by hermetically sealing it in cans, or combining with it a due proportion of pulverized sugar. Another maker, Mr. Blachford, in the State of New York, makes a solidified milk by adding one-fourth part in weight of white sugar, and a teaspoonful of soda, evaporating the milk by water heated with steam. It is formed into tablets covered with tinfoil. Similar solidified cakes of milk are sold occasionally in this country. Mr. Moore, of Sun-street, vends a concentrated preserved milk in tin cases; one spoonful of which, added to six of boiling water, yields a very good milk.

Mr. Septimus Plesse furnishes the following receipt for the manufacture of a purely artificial milk or lactine: Honey four ounces, powdered gum arabic half an ounce, three yolks of eggs, and six ounces of salad oil, well rubbed up together. One ounce of this, dissolved in half a pint of water, produces that amount of artificial milk. A more useful plan for the emigrant or voyager is to place bottles of milk, well corked, in a pan of cold water, and gradually raise the temperature to the boiling point. Then remove the pan from the fire, and let the bottles cool in the water. The milk will remain good for six months. In Italy they carry the process further, in the production of a dry substance called "Lactenia." Instead of putting the milk into bottles they evaporate it to dryness, under constant stirring. A dry mass is thus obtained, which, when dissolved in water, is said to possess all the properties of the best milk.

Milk has been made to perform other offices besides the production of butter and cheese, custards and puddings, and colouring of dietetic drinks. It has taken the place of albumen in the textile factories, and has been found useful in the hands of the calico printer. In pigment printing the colours have to be laid on the face of the fabric in an insoluble condition, so as to give a full, brilliant appearance. Lactarin, obtained from butter-milk, is more economical than the expensive egg albumen. When the price of olive and other oils were high, the woollen manufacturers and spinners mixed milk with the oil. It did not, however, amalgamate well with the oil; and an inferior texture of yarn and cloth was said to be the result. Besides, the milk undergoes chemical changes, which leave a sour smell about the fabrics, that make them less saleable; and the acid of the milk corrodes the combs and other machinery used in the processes of manufacturing the wool into yarn and cloth.

The Kalmucks, and most of the shepherd tribes of Central Asia, prepare from the milk of their cattle two kinds of beverage; one is called "koumis," and is sour milk which has undergone a certain degree of vinous fermentation. It corresponds with the "pinna"

of the Laplanders, which is made of rein-deer milk. The other beverage is an intoxicating, agreeable, flavoured liquid, obtained from koumis by distillation. Good koumis cannot be obtained from every kind of milk; that made with the milk of cows or sheep is bad. The milk of camels, and of mares particularly, yields twice as much. The koumis is prepared by mixing six parts of warm milk with one of warm water, and some old koumis as a ferment, then fermenting with frequent agitation. The fermenting quality of milk depends on the saccharine matter which is held in solution by the whey, in the proportion of about 5 per cent. Sugar of milk is obtained after cheese is made, by evaporating the whey. When dissolved in four times its weight of water, clarified, and evaporated to a syrup, white crystals are obtained, called lactic acid. Milk boiled with a little sugar keeps a considerable time. In Switzerland milk sugar is made somewhat largely, and used for food; and it is also used medicinally in this country.

Thus much for the milk of our breakfast tables. This brief inquiry shows us under how many various aspects even one product may be viewed by different persons and in different countries.

SIGNS OF RAIN.

TWENTY-NINE REASONS FOR NOT GOING OUT TO A PIC NIC.

The hollow winds begin to blow,
The clouds look black, the grass is low.
The soot falls down, the spaniels sleep,
The spiders from their cobwebs peep.
Last night the sun went pale to bed,
The moon in halos hid her head;
The boding shepherd heaves a sigh,
For, see, a rainbow spans the sky.
The walls are damp, the ditches swell,
Closed is the pink-eyed pimpernell.
Hark! how the chairs and tables creak,
Old Betty's joints are on the rack;
Loud quack the ducks, the peacocks cry,
The distant hills are looking nigh;
How restless are the snorting swine,
The busy flies disturb the kine;
Low o'er the grass the swallow wings,
The cricket, too, how sharp he sings;
Puss on the earth, with velvet paws,
Sits, wiping o'er her whiskered jaws,
Through the clear stream the fishes rise,
And nimbly catch the insatiable flies;
The glow-worms, numerous and bright,
Illumed the dewy dell last night;
At dusk the squalid toad was seen,
Hopping and crawling o'er the green;
The whirling wind the dust obeys,
And in the rapid eddy plays;
The frog has changed his yellow vest,
And in a russet coat is dressed.
Though June, the air is cold and still;
The mellow blackbird's voice is shrill;
My dog, so altered in his taste,
Quits mutton-bones on grass to feast.
And see yon rooks, how odd the flight,
They imitate the gliding kite,
And seem precipitate to fall,
As if they felt the piercing ball.
'Twill surely rain, I see with sorrow,
Our jaunt must be put off to-morrow.

RETURN OF THE SALES OF ESTATES IN LONDON, AT THE AUCTION MART AND GARRAWAY'S, WITH THE SALES IN THE LANDED-ESTATES COURT, DUBLIN, FOR TWO YEARS, ENDING SEPTEMBER, 1859.

MONTHS.	LONDON SALES, From Oct., 1857, to Sept., 1858, (inclusive).			LONDON SALES, From Oct., 1858, to Sept., 1859, (inclusive).			DUBLIN SALES. From Oct., '57, to Sept. 1858. From Oct. '58, to Sept. 1859.	
	Sold.	Bought in.	Total.	Sold.	Bought in.	Total.	Sold.	Sold.
	£	£	£	£	£	£	£	£
October.....	90,924	159,935	250,859	119,750	164,000	283,750	48,310	36,148
November.....	75,793	123,780	199,573	220,312	255,579	475,891	400,525	710,450
December.....	68,941	118,680	182,621	*527,578	53,990	581,568	340,160	188,315
January	13,465	58,369	71,834	73,627	132,105	205,732	81,476	20,400
February	101,594	48,857	150,451	115,807	117,870	233,677	68,870	96,070
March	107,550	181,038	288,588	235,048	159,470	394,518	85,580	1,835
April.....	210,179	280,448	490,627	135,644	144,582	280,226	56,610	13,435
May	395,695	459,455	855,150	358,927	414,565	773,492	377,832	128,927
June	605,382	909,724	1,515,106	465,328	565,798	1,031,126	371,523	212,948
July	607,730	1,319,205	1,926,935	547,898	514,780	1,062,678	96,845	68,043
August	396,919	938,132	1,335,051	306,418	702,464	1,008,882	—	—
September.....	134,511	368,835	503,346	125,375	167,730	289,105	—	—
	2,803,683	4,966,458	7,770,141	3,231,712	3,388,933	6,620,645	1,927,731	1,481,571

* In the month of December, 1858, two large sales occurred at the Mart of estates in Northumberland, amounting together to £428,000. This accounts for so large an amount in December, 1858, compared with December, 1857.

In the above table we give the amount realised by the sale of land and houses at the auction mart and Garraway's during the last two years; at the same time we show the amount bought in, as well as the total amount put up by auction. We consider these statistics interesting and of some importance. Last year the total amount of estates offered for sale exceeded the present year by about £1,150,000, but the sales this year have, in proportion, exceeded those of last year, viz., £3,231,712 was sold out of £6,620,645, whereas last season the sales amounted to £2,803,683 out of £7,770,141. This year nearly half the estates have found purchasers, while only about one-third of the property offered for sale last season was really sold. Taking the average of the two years, it would appear that estates to the value of seven millions are annually put up for sale by auction in London alone, nearly half of which is disposed of; indeed, it may be taken for granted that half is sold, if we bear in mind that in many instances when an estate has been bought in at the public auction, it is subsequently sold by private contract, the public competition having tested its value.

With respect to the column of estates bought in, allowance should be made for property offered for sale twice in the same season. A repetition of this kind is not likely to occur to sales; the amount can only be entered once, but some estates which we could name, by being bought in again and again, tend to unduly augment the bought-in column.

Our thanks are due to the Secretary of the Estate Exchange for the above return of the London sales, and we much regret that such a valuable society has not been in existence longer, so that instead of giving only two years of sales we might have been enabled to lay before our readers the sales for the last twenty years. We hope the admirable system adopted at the Estate Exchange will be persevered in; a record of the public

sales of estates must be of great importance and value to those who are interested in real property.

With respect to the country sales, we should be happy if we had materials for showing the amount, but we have no means whatever of so doing. True, a long list of country sales appear in each publication of our *Gazette*, but it is only a portion of the sales that actually take place. We consider that, taking the business all over the country, we shall be safe in assuming that the amount of sales equals that which is sold in London; if this is the case, we find that about six millions sterling of land and houses annually change hands in England and Wales.

Now for a word or two respecting the sale of estates in Ireland. The table shows that the business of the Landed Estates Court is declining, though perhaps it may be said with some truth that especial causes existed to account for the paucity of sales this year; but still, it is improbable the Court will ever again be burthened with such an amount of sales as occurred a few years back. The average annual sales of the last two years have been £1,704,651, whereas in 1852 the sales amounted to £2,833,660, and in 1853 to £2,818,861. The sales for last year amounted to about the same as in 1850, the first year of the proceedings of the Encumbered Estates Court. The Court sell by private contract: but we are not touching on what the judges accomplish in this respect, or what is sold in London by private treaty; we are confining our remarks to the public sales alone. In speaking of the sale of estates in the Landed Estates Court, Dublin, and comparing such with what is effected at the Auction Mart and Garraway's, we must bear in mind that the sales in the Court in Dublin represent the *whole* of the estate sales in Ireland: there is literally nothing done outside the Court. We certainly

know of one estate shortly to be sold by a Dublin auctioneer; but this is quite an unusual event: we do not suppose that six such sales occur in a year. From these remarks it is apparent that the London sales of about three millions annually, with the country sales throughout England assumed as another three millions, total six millions value of land and houses exchange hands annually in England, to about a million and a half in Ireland, the former being in a great measure *free sales*, and the latter *compulsory*. The area of England and Wales is not quite double that of Ireland; and yet we have four times the amount of sales. It would appear that the very large sale-years in

Dublin, as reported in the *Irish Land Schedule*, did not exceed the amount of property annually sold in London; but the former appeared of such magnitude from the fact that the sales in London were not reported.

We confess we have only opened this subject. We should be glad to proceed further, and be enabled to compare the number of purchasers in this country with those in Ireland. This is a wide field for inquiry; but we must leave the subject to other and abler hands, being satisfied to have given these few remarks on the estate-sales of England and Ireland.—*Estates Gazette*.

REAPING MACHINES IN SCOTLAND.

In the quarterly agricultural reports from the several counties in Scotland, published by our contemporary, the *North British Agriculturist*, the following general remarks on the use of the reaping machine are given:—

The report for Aberdeenshire states:—"Some reaping machines were used by a few of the most spirited farmers throughout the county, but not to the extent that the advantages of this valuable implement seem to warrant, seeing that so much important labour could be saved by its general adoption in harvesting the crops. If the surface is smooth, the reaper makes as good work on steep as on level land, the only drawback being that the draught is too heavy for a pair of horses; but if the draught of the implement could be reduced, and its working efficiency kept up, we would then have more hope of seeing it used on our high-lying and steep-surfaced land."

Suggestions are here given to machine-makers in reference to reducing the draught of the implement, so as to render reaping machines suitable for cutting crops on steep lands; the writer stating that where the surface is smooth the work done by reaping machines is as good as that on level lands. There has been hitherto a very general impression that machines cannot be used on steep lands even were the draught of the machines reduced so as to render them adapted for the strength of two horses.

The report for Berwickshire states:—"Reaping machines are getting progressively common in this county from year to year, and one or more of these very useful implements are possessed now by the generality of farmers of any extent. Now that the working is being better understood, they are more thought of. They are undoubtedly a great saving of expense, and, in case of scarcity of hands, of incalculable advantage in cutting down grain that might otherwise be shaken by the wind."

The number of machines which were in Berwickshire this season was only equalled by the number in Haddingtonshire. The progress made in introducing machines in Berwickshire has been very uniform. The machine which is now in highest favour is Burgess & Key's. The reporter has used during the last two seasons at least three machines—one Burgess & Key's, and two M'Cormick's Bell.

The reporter for Edinburghshire writes somewhat despondingly of reaping machines, being the exception to the generally highly favourable accounts given of the working of these, and of the sanguine anticipations of their future position as one of the ordinary implements of the farm. As there are always two sides of a question, it is satisfactory to hear both:—"Harvest began in the low district by the middle of

August, and mostly all was cut down within the month—scythemens doing much of the work. Shearers were plentiful, the wages being from 9s. to 10s. per week, with food. Reaping machines were also used; in most cases, however, Bell's was never taken out, those mostly used being the lighter descriptions, such as Dray's Hussey, or Gardner's. The improvement of reaping machines seems to be now in abeyance, for the cutting apparatus, which was early perfected, has been little improved; and, save with Burgess & Key's M'Cormick, nothing has been done effectively with gathering appliances. The weight and cumbersome nature of Burgess & Key's gathering apparatus operates sadly against its general usefulness; and although it undoubtedly stands first at the present time as the most complete machine, it is not to be believed that all further improvements are impossible, and that a better machine than any of the existing ones cannot be constructed. It was often wished that short stiffer-strawed crops could be grown for the purpose of their being reaped with machines. This season these were in abundance, and the heavy machines were at a discount; but what guarantee have we that next year a tangled twisted crop may not be presented to us to begin to? and without superior machines to those at present existing, where are we? If we once allow our present bands of reapers to drop off—which we will soon do if we do not encourage them—how are our crops then to be cut? It is only, therefore, by aiming at having such machines as shall be available for any crop that our purpose with them is to be effectually served. Give us a Gardner's or a Dray's Hussey, which will cut effectually a laid twisted crop, then progress will be made. But to give prizes to such machines year after year without progress in this respect, is just to lay money badly out; these machines making no pretensions to self-laying, it being the man that does so. It is only in cutting all sorts of crops they can be improved with advantage."

The majority of those possessing reaping machines will differ in opinion with the writer of the report as to the probability of non-delivery machines being sufficient to meet the views of the purchasers of reapers. Non-delivery of the cut grain is a serious objection to all machines produced on the principle of Hussey's. The remarks in reference to the awarding of prizes year after year, without any progress, do not apply to the prize reaper of Burgess & Key's M'Cormick. This last season the machine presented an important improvement, which facilitates turning. Besides improved workmanship in the machines sent out, we believe a better description of material is now used. We observe from the reports of the patent office, that Mr. George Bell, Inchmichael,

has lately patented improvements in the machine. The nature of the alterations is not stated, but it may be expected they are in advance of previous alterations made on the original machine. The report of Mr. Wilson, of Wester Cowden, experienced in the use of Bell's reaper, given in last week's impression, shows in a favourable light what can be effected by persevering with reaping machines. The farm of Wester Cowden is in the county of Edinburgh, where the report is somewhat unfavourable as to machine reaping.

The report for the county of Forfar contains a favourable notice of the machines sent out this last season by Burgess & Key. But the report differs from that of the others, in stating that the crops were not favourable for cutting with machines. "The past harvest has not been favourable for reaping by machinery, owing, in many cases, to the shortness of straw in oats and barley, and the necessity of getting all the fodder possible. In cutting wheat they have invariably made excellent work, though to secure this it has generally been found necessary to cut only in one direction. The machines sent out by Burgess & Key this year are superior to those of last season, both in construction and workmanship, and very trifling alterations have made a considerable improvement in them. We believe other makers are advancing in the same way. In the course of another year or two we may fairly expect to have reaping machinery brought to as great perfection as can be desired." The reporter is very sanguine of the speedy perfection of reaping machines.

The report for Haddingtonshire thus briefly alludes to reaping machines: "The harvest was not only expeditiously but cheaply finished—a great extent of grain being cut by machinery, and on several farms fully three-fourths of the crop." The reporter, we believe, used three machines, cutting fully three-fourths of the entire crop. The area so cut would extend to upwards of 300 acres, consisting of wheat, barley, and oats. In the county reaping machines are coming yearly into greater request, and upwards of 100 machines would be at work in the county last harvest. At first Bell's machine, manufactured by Crosskill, was in most favour, but latterly other machines have come into request. Defective workmanship, and inferior materials, in the machines first sent out by Crosskill's firm, acted most injuriously against the progress of machine reaping in this county.

The report for Inverness-shire contains no allusion to reaping machines, but refers to the scarcity of field labour compelling the farmer to adopt the scythe, which "was almost universally used for cutting down the grain." By next season more than one machine will be at work in this county.

The report for Linlithgowshire states, that "the more general use of the scythe and reaping machine had the effect of moderating shearers' wages, which ran from 1s. 4d. to 1s. 6d. a-day with victuals, a rate considerably under that of former years."

The report for Perthshire contains two references to reaping machines. The following is the fullest: "We have stated that a number of reapers were this year at work, and gave satisfaction—this is a pleasing feature in connection with farming. We particularly beg to allude to Burgess & Key's reaper, which we have witnessed, where the work was everything that could be desired, and the saving of expense greater than we could have anticipated. We wish all reaping machines great increase over the county, and hope those who still require them will be provided from some respectable makers before another harvest." Should the advice be acted on for each farmer in the county to procure a reaper, Perthshire will absorb nearly all the machines which can be manufactured in England and Scotland before the commencement

of the harvest of 1880. Doubtless there are few districts in which reaping machines are more required than in this extensive corn-producing county. The practice complained of by the reporter, of cutting nearly the whole of the grain on the farms previous to stacking a portion, shows the existing necessity for machines to cut the crop, as it is not to be inferred that the Perthshire farmers are so "penny-wise and pound-foolish" as to expose their crops in the stook one day longer than is necessary to secure their keeping in the stack, for the paltry saving of keeping the ploughmen cutting and binding corn crops.

In other counties reaping machines have been in operation, although not referred to in the reports. The general interest now taken in reaping machines will tend to their improvement, while it will induce farmers to purchase with greater freedom, knowing that reaping by machinery is perfectly practicable. We are of opinion that agricultural associations have hitherto shown a culpable apathy in reference to the introduction of improved reaping machines. In America, it was—and is still—quite a common practice for an agricultural club to purchase machines for trial. If the machines prove valuable, the fact is directly ascertained and taken advantage of; if the machinery prove not valuable, the loss is sustained by the club, and the machines are not used. This system might be advantageously adopted, both as to mowing and reaping machines in the United Kingdom.

CAMBRIDGESHIRE FARMS AND FARMING AT PRESENT CONTRASTED WITH THEIR POSITION THIRTY YEARS BACK.—At the Western Cambridgeshire Meeting, the Earl of Hardwicke said: There was no doubt but the country in which they lived had, in his own memory, rapidly advanced in the science of agriculture. He remembered the time when, in their own vicinity, the country was so open, that they could gallop from Royston to Cambridge without meeting a fence, and when land, at the time to which he was alluding, let for one-fourth the value that was now being realised. He had some land at Orwell, which, 30 years ago, he let for 9s. an acre, and that same land was now being let for 40s. an acre. This showed the advance of agriculture in their own county, and was, indeed, indicative of the general progress of agriculture throughout the country. The Press might give all the credit to free trade, but he should attribute it to protection. At the last time he met them, at that anniversary, he told them he had abandoned protection; he repeated it. It was almost idle to allude to it, for they would never see it again; and he was now as good a free trader, and, perhaps, a better one, than any of them. Free trade and an increase of population was working together. There was a time when farmers would only take a choice bit of land; but in the struggle in the world now going on, if a farmer could not have his favourite piece of land, he must take the next best piece, and then the next, and the next, and so on, till, by competition, the farmer was at last obliged to take what he could get; and to this might be attributed, in a great measure, the prosperity of agriculture. Cambridgeshire, as an agricultural district, was one of the most profitable in England. Cambridgeshire stood fifth or sixth, in point of value, in the aggregate in all England. Look at the fens of Cambridgeshire; contemplate what had been done there. In harvest time, it was one vast sea of corn, as level as the ocean itself. Look at the thousands and hundreds of thousands of acres that had been wrested from the waters by the capital, the enterprise, the skill, and indomitable perseverance of the men of Cambridgeshire, and all by pumping by the steam-engine. They were an advancing and an improving country, and Cambridgeshire was not behind in the great science of agriculture.

THE PRODUCTS OF AUSTRALIA.

While English farmers and stockbreeders are resting from their labours, and preparing for their usual Christmas gatherings, their brethren on the other side of the globe are rather differently occupied. Not that they are altogether over-looking competitive shows; for announcements of annual exhibitions and meetings of agricultural societies are pretty thickly scattered over the colonial journals. In Victoria silver and gold medals have just been pretty extensively distributed for bulls and working bullocks, grazing, dairy, and fat stock. Draught horses and blood horses, colonial or imported, merinoes and Leicester and Cotswolds, pigs, dairy produce, and agricultural implements and machinery, have all come in for competition and reward. The colony had sustained a loss in one of its finest specimens of imported stock, in the death of Master Butterfly. This is a heavy loss to his owner, Mr. G. J. Ware. Colonel Towneley was paid 1,200 guineas for the animal, and with freight, insurance, and other expenses, we doubt if he cost, landed on the Melbourne wharf, one penny less than £1,500. As Master Butterfly had been some two years in the colony, no doubt he has left among the stock of the Western district many inheritors of his fine temper, symmetry, and general good qualities.

An account is published of the number of live stock imported into Victoria across the Murray, from which it appears that during the quarter ending June, 27,306 cattle, 96,815 sheep, and 1,104 horses had been registered as imports at Echuca, Wangaratta, Mulwalla, Belvoir, Swan Hill, Harrow, and Casterton. The five first-mentioned places are on the New South Wales frontiers, and the two last on the borders of South Australia. Echuca is the great mart for cattle, Swan Hill for sheep, and Belvoir for horses.

But the colonists do not seem half active and industrious enough in the extension of grain culture to supply the wants of the increasing population, and prices of wheat and flour have gone up amazingly. The subject of the last wheat crops and the means of supplying the deficiency seem to be occupying a considerable degree of attention in Victoria and Tasmania; and this is not to be wondered at when flour is selling at £40 per ton in the gold fields, and at £34 per ton in the towns. Ten years ago it could be bought readily at one-fourth that price. Another food staple which used to rule high—potatoes—is, however, fortunately, very cheap; £3 to £3 10s. per ton, or just half the price of 1848. At Adelaide flour had been up to £33 per ton, and wheat to 15s. per bushel.

A Mr. D. Simpson, of Hobart Town, who appears to be an extensive corn-dealer, publishes some statistics of the corn-crops and consumption of the different colonies, the accuracy of which is, however, questioned in some

of the journals. He estimates the quantity of wheat produced in the years 1858 and 1859 as follows:

SOUTH AUSTRALIA.		Bushels.
187,000 acres, averaging 9 bushels per acre		1,683,000
Required for seed.....		300,000
Total		1,383,000
Population 110,000, at 5lb. per head per week for 44 weeks.....		550,000
Surplus for export.....		833,000
VICTORIA.		
70,000 acres, averaging 15 bushels per acre		1,050,000
Less seed		180,000
For home consumption, total surplus ..		870,000
Population 520,000, at 6lb. per head per week for 44 weeks		3,088,182
TASMANIA.		
50,000 acres, averaging 15 bushels per acre		750,000
Less seed		100,000
Total		650,000
Population 84,000, at 5lb. per head per week for 44 weeks		448,636
Surplus		201,364
South Australia, surplus		833,000
Victoria, do.		870,000
Tasmania, do.		201,364
Available for Victoria		1,904,364
Consumption of Victoria		3,088,182
Available for do.		1,904,364
Deficiency for Victoria		1,183,818
Probable deficiency of New South Wales		400,000
Quantity needed		1,583,818

These estimates are based, we presume, upon the demand of the population until the new crop is harvested; but they are exceedingly vague, and the computer, moreover, deducts 25 per cent. from the growers' estimates of production per acre. His reason for limiting the year to 44 weeks is, that though the stocks were unusually small at the commencement, yet there was at least four weeks' supply on hand. In case of scarcity they could also reckon on commencing four weeks sooner than under ordinary circumstances, which makes up the eight deficient weeks. Mr. Simpson considers there is a real deficiency of 35,000 tons, which must be met by foreign imports, chiefly from Chili, as but little is likely to be sent from this country or the United States.

The cultivation of the sorghum saccharatum does not appear to have succeeded in Victoria any better this year than last. After reaching to a good height, and promising to be very successful, the plants suffered from the late frost. The soil seems well adapted to the plant, as it grew remarkably well, and but for the unusually late appearance of frost it would probably mature satisfactorily.

Notwithstanding that the supply of potatoes had been considerably in excess of the demand, and in consequence of their low market value they had been much used for cattle-food, an equal quantity seems to have been planted. Many farmers think they will pay better next year. Some cultivators are about growing the large white carrot for cattle-food.

The Government of Victoria had proposed to the agricultural societies of the colony to take upon themselves the responsibility of compiling the statistical returns of cultivated lands and crops for the current year. We also notice that a steam-plough had been ordered from England by the Council of Agriculture of Melbourne, to be used on the model-farm for subsoiling and trenching: so that the colonists are determined to keep pace with agricultural improvements at home. This is as it should be. They have money enough, and energy enough, if they will but find the time and thought to improve and promote the best interests of the colony, by the extension of agriculture, and improved mode of tillage and cultivation.

The colonists do not seem to neglect the sports of the field either; for, besides their Derbys and Legers and Oaks, they have their hounds, and are not always obliged to course dingoes, or native dogs. Mr.

Thomas Chirnside informs the Nimrods of the western district of Victoria, "and those parties who purpose having a day with the Melbourne and Geelong hounds, at the Werribee, that on Saturday, 1st Sept., a deer will be uncared about two miles north of the Werribee Railway Station, in the direction of Mount Cotterill, at half-past nine o'clock. A second deer will be in reserve, ready at the railway station (in case the first does not give sport), or a native dog. On the following Saturday, Sept. 3rd, a deer and native dog will also be let go, at or near the Little River Railway Station, towards Station Peak. Should the weather keep cool, a deer will be let go at Salt Water River, near the race-course, sometime between the 5th and 12th October. There being about as little sport in this colony as in any country in the world, I propose giving a buck every two or three weeks during winter. And as I am getting red deer from England, I will be able to give a stag hunt, which affords better sport than fallow deer."

These features are worthy of record, although occurring in a distant quarter, because there are numbers directly and indirectly interested in the progress of our southern colonies, and we can but echo heartily the words of their own motto—"Advance, Australia!"

THE WHEAT AND FLOUR TRADE OF SOUTH AUSTRALIA.

In noticing recently some Tasmanian calculations respecting the stocks of wheat and flour available for use in the Australian colonies between the present period and the ingathering of the next harvest, we promised to look into the state of affairs in that respect in South Australia, in order to ascertain how far we are prepared to feed ourselves and our neighbours during the ensuing three or four months. That promise we now proceed to redeem. In calculating in advance the probable requirements of the year, we are in the habit of setting aside a fixed quantity per head of the population as the measure of our home consumption. But this theoretical calculation may often be falsified in practice; and, indeed, is very likely to be falsified under such circumstances as prevail at the present moment. With the labouring classes earning considerably less money in wages than the average of the last preceding half-dozen years, with bread at an excessively high price, and with potatoes plentiful and cheap, it is inevitable that the estimated ratio of consumption will not be reached. It may thus become possible to export a much larger quantity than was originally set aside as available for exportation, without in the least degree vitiating the original calculations. The quantity abstracted from the produce of one harvest to sow for the next is less liable to fluctuation on account of unforeseen causes. The probability is, however, that the high price which has ruled during the last four months would stimulate farmers to cultivate a larger breadth of land than they might otherwise have intended to sow with wheat. These preliminary explanations are requisite to a correct understanding of the calculations which follow.

The two great facts to be ascertained are, 1st, the quantity produced at last harvest, and, 2nd, the quantity

disposed of by exportation and otherwise up to the present time. With respect to the first we have no other means of information than the official returns, as collected by the parties employed by the Government for that purpose. According to those returns the entire produce of our last wheat harvest was 2,109,544 bushels, which is equivalent to 44,884 tons of flour. But circumstances are transpiring which lead to the conclusion that this aggregate is somewhat below the actual yield. The cause of the error is the circumstance which we pointed out some months ago as the only possible source of mistake in the calculations as finally revised, viz., the inaccuracy of the data supplied by farmers themselves in relation to their own returns. On this point we will only extract a few remarks from speeches recently delivered at an agricultural dinner at Normanville. They are as follow:

"Mr. James Smith said there was an important point he wished to call attention to, which was that the yield of the district of Yankalilla was far greater than was stated in the Government returns. He had put his yield at 20 bushels, thinking he would rather be under the mark than over it; but on clearing up he had found his average was 28 bushels.

"The Chairman (Mr. Herbert) stated that while the Government statistics showed 77,000 bushels as the amount raised in the district, there had been 130,000 sent out of it. Not all of that, but nearly all, had been raised in the district. The average of the whole district had been somewhere about 28 bushels per acre. Commercial transactions showed that result.

"Mr. Willson confirmed that opinion. He was convinced that when the quantity which had come into the district for exportation from Inman Valley, Myponga, and Encounter Bay was fully allowed for, there would be shown, as the direct produce of the district, some 30,000 or 40,000 bushels more than the returns gave.

"Mr. Gardiner corroborated the statement."

We can only say that farmers are strangely blind to their own interests in thus intentionally understating the yield of their farms. They may be certain that the consequence will be that merchants and the public will go to the opposite extreme, and add to their acknowledged yield a per-centage greater than the facts will warrant. As the result, they will not get so good prices for their produce as if the state of the case were accurately known. We may remind our readers that the district referred to by the speakers from whom we have quoted, appeared from the returns to be the most fertile portion of the colony. But even that high return now appears to have been understated. It must be remembered, also, that similar statements have not been publicly made anywhere else, so that it is not impossible that the under-estimate may have been chiefly confined to that district. For the present, however, we can only conjecture how that may be. The yield of Yankalilla is now said to have been 40 per cent. greater than was stated by the farmers to the official collectors. We will add 10 per cent. only to the total yield of the colony, as returned, and assume the produce of last harvest to have been 50,000 tons of flour.

We now come to the disposal of our produce. In the first place we collect the weekly exports from Port Adelaide, as published in the *Government Gazette*. They are as follow:—

WHEAT.

Week ending	Quarters.	Price per Bushel.	Gross Value.
		s. d.	£ s.
January 1.....	819	6 0	1,985 12
8.....	837	6 0	2,008 16
15.....	862	6 3	2,155 0
22.....	1,242	6 3	3,780 0
February 29.....	2,173	6 6	5,649 6
5.....	2,183	6 9	5,894 2
12.....	1,693	6 9	4,571 2
19.....	2,383	6 6	6,195 16
26.....	3,575	6 4	9,056 13
March 5.....	924	6 6	2,402 8
12.....	705	6 8	1,080 0
19.....	1,940	6 8	5,173 7
26.....	520	7 8	1,594 13
First Quarter	19,856		52,276 15
April 2.....	2,791	7 8	8,559 1
9.....	1,392	8 0	4,454 8
16.....	—	7 10	—
23.....	69	7 10	216 4
30.....	169	8 2	552 2
May 7.....	1,184	8 2	3,867 14
14.....	105	10 0	420 0
21.....	360	10 0	1,440 0
28.....	592	9 9	2,308 16
June 4.....	—	9 6	—
11.....	555	9 6	2,109 0
18.....	—	10 0	—
25.....	—	10 0	—
Second Quarter	7,217		23,927 5
July 2.....	1,238	9 9	4,828 4
9.....	310	11 4	1,418 5
16.....	1	10 6	4 4
23.....	—	11 0	—
30.....	1,292½	12 3	6,333 5
August 6.....	125	12 0	598 10
13.....	—	12 4	—
20.....	—	12 6	—
27.....	—	13 0	—
September 3.....	634	16 6	3,677 4
Ten weeks	8,004½		16,859 12

FLOUR.

Week ending.	Tons.	Price per ton.	Gross value.
		£ s.	£ s.
January 1.....	184	15 10	2,852 0
8.....	229½	15 0	3,442 10
15.....	272½	15 0	4,087 10
22.....	464	15 0	6,930 0
29.....	375½	15 0	5,632 10
February 5.....	444½	15 10	6,889 15
12.....	496½	15 15	7,819 17
19.....	604	15 13	9,113 0
26.....	553	15 15	8,709 15
March 5.....	363½	16 0	5,816 0
12.....	411½	16 0	6,584 0
19.....	539	16 10	8,893 10
26.....	156	10 10	2,886 0
First Quarter	5,093½	—	80,106 7
April 2.....	251	18 10	4,613 10
9.....	308	18 10	6,253 11
16.....	155	18 10	2,867 10
23.....	169	18 10	3,089 10
30.....	89	19 0	1,691 0
May 7.....	502	21 0	10,512 0
14.....	438	23 10	10,293 0
21.....	276	23 15	6,555 0
28.....	522½	23 15	12,409 7
June 4.....	—	23 15	—
11.....	296	23 10	6,956 0
18.....	89½	23 10	2,103 5
25.....	423	25 10	10,786 10
Second Quarter....	3,547	—	78,489 12
July 2.....	280½	24 10	6,872 5
9.....	712	26 10	18,868 0
16.....	467	26 10	12,375 10
23.....	705	27 0	19,035 0
30.....	439	28 0	12,292 0
August 6.....	225	27 15	6,243 15
13.....	65½	28 0	1,834 0
20.....	240	28 0	6,720 0
27.....	407	29 0	11,803 0
September 3.....	181	33 0	4,323 0
Ten Weeks	3,672	—	100,366 10

These are the exports from port Adelaide; the exports from the outports we can give only to the 30th June last. They were as follow: Wheat, 4,457 quarters, valued at £13,121; flour, 2,441½ tons, valued at £45,847. We can now collect all the known and estimated consumption in various modes of the wheat grown in South Australia last harvest, and we obtain the following result:

	Tons Flour.	Value.
Wheat exported from Port Adelaide, Jan. 1 to September 3, 30,870½ qrs., equivalent to	5,221	£. s. 93,063 12
Flour, ditto, ditto.	12,312½	258,662 9
Wheat exported from outports, January 1 to June 30, 4,457 qrs., equivalent to	758½	13,121 0
Flour, ditto, ditto	2,141½	45,817 5
Wheat used for seed 27,000 bushels, equivalent to	5,744½	—
Ditto, seed for hay, equivalent.	638	—
Flour consumed during two-thirds of year 1859, at eight bushels per head	18,617	—
	40,733½	£410,694 8

So far as we can see from the data we have now obtained, we have very little flour to spare. If the exports from the outports have been maintained during the last ten weeks at the same proportionate rate to the

exports of the half-year as the exports from Port Adelaide have been kept up during that period, at least 1,000 tons of flour must be deducted from the stock apparently remaining. And a very strong proof that this estimate is not exaggerated may be deduced from the statement made at Yankalilla. It would appear from that statement that no less than 2,766 tons have been shipped from that port alone. From the table we have just given, it will be seen that no more than 3,200 tons were exported from all the outports combined during the half-year. The inference that a considerable quantity has been exported during the ten weeks succeeding, of which we have no official account as yet, is almost demonstrative. This reduces our stocks on hand (if we start from the official return of the yield of last harvest) to 3,150 tons; and as we shall require to feed our own population during the unexpired third of the year 6,808 tons, we find ourselves deficient to the

extent of 3,658 tons; or in other words, that we have sold that much more than we could spare, and shall have to repurchase to that extent. But on the assumption that the produce of last harvest exceeded by 10 per cent. the estimated yield, we should have had on hand at the beginning of this month 8,266 tons. If this were the case we could still spare 2,458 tons for our extra-colonial customers, without subjecting ourselves to the risk of being placed on short commons. In conclusion, we must warn our readers of the great uncertainty attending several of the elements of this calculation. We have endeavoured to ascertain the true state of the case; but for all our care we may yet be wide of the mark. We have shown, however, we think indisputably, that it is impossible to affirm positively whether our stocks of breadstuffs are a little less or a little more than we shall require for our own use between this and Christmas.—*Adelaide Observer*, Sept. 17.

ON BREAD-MAKING.

BY WM. ODLING, M.B., F.R.S.

[The following paper was read before the chemical section of the British Association, Aberdeen, 1859]:—

I wish to introduce to the notice of this section of the Association a new mode of making bread, invented by Dr. Danglish, and now practised on a somewhat large scale in London. The process is one of considerable interest, not only in a chemical, but in a manufacturing and a sanitary point of view.

The vesicular character of ordinary bread results, as is well known, from the development of carbonic acid gas uniformly throughout a mass of fermenting dough, whereby a loose, spongy texture is imparted to what would otherwise be a dense sodden lump of baked flour and water.

In fermented bread the carbonic acid gas thus generated within the substance of the dough is a product of the transformation or degradation of one of the constituents of the flour, namely, of the starch or sugar. In the plan I am about to describe the carbonic acid gas is produced independently and superadded to the flour, which consequently need not undergo any degradation whatever.

The following description furnishes a general outline of the process:—Carbonic acid gas, stored in an ordinary gas-holder, is pumped therefrom into a cylindrical vessel of water, whereby the water becomes charged with the gas. This carbonic acid water is mixed, under pressure, with the flour, and the resulting dough, which becomes vesicular on the removal of the pressure, divided into loaves and baked.

At present the carbonic acid gas is produced in the manner usually employed by soda-water makers. A mixture of chalk and water is run into a large wooden tub, in which an agitator constantly revolves by means of an endless band, driven by a steam-engine. Sulphuric acid, flowing through a leaden pipe, closed at the bottom by a leaden cup of acid, which acts as a valve, is constantly dropping, by the overflow of the cup, into the mixture of chalk and water; and the carbonic acid gas thus generated passes at once into an ordinary gas-holder having a capacity of 1,000 cubic feet, where it is stored for use. But a different mode of producing the carbonic acid has been tried with success, and is now about to be employed. This process consists in the ignition of chalk, and is interesting as being opposed to our ordinary chemical notions of the circumstances under which chalk can be made to part with

its carbonic acid. The chalk is heated for three or four hours in five small iron retorts resembling gas retorts. The first portion of gas, being constituted largely of air and steam, is allowed to escape: the remainder passes at once into the gas-holder. By this means a large supply of pure carbonic acid is obtained very cheaply. The lime remaining in the retorts, though not absolutely caustic, is very nearly so, and slacks readily with water.

From the gas-holder, the carbonic-acid gas is usually pumped direct into the water-vessel, but sometimes into a separate reservoir of condensed gas, which then enters the water-vessel by its own elasticity. The pair of pumps are arranged to work under a pressure of 200 lbs. on the square inch. Any additional pressure opens a valve through which the gas re-passes into the gas-holder. The pumps are worked in a cistern of water, and the pipes leading from the pumps are encased in a sort of Liebig's condensing apparatus, whereby the great heat generated by the condensation of the gas is effectually withdrawn.

The water-vessel is a closed cylinder of copper, with hemispherical ends, tinned on the inside, about 5 ft. high, and 1 ft in diameter. Its upper extremity communicates, by means of a cock, with a cistern of water placed directly above it, and, by means of another cock, with a pipe leading into the upper part of the mixing or doughing vessel. This mixer is a hollow sphere of cast-iron, about 3 ft. in diameter, having a rotating horizontal axis, to which the mixing arms or forks are attached. Its upper part communicates by a pipe with the upper part of the water-cylinder, and its lower part by another pipe, with the lower part of the cylinder. It is furnished with two circular openings, somewhat less than a foot in diameter, one at top, one at bottom. The lids which close these openings of the mixer have each a circular rim or projection fitting into a corresponding circular groove or depression lined with vulcanite; and the apposition is rendered pressure-tight by means of a screw. The exact mode in which these lids are adapted varies somewhat in the different mixers.

In order to make bread, a definite quantity of water—about 20 gallons—is run into the water cylinder, so as to about three-parts fill it, the quantity admitted being read off upon a lateral gauge. The bottom lid of the mixer having been properly attached, the cloth nozzle of a shoot is introduced into the upper

opening, through which a sack of flour and 3 or 4 lbs. of salt are passed, from an upper storey in the mixer. The cloth nozzle is then removed, and the upper lid properly closed. The closed mixer being then in communication with the closed water-vessel by the upper pipe, an exhausting pump connected directly with the mixer is set to work, and so rapidly and completely is the exhaustion of air from the interior of these two vessels effected, that in the course of two minutes a vacuum of 29 or 30 inches is produced. The object of this preliminary exhaustion is simply to prevent any admixture of air with the carbonic acid subsequently introduced, inasmuch as a great portion of this latter has to be used over and over again. The necessary vacuum having been obtained, carbonic acid gas is admitted, either directly from the forcing pump, or from the intermediate reservoir of condensed gas. The carbonic acid first enters the cylinder at the bottom of the contained column of water, passes through the water to the top of the cylinder, and thence into the mixer, an arrangement which promotes the thorough saturation of the water. Moreover, the gas is admitted through a rose furnished with a few minute openings only, whereby it does not pass through the water in mass, but is distributed equally throughout. The pumps are continued in action until the pressure in the two vessels has reached 100lb. on the square inch. Then, on turning a cock at the bottom of the cylinder, which is on a higher level than the top of the mixer, the water runs from the cylinder into the mixer by its own gravity. The kneading axis, with its arms, is next set going. The process of kneading differs from ordinary machine kneading in one important particular. The substance kneaded is not a tough vesicular mass of fermenting sponge and flour and water, difficult to incorporate, but a non-vesicular mass of flour and water only. This kneading is continued for a period varying from three to ten minutes. As a rule, the less the kneading of the flour the whiter and more perfect the bread; but with some descriptions of flour the kneading must be continued for about ten minutes, in order to develop the elastic and tenacious characters of the gluten sufficiently to retain the carbonic acid, although, with good flour, three or four minutes are generally sufficient. After the kneading is completed, the dough is forced out from the mixture by the elasticity of the contained carbonic acid.

The exit for the dough is of somewhat peculiar construction. In the bottom lid of the mixer, shielded by internal buttons to prevent the direct pressure of the gas, are two rectangular slits, each 2 in. long, and a quarter of an inch wide. From these proceed two flat tin pipes, which gradually increase in size, trumpet-like, until they meet together, when they unite to form one circular nozzle, about 4 in. in diameter. The object of this contrivance is to prevent any sudden expansion of the dough as it becomes freed from the pressure in the mixer. Thus, the section of dough as it escapes from the mixer occupies an area of 1 square inch only. It then passes through the gradually-expanding trumpet-pipe until its sectional area becomes equal to about 12 square inches, after which it is allowed to expand freely. The boy in charge of this exit for the dough has at his disposal a cut-valve, by which the issue of the dough through the pipe is stopped or permitted. He receives the dough in a succession of tins or French moulding baskets, and, by a little practice, is able to cut off from the continuous stream of dough, into each tin or basket, a quantity weighing about 2lbs. 4 os. The tins with the dough in them are placed at once on the floor of the oven. The dough in the baskets is emptied on to wooden peels, and thence slid upon the oven bottom. This oven is what is termed a travelling oven. The bottom constitutes part of an endless chain

involving on two drums, by which the speed of its travelling can be regulated. The loaves enter at one extremity of the oven, and are rejected at the other, being baked during their transit.

The advantages of the new process are—1st. Its cleanliness. Instead of the dough being mixed with naked arms or feet, the bread, from the wetting of the flour to the completion of the baking, is not, and scarcely can be, touched by any one. 2nd. Its rapidity. An hour and a half serves for the entire conversion of a sack of flour into baked loaves; whereas in the ordinary process four or five hours are occupied in the formation of the sponge, and a further time in the kneading, raising, and baking of the dough. 3rd. Its preventing deterioration of the flour. In making fermented bread from certain varieties of flour, not in themselves unwholesome, the prolonged action of warmth and moisture induces a change of the starchy matter of the flour into dextrine, whereby the bread becomes sodden and dark-coloured. This change is usually prevented by the addition of alum, which is, indeed, an almost necessary ingredient in the manufacture of bread from glucogenic flour. But in operating by the new process, there is no time for the glucogenic change to take place, and consequently no advantage in the use of alum, even with any description of flour. 4th. Its certainty and uniformity. Owing to differences in the character and rapidity of the fermentation, dependent on variations of temperature, quality of yeast, &c., the manufacture of fermented bread frequently presents certain vagaries and irregularities from which the new process is entirely free. 5th. The character of the bread. Chemical analysis shows that the flour has undergone less deterioration in bread made by the new, than in that made by the fermented process. In other words, the percentage of extractive matters is smaller. The new bread has been tried dietetically at Guy's Hospital, and by many London physicians, and has been highly approved of. It is well known that for some years past the use of fermented bread, in dyspeptic cases, has been objected to, by members of the medical profession, the *debris* of the yeast being considered unwholesome, and liable to induce acidity. 6th. Its economy. The cost of carbonic acid is alleged to be less than the cost of yeast. Moreover, in making fermented bread there is a small, but necessary waste of the saccharine constituents, which is avoided in the new process. 7th. The saving of labour and health. It substitutes machine labour for manual labour of a very exhausting kind. The sanitary condition of journeymen bakers was investigated some time ago by Dr. Guy, and found to be most lamentable, from their constant nightwork, and from the fatiguing and unwholesome character of their labour, particularly the kneading. In a politico-economical point of view, the process is as important as removing bread-making from a domestic manual work to a manufacturing machine-work. From the character of the apparatus, the process can only be used profitably on a large scale, and not in small bakeries.

LAND MEASURE.—Every farmer should have a rod measure, a light, stiff pole, just sixteen and a half feet long, for measuring land. By a little practice, he can learn to step just a rod in five steps, which will answer very well for farm work. Ascertain the number of rods in width and length of a lot you wish to measure, and multiply one number by the other, and divide by one hundred and sixty, and you have the number of acres, as one hundred and sixty square rods make one square acre. If you wish to lay off one square acre, measure thirteen rods on one side, by twelve and a half on the other. This gives two and a half rods over a full acre.

LONDON, OR CENTRAL FARMERS' CLUB.

THE GROWTH OF SEEDS.

The first monthly meeting after the autumnal recess took place at the Club-house, Bridge-street, Blackfriars, on Monday evening, November 7th. Mr. John Thomas, of Bletsoe, resumed his duties as Chairman of the year, supported by Sir James Duke, M.P., Messrs. J. Marshall, L. A. Cousmaker, H. Trethewy, T. E. Pawlett, J. J. Mechi, T. Owen, James Wood, C. Howard, J. Howard, W. Gray, J. Cressingham, T. Congreve, James Thomas, E. Purser, J. A. Williams, Spencer Skelton, J. B. Spearing, E. Little, G. P. Tuxford, J. C. Nesbit, C. J. Brickwell, G. Browne, G. Fidler, W. Heard, R. Marsh, J. Bradshaw, J. Russell, S. Sidney, P. F. Pell, J. Odams, &c., &c.

The CHAIRMAN, in opening the proceedings, said he felt very great pleasure in meeting the members present after what might be termed their long vacation. He was sorry that he could not congratulate his brother-farmers on their position at the present time, believing as he did that the corn crops would be found deficient both in quality and in quantity. They, must, however, make the best of them as they were, and hope for better times (Hear, hear).

Mr. J. MARSHALL (of Rischolme, Lincolnshire) then rose to introduce the question appointed for discussion, viz., "The Growth of Seeds in Alternate Husbandry, without the admixture of Trefoil or Ryegrass." He said—Mr. Chairman and Gentlemen: Several months having passed away since we last had the pleasure of meeting in this room, and many events of great and grave importance having in the meantime occurred, not only affecting the interests of the members of this club, but of the country at large, and in which all classes are most deeply concerned, I cannot commence my paper this evening without expressing a sincere and heartfelt gratitude to an all-bountiful Providence for the blessing bestowed upon us by a most abundant and productive harvest, an especial benefaction to the artisan and labourer, which it may be hoped they will not fail to appreciate; nor can I close this part of my subject without appealing to your deep and fervent sympathies for the irreparable loss we have sustained by the death of a reverend gentleman (Hear, hear), the late incumbent of Ermington, and one of the earliest members of this club; who by his uniform kindness, his urbanity of manners, and unceasing and studious attention to whatever he undertook in reference to our wants or wishes, has indelibly impressed upon our minds a solemn and mournful regret, which time alone can obliterate from the recollection of those by whom he was best known (Hear, hear). Gentlemen, the subject I propose to introduce for this evening's discussion—that of the growth of seeds in alternate husbandry without the admixture of trefoil or ryegrass—is one of very great importance, not only to the sheep-breeder, as involving the produce of a mate-

rial part of his occupation, and the means of providing for his flock during the summer months, but to the corn-grower also, as a preliminary course in the production of his subsequent crop of wheat, and may therefore be reasonably divided into two parts. The four-field system being that almost universally adopted on the light-land soils of England, and the intervening growth of a pulse crop in lieu of seeds not altogether a popular introduction—though, with clean cultivation, by no means, as a change, to be lost sight of—it necessarily follows that the seed crop, involving as it does one-fourth of the production of the whole farm, should be so arranged as to grow no description of grass which shall be liable at any period of the year to disorder or disagree with the animals depastured on it, on the one hand, or risk the filling of your fields with twitch or couch-grass on the other. I take it, as a rule, that the largest proportion of the seeds on every light-land farm is usually fed off by ewes and lambs; and it is to this kind of stock especially that my remarks are intended generally to apply. The custom of sowing large quantities of trefoil, on account of its cheapness, and, since its introduction of late years, of Italian ryegrass mixed with other small seeds, has long since prevailed in the northern and midland counties; and I am inclined to think, from my own experience, which has been pretty generally confirmed by that of others, that to the superabundant growth of trefoil at particular seasons of the year, and under certain circumstances, may be attributed the immense loss of lambs sustained by flockmasters during the autumns of 1857 and 1858. Those seasons were most disastrous, and thousands of lambs died between the months of October and January, without any very apparent cause, yet I am fully convinced that it may be traced and attributed to their feeding on trefoil seeds, under certain conditions, in the months of July and August. I believe no grass hitherto discovered will bear a comparison in produce, upon dry chalky or stony soils (or perhaps upon any other description of soil), that will give the same amount of sheep-feed in dry hot weather, or that will bear close feeding with the same impunity in alternate husbandry, as trefoil; and by the same rule, no grass with which I am acquainted grows with the same degree of rapidity, or produces in a short time so luxuriant or dangerous a pasture in warm, damp, showery weather—and it is to this condition of its growth that I am so particularly anxious to direct your attention. So long as you keep your three or four ewes and lambs per acre upon it without removal, you have perhaps little to fear, because they necessarily keep it extremely bare, and in that state it must always be kept, even though it inflict upon you the necessity of giving a little corn or cake to supply what may appear a deficiency in the pasture;

but since there appears no absolute necessity of growing it amongst your seeds, I recommend you to abandon it altogether. The objection I have to Italian ryegrass is chiefly founded on the effect produced on the subsequent crop of wheat; and when we take seriously into our consideration the fact that in many instances one-third, and in most one-fourth, of the crop is jeopardized, if not entirely destroyed by it, if we are to continue its growth, it becomes a matter of some moment to discover a remedy for so fearful an evil. Italian ryegrass is by far the most valuable variety as sheep-food, and produces perhaps double or treble more than any other variety of ryegrass; it is relished and eaten with avidity by every description of cattle, and they all appear to thrive upon it; still you cannot afford to sacrifice the integrity of your corn crop. I attribute the loss of the wheat plant, of late years so much complained of, to the increased growth of Italian ryegrass, and to no other cause. You scarcely ever see the same effect produced after a crop of beans or peas; there is no waste then, no dead plants to be pulled up by yards, and almost by acres, together, but a healthy tillering and gradual increase, and in the end a full and productive crop. I am, however, glad to be able—even under circumstances of compulsion to cultivate this objectionable plant—to point out to you a remedy, as far as the wheat crop may be influenced by its growth, and it is simply this: to plough your seed lands intended for wheat early enough, say the last week in August or the first in September, and to sow it not later than the 14th of October. This system has been adopted to some extent in Lincolnshire the last two years, and with the best and most marked effect. In order to prove this theory, I left two acres in the middle of a sixty-acre seed field, which was finished ploughing on the 4th of September, until the 4th of October, the day before it was drilled; the entire field was then pressed with a Cambridge roller, and drilled across; and that portion recently ploughed lost plant, and was at harvest, to all appearance, at least one quarter per acre less than the remainder of the field. I have seen the same effect produced by growing other varieties of ryegrass; that portion of the field sown with small seeds having no admixture of ryegrass, or any kind of bent whatever, lost no plant, and yielded, apparently, 25 per cent. more than the remainder of the field sown with different varieties of ryegrass and other small seeds. There is one other objection to the growth of ryegrass, which, in the minds of some men—and those very good judges too—must always operate against its general cultivation, and that is, the difficulty of procuring a sample of the seed entirely free from the seeds of couch grass. Now, in the substitute I shall propose, and I know of only one variety of grass at all adapted to “alternate husbandry,” I mean Timothy-grass, the seeds are so dissimilar, and the facility of dressing out any extraneous matter so easy, that a perfectly clean sample may always be obtained, and no risk of an increased growth of twitch grass hazarded. I am, however, free to confess that even Timothy-grass will not produce so good a pasture as ryegrass, and that perhaps the middle course—that of

growing a little of both—might in the end prove the most advantageous. In laying land down in seeds, in many districts, far too little seed of any description is commonly sown. I have a communication on this subject from a gentleman from Crediton, in Devonshire, who says, there, a mixture of 6 lbs. of red clover, and 1 lb. of white, with 2 pecks of caver, is considered a good seeding. Now here, from 14 to 21 lbs. is not thought too much; and whether drilled or sown broadcast should be adhered to as the best system of depositing the seeds, is still a very open question. I rather incline to drilling, inasmuch as the seeds get a certain depth into the soil; whereas when sown broadcast much remains on the surface, and often does not vegetate at all. The mixture I propose for feeding purposes would be as follows: 12 lbs. of white clover, 2 lbs. of parakey, 2 lbs. of rib-grass, 4 lbs. of Timothy, $\frac{1}{2}$ a peck of dwarf ryegrass, $\frac{1}{2}$ a peck of Italian; the latter the sheep will eat to the very earth; the former they will not eat much of, but it will serve as a shade to the other grasses, and keep out the drought. For mowing, I would recommend 14 lbs. of red clover, and 2 lbs. of Timothy or $\frac{1}{2}$ a peck of Italian ryegrass. In these minute quantities, ryegrass may be grown as an adjunct without perhaps much danger to the succeeding crop; and so far, and no farther, is it safe to cultivate it, though perhaps it might be wiser to omit it altogether; nor do I mean to say that two or three pounds of trefoil per acre, amongst other grasses, would endanger the health of a flock of sheep in ordinary seasons, but I am quite sure they would be safer and far more healthy without it. (Cheers.)

Mr. J. THOMAS (late of Liddington Park, Amptill) was rather disappointed at Mr. Marshall not having entered at greater length into the subject which he had introduced for discussion. He had hoped to hear some suggestions which would have tended to enable them to grow their grasses every four years on light land, without risk of failure. To grow them every eight years was not difficult; but when sheep-farming was so rapidly overtaking tillage, they would of course be glad to learn what was the best means of keeping the largest possible quantity of stock on their farms. Valuable as Mr. Marshall's paper was, it had, he thought, more to do with the successful weaning of lambs, or the management of them in the autumn, than with the profitable growth of seeds. He (Mr. Thomas) was happy to say that he could remember scarcely a single instance in which he had lost his seeds. He had never adopted the plan of mixing them mentioned by Mr. Marshall. Bound down as many of them were, by their leases, to adhere to the four-course system, it was absolutely essential to find out what was the best mode of obtaining a pasture every fourth year. This he had only been able to do by rejecting ryegrass altogether, having discovered, in his early attempts at cultivation, that not only the first wheat-crop, the turnips, the barley, and the clover, but even the wheat-crop four years afterwards, never got over the damage done by Italian ryegrass, notwithstanding a large application of liquid manure. The plan with which he had been successful with his seeds was that of growing white clover and rib grass the first

four years, and red clover and trefoil the second four. Upon that system, he had seldom experienced a failure. After the mowing of red clover, trefoil rarely rose a second time; and the land was placed in the best condition for the weaning of lambs. The placing of lambs on white clover, previously fed off by ewes and other sheep in the autumn, was almost sure to cause an immense mortality among them; and he had no doubt that a large proportion of the loss spoken of by Mr. Marshall as having occurred in Lincolnshire and elsewhere, arose from the lambs being put on white clover-leys previously fed off by sheep. If any of those whom he addressed had not tried the experiment, he would strongly advise them not to do so, as loss would certainly be the result. The same remark was applicable to red clover fed off, but not to that which had been mown; and therefore he did not think that, in cases in which they were bound to keep to the four-course system, they would find that plan better than the alternate one which he had adopted himself. Those who had farmed, like himself, dry sandy land, must be aware that, in order to ensure a wheat-crop afterwards, it was desirable to keep the land well shaded, not overstocking it or allowing it to grow too much seed. With regard to the timothy-grass referred to by Mr. Marshall he would observe that, if it were the same thing as the crested dog's-tail grass, it would generally be rejected by the sheep and other stock so long as they could obtain anything else. The stalk was so tough that it required no ordinary amount of exertion to break it. In conclusion, he would remark that he wished he could add his testimony to that of Mr. Marshall, that the harvest this year had been a productive one; but he must say that, whatever might have been the case in Lincolnshire, the harvest had not been abundant in that part of the country with which he was connected. An old poet said:

"Liberal, not lavish is kind Nature's hand;"

and he was sorry to say that, so far as his own observation extended, though Nature might have been "liberal," she had not, in this instance, been as "lavish" as in former years (Hear, hear).

Mr. Alderman MENCHI (Tiptree), after sixteen years' practice, entirely disapproved of the mixing anything with red clover. In his county (Essex) they almost invariably sowed red clover alone once in eight years, taking special care to hoe in April or May any weeds which might have sprung up, in order that the clover might have all the ground to itself. With regard to the loss of lambs, he must observe that that evil was not attributable solely to trefoil. In corroboration of what was said by Mr. Thomas, he could state that if lambs were put on red clover, which had been previously fed down by sheep, they would die off, from what as yet appeared to be an unexplained cause. That had been the result of practice in his district. His own practice was to mow the clover, hoe it once, and make it into hay; then let it grow a second time, and feed it off when high, with sheep eating rape-cake. He was not a believer in the shading of the land. He believed that the reason why they got better wheat after clover had been allowed

to reach its full size was this, that the root and the top were developed in proportion to each other. Over-close feeding prevented the stem and leaf formation, and thus stopped the development of the root, which was the food of the wheat. On light land he had adopted the practice recommended by Mr. Thomas, of having a crop of white clover; and if he considered the land was very saucy, he sometimes took it, as he had indeed done this year, for seed. As regarded Italian rye-grass, he thought the utmost attention should be devoted to the obtaining genuine seed, without couch or twitch-grass. He had reason to believe that a large quantity of couch-grass seed was actually exported from this country, and mixed abroad with the seeds, which were imported as Italian rye-grass (laughter). That he had been told by a friend who was in the trade, and therefore in the secret (renewed laughter). It was of the utmost importance, therefore, that they should all buy of some respectable person, who was careful in selecting his seeds. He purchased his seed from his friend Mr. Dickenson, and he found practically that he had Italian rye-grass, and nothing else. Italian rye-grass was very greedy in its desire for moisture, and being very much like the wheat crop, it was a bad preparation for wheat in the general acceptance of the term. He always grew some Italian rye-grass, irrigating it thoroughly. His cattle liked it, and thrived upon it, there being no scouring, and he believed animals would do well upon it, provided there was an ample supply of moisture, which, with his means of irrigation at the rate of 6,000 gallons per hour, he had himself no difficulty in securing. He grew it for two years, and he had always found it to be not at all a bad preparation for wheat. He broke up the second year's growth at the beginning of July; he then sowed some red rape-seed, and after this had attained a certain height he either fed it off or ploughed it in. Proceeding on this plan, he had from some miserably poor land that year obtained four-and-a-half quarters of wheat per acre. (Hear, hear). If he were not able to break up that land in dry weather, so as to take an intermediate crop of rape, he would of necessity sow 5 cwt. of rape-cake and 2 cwt. of salt, and, although tens of thousands of wire-worms might have been seen in the ground previously, the result would be that he would not lose a single stem of his wheat-plant. That he had proved by experience.

Mr. MARSHALL: After a fallow?

Mr. Alderman MENCHI: No; in a single ploughing. The wire-worms would entirely disappear; and he had been told that the cause of this was, that they ate into the rape-cake, gorged, and killed themselves. (Hear, hear). He thought that as a general rule they would be safe in drilling their clover. Having tried both plans, he was of opinion that it was generally a great economy of seed to drill clover; that 8 lbs. of seed would yield as thick a crop in the drilling as 16 lbs. would in the broad-casting. He was happy to be able to corroborate in some degree the account which Mr. Marshall had given of his year's wheat-crop. So far as he could judge from what he had seen in his own neighbourhood

there was a very fair crop, and he hoped it would realize a fair market price.

Mr. T. OWEN (Clapton, Hungerford,) had expected Mr. Marshall to give them some advice with regard to the management of their grass seeds, the sowing of the seeds in the summer, even so as to produce a fair crop of grass and leave the land in a kindly state for the wheat crop. The grand question of course was how they might at once grow a sufficient quantity of hay, and leave the land in the best state of preparation for wheat. There was very great difficulty in doing that. They all knew, indeed, that red clover was one of the best swards they could possibly have as a preparation for the wheat-plant. White clover, however, was anything but a kind lay for it. Nineteen times out of twenty he would rather after white clover. With red clover he would certainly plough one earth, but he did not consider it safe to do so with white clover. As to Italian rye-grass, he thought it was poison to the wheat crop. Mr. Williams once recommended him to mix Italian rye-grass with his seeds. He did so one year, he would take care that he never would do so again (laughter). He really believed that he lost a quarter of wheat per acre where he substituted Italian rye-grass for the common Peasey rye-grass. The latter was bad enough for the wheat crop, but the former was ten times worse. Red clover was half the manure of a wheat crop, if they had a true plant. He had found that wherever there was a deficiency in the grass crop there was a corresponding one in the wheat crop, if sown one plough, and they could not therefore, as a general rule, depend upon red clover as a lay for their wheat crop. He had himself adopted what he conceived to be a safe principle, mixing 12 lbs. of red clover, 4 lbs. of trefoil, and a peck of common Peasey rye-grass, on light soil.

Mr. MARSHALL would be glad if Mr. Owen would tell them what course he pursued in reference to feeding.

Mr. OWEN said, sowing as he did 150 acres of wheat, he had a certain quantity which came in red clover; the rest came in white clover, hop, rape, and so on. His white crop was sown mostly for food.

Mr. MARSHALL wished to know in what proportions the seed was sown.

Mr. OWEN said he sowed about 16 lbs. of white clover and a peck of rye-grass. The white clover was sown distinctly from the red. What Italian rye-grass he used was also kept quite alone.

Mr. COUSSMAKER (Westwood, Guildford) said it seemed to be the settled opinion of those who had spoken, that it was not advisable to mix trefoil and rye-grass with red clover every four years. They all knew that red clover could not be grown once in four years; therefore, if they were bound to grow grass once in four or once in five years, they had better take red clover and a mixture of seeds alternately, so as not to mix them together. In his neighbourhood it was the practice to mix all the seeds together; but the best course was to adopt red clover once in eight or ten years, with a mixture of other seeds in alternate courses. There was one evil connected with red clover from which farmers had suffered immensely during the last few years, and

which was, in fact, on the increase; he alluded to the prevalence of dodder. The evil was extending so much that many persons had lost nearly half the crop. Dodder was a parasite that grew upon the clover crop. When he first saw it several years ago, he did not consider it of much consequence; it did not then appear in the first crop, but in the second; but this year it had shown itself in the first crop as well as in the second, and he had lost one-third of the whole. Dodder grew like a fairy circle; at first you saw a patch five or six feet in diameter, it afterwards increased to 15 or 16 feet; wherever it grew it entirely killed the clover; and wherever the clover had been killed, a patch of weeds came up afterwards, however clean the land might have been. Wherever clover failed, wheat failed afterwards. Bad as the dodder had been this year, he expected to find it still worse next. This year he saw it in the seeds immediately after the barley was cleared away, which he had never done before; in a ten-acre field he found, when the barley was taken off, about a dozen patches, with a diameter of three or four feet each; and though he sent his men to pull it up by hand, they could not entirely stop it. It was not he alone who suffered; every one in his neighbourhood complained of the same evil. He had written to the person of whom he bought, and the reply was that he supposed it was imported in the seed.

Mr. Alderman MECHI believed, that if they bought their seed of those who grew it in this country, they would not be subjected to the loss occasioned by this parasite.

Mr. OWEN begged Mr. Mechi's pardon. He bought his own seed of a person who resided within seven miles; yet in a seven-acre field there were fifty places where dodder was very conspicuous.

Mr. MARSHALL would like to hear a description of the appearance of dodder.

Mr. COUSSMAKER said it was a little plant with a small white blossom, and having also a very minute seed. It was a parasite running entirely on the clover plant, and was to be seen not merely on clover, but also on furze bushes and heather in the neighbourhood of moorland. A neighbour of his, who had rubbed some of it out, told him that the seed was very minute; the root was a fibrous one.

Mr. CONGREVE (Leamington Hastings, Rugby) wished to add one or two words to what had fallen from Mr. Coussmaker in reference to dodder. Six years ago, in riding along a road through a field of clover on his farm, he perceived that some of the clover was entwined by something that was new to him; and having just read something about dodder, he turned again to the book, and found that what he had seen corresponded exactly with what was there described. It took a circle of 6, 8, or 10 feet in diameter, and seemed gradually to spread. It was a little red fibrous plant without leaf, but having a white blossom. He felt exceedingly alarmed about it, because his horses were going to consume it, and also, he feared that the next year's crop would suffer. If his fears had been realized, which was not the case, he should have dressed

his clover seed, as he treats his wheat, with a dose of blue vitriol, because he believed that the dodder was attached to the seed and not in the land. The land had not been in clover for eight years, and the dodder had never appeared before.

Mr. Alderman MEOXI: Would not the treatment you speak of injure the clover seed?

Mr. CONGERN: It could not do harm, if a proper strength, and it might do good.

Mr. J. BRADSHAW (Knole, Guildford), after the remarks which had been made with regard to Italian rye-grass, could not forbear from giving the result of his own experience, in reference to a practice which had, he knew, been adopted on some of the best farms in the country. The failure of wheat after Italian rye-grass did not arise entirely from the use of that seed, but partly from the abuse of the produce. If Italian rye-grass, which was a most productive and valuable crop for feeding sheep and other stock, were kept down and never allowed to go to seed, it would, he believed, generally, not lead to the evils which had been mentioned. He knew that last year six quarters of wheat per acre were produced after rye-grass and both white and red clover, and on a farm in the midland counties, where he had been visiting within the last ten days, he had also been told of a very good result. He thought it very important that those who addressed that Club should state what part of the country they came from; he himself came from the south part of Surrey, approaching the Weald, and there he invariably grew rye-grass with red and white clover, sowing two pecks per acre. He had now a splendid crop of white clover, thirty acres, which he meant to feed off with ewes and lambs next year. He would either plough the land up, and make a bastard fallow of it, or sow beans and peas, in the expectation of a good result in wheat. In discussing a subject like this, it was desirable to state facts. In 1857 he grew 108 loads of wheat on 110 acres, or nearly 5 quarters per acre. That was a fact. (A VOICE: After Italian rye-grass?) Yes, after red and white clover, and beans and peas. It was, he concluded, not the use, but the abuse of Italian rye-grass, that was injurious. Moreover, what was successful in one district—for example, the Midland Counties or in Lincolnshire—would perhaps fail in the south. If he were to farm in Surrey as they did in Lincolnshire he would be a ruined man (Hear, hear). Hence the importance of its being stated by gentlemen who spoke in that room of their own practice, in what county they resided. No man, probably had smarted more bitterly than he had done in consequence of having discarded the practice on the other side of his own fence, and substituted for it what was successful in other parts of the country; but he had borrowed a leaf from his neighbours, and was now endeavouring to improve on their practice.

Mr. J. A. WILLIAMS (Baydon, Hungerford) said: a few years ago a neighbour of his planted Italian rye grass amongst all his grass seeds, and told him (what he certainly had not heard before) that Italian rye-grass would bear mixing with red clover. To his mind the two

seemed like spring and winter, his idea being that Italian rye-grass would be seed long before the clover was fit to cut for hay. However, he sowed his whole crop in that way, and when he came to cut his red clover he found his Italian rye-grass infinitely more tender than his common rye-grass used to be at the same period. He regarded it rather as a crop of hay than as preceding wheat; and if his friend Mr. Owen had been led into error, it was perhaps from thinking more of an increased production of wheat than he (Mr. Williams) had done. If the seeds were permitted to grow to a considerable length, Italian rye-grass was perhaps the worst preparation for the wheat crop that they could possibly have. But with the limited amount of seeds at their command, for he really did not know more than about five, if trefoil and rye-grass were dispensed with, the question arose, what they were to do to supply their place? The growth of the clover plant was very uncertain. He did not see what those who farmed the light lands of Berkshire, Hampshire, and Wiltshire were, in that case, to depend upon; and, with stock, wool, and meat at their present prices, and wheat at 40s., he should hesitate to give up valuable seeds on account of the future wheat-crop. He, for one, was unwilling to cease growing a most valuable article on account of the effect it might have on the wheat plant. This year he had a piece of Italian rye-grass. Having fed it off in the spring, he subsequently mowed it for hay. He had fed it off again since; and he had now carted dung to it. Some of his neighbours might think that, after all this, he was going to sow wheat. Nothing of the kind; it was out of the question. He cared little for a crop of wheat, when such a crop as we had last harvested was sold for 40s. per qr. He was going to sow oats, and believed he could produce a magnificent crop from land which was not fit, perhaps, for a crop of wheat.

Mr. J. C. NESBIT (Kennington College) should have imagined that, in a discussion on the growth of seeds in alternate husbandry, more attention would be paid to the functions of the various kinds of seed, and to the rotations of crops. What they all wanted to know was, how these seeds acted alternately with each other, so that the greatest possible effect was produced. He was glad to see his friend Mr. Mechi coming forward that evening in support of a theory which he (Mr. Nesbit) put forward several years ago, with respect to the action of the clover-root upon the wheat-crop—namely, that the previous root-crop or clover-crop, by the development of its roots in the land, furnished subsequent nourishment for the wheat. If the clover were fed off by sheep, there would apparently be a larger amount deposited on the land; but he distinctly proved, not merely in theory, but by practice, many years ago, that, if they allowed grass or clover to grow to a certain height, the lower development would prove equal to the upper one; that the development of the roots would give a larger amount of food than could be afforded if the land were fed off by sheep. He was glad to find Mr. Mechi's practice confirming the correctness of this theory. The variations in the rotations of grass presented one of the most important

points that they had to deal with. There was one point which had not been as much alluded to that evening as he could have wished; he alluded to what was called clover sickness—to the fact that upon some soils clover would not grow more than once in a certain number of years, while upon others it would grow in a much shorter period. This was a difficulty which was, thus far, utterly unexplained.

Mr. Alderman MACH: Except by Liebig.

Mr. NESBIT repeated that they were not yet in possession of any clear explanation. He had tried various chemical manures on land which was cloversick, and none of them produced the proper effect. Nor did mere mechanical alterations produce any effect. The cause, in his (Mr. Nesbit's) opinion, lay far beyond chemistry; it was some peculiarity in the physiology of the plant, its character and mode of growth. The analyzing of a plant, in order to show what its powers of life were, how it grew, and under what conditions, was perfectly absurd. You might as well take one of the living men in that room, calcine him in a furnace, analyze the ashes, and then attempt to explain how that body grew. They wanted to understand the botany and physiology of plants, their habits, nature, and so on. The nature and habits of the clover plant, as one of the series in a rotation of crops, were, he repeated, not clearly understood at present. All they knew was that, many years ago they could get clover once in four years, and that in most places they could not do so at present. He knew a case in Suffolk, in which there was a large field, one-half peas and one-half clover. The occupier threw it all into clover, and then took wheat, turnips, barley, and afterwards clover again; and to a single inch where the clover had been before, there was seen the greatest difference from all the rest, and there was a splendid crop of clover grown. This was not a matter which a mere chemist could explain satisfactorily. There was something beyond the mere fact of the plants containing this or that; there was something in the habits of the plant which they did not at present understand, and never would until practical farmers turned their attention to the subject, and endeavoured to obtain the requisite information. One thing that materially injured the clover plant was the sowing it with barley, and thus preventing it from enjoying the air and the light of the sun. Many persons had, however, sown clover with wheat; and had secured better grain crops and more clover. It was very important that the clover plant, when it did get a full amount of light and air, should be allowed to disseminate its roots in the ground, so that they should obtain their full natural strength; whereas the usual course was to send in a flock of sheep in autumn to eat it off (cries of "No," and of "Yes"). Well, at all events, it was a common occurrence in some parts of the country to feed the young clover plant off at once, before it had been able to get its roots well in the ground and to attain its full strength. Farmers who had not been sufficiently careful in reference to the food of their sheep, often sent them in to the young clover, thus diminishing its real power as a plant.

A VOICE: Will that kill it?

Mr. NESBIT: It undoubtedly had a great tendency to kill it. If it were allowed to grow, it would secure a greater development, and there would be a better chance of another year's growth. As regarded the grasses generally, it was, in his opinion, desirable that in the practice of agriculture they should be varied as much as possible; while the different varieties, not merely of grasses, but also of roots, should be kept in rotation as far as possible asunder. He would always interpolate with the seeds, on soils that would bear it, a crop of beetroot or mangel-wurzel. For example, he would have one year red clover, four years afterwards mangel-wurzel, four years after that trifolium, white clover, and other seeds, and then red clover again. On proper soils, beans, peas, or other leguminous plants might also be interpolated. In the same way would he proceed with the root crop; he would invariably use two or three varieties of turnips, one after another, every four years, so as not to have the same sort of turnips on the same soil too frequently. They were not, as he said before, able fully to explain the causes of what occurred in this case; but when practice exhibited certain effects, they were bound, as sensible men, to make use of the knowledge which they had acquired, even though they might be unable to give the precise reasons. As regarded Italian ryegrass, he did not believe it would ever be as good a preparation for wheat as red clover, because it had not an equal quantity of roots, and therefore would not put an equal amount of manuring matter in the land; but, nevertheless, he thought that if its roots were allowed to remain in the land, and not taken away, ryegrass would in many cases be followed by a fair crop of wheat. On the highly-cultivated lands of Norfolk, where a very large quantity of oilcake had been used, good malting barley could not be well obtained immediately after turnips, but was good if the rotation was turnips, wheat, barley. The idea that the taking of two white crops in succession is injurious was absurd. That might have been the case formerly; but when the farmer was in such a much more independent position than he used to be, and when by means of oilcake and other artificial manures he was enabled to maintain the fertility of the land, the matter was one of perfect indifference; he might now with impunity take two white crops in succession, if he pleased. With respect to the dodder which had been so much talked about, he thought it must have occurred to almost every one present, that when Mr. Coussmaker first saw that article in his clover-field, he ought at once to have got rid of it.—[Mr. Coussmaker: "How?"]—By cutting it down and taking it away; instead of which, it seemed that this parasitical plant was allowed to continue growing upon the stem of the clover, sucking the juices which the clover required for its own use. He certainly should have thought that a gentleman of Mr. Coussmaker's intelligence would have destroyed such an interloper.—[Mr. Coussmaker: "That is more easily said than done!"] (Hear hear) —His friend surely was not aware that there was an old Act of Parliament still unrepealed that made a farmer who allowed weeds to

grow in his field, to the annoyance of his neighbour, liable for damages (laughter). To return from this digression, he did not see how they could do without trefoil or Italian ryegrass, especially upon the light chalky soils of Hampshire and Dorsetshire. In this case, he thought, as in many others, the great danger lay in running into extremes. The grand point was to make a temperate and judicious use of the grasses in question, and to avoid going to excess. The chief remark which he had to make in reference to the discussion which had taken place that evening was, that the greater the amount of variation which was given to the grasses, clovers, roots, and pulse, the better would be the result. To this he would add that he would advise gentlemen engaged in practical farming to see if they could not do something towards discovering the habits of the clover plant, and thus enabling themselves, and the farming community generally, to deal with it in a more profitable manner than they did at present.

Mr. COUSSMAKER wished to explain, in consequence of what had fallen from Mr. Nesbit, that when he discovered the dodder among his clover, he did cut it down as closely as possible, notwithstanding which it spread in the second crop.

Mr. PELL (Scopwick, Lincoln) desired to state that he discovered dodder among his clover, growing to a circle of about two yards. In appearance it was a sort of wiry substance winding itself round the clover.

Mr. SPEARING (Moulsford, Berks) had hoped that Mr. Nesbit or some other gentleman would have told them that evening what the clover dodder or doddern spoken of by Mr. Coussmaker was, or how it operated. He had himself noticed it very particularly. In the first instance the clover became sick and decayed in spots; then something arose which lived, as it were, on this decay. There was, he thought, a plant that existed on the decay and decomposition of the clover plant, but not being a chemist, he was unable to explain it properly.

Mr. NESBIT having bestowed considerable attention on the decay of the clover plant for several years, had discovered that where the plant had become sick, fungi were formed, which though very small were easily detected with the aid of the microscope. But this did not bring them any nearer a solution of the main question, namely how these fungi grew upon the plant. They knew that the plant got into an unhealthy condition, but they could not yet exactly explain why.

The CHAIRMAN said as the subject had been very well discussed, he thought it would not be becoming in him to make more than one or two remarks. In the first place, he would observe with regard to differences of cultivation on different kinds of land, that every farmer ought to understand his own farm, and to know whether or not it was suitable for the growth of Italian ryegrass, or red clover or white, or anything else. Having himself been a farmer for a considerable period, he must say that he had found nothing like red clover on heavy land. He agreed with Mr. Nesbit that if you

could manage, consistently with the feeding of stock, to mow that twice, you generally got a better stock of wheat than if you mowed it only once. The roots developed much more in that case from the cutting of the top, and the vegetable matter produced in the soil led to a better subsequent crop. At all events, that was his own experience. He invariably grew the best wheat where he had cut his clover twice. He occupied both strong clay land and gravelly land. On his gravelly land he generally sowed a mixture of red and white clover and trefoil, in the proportions of about 10 lbs. of red clover, 5 lbs. of white clover, and 3 or 4 lbs. of trefoil. He was not aware that he had suffered as regarded his lambs, in feeding them upon the land of which he was speaking; he invariably fed, because he required the produce for the use of his stock. He had found that he could get as good a crop by feeding on this description of land as if he had mowed, but not on the strong heavy land. He had discarded the growth of ryegrass, whether Italian or any other, for some years; having tried it on several occasions, he always found his subsequent wheat crop considerably deficient in comparison with that grown on other parts of his farm. He had not, therefore, grown any ryegrass for a considerable period. As regarded dodder, he would observe that since he had been in Bedfordshire, now somewhere about nine years, he had not seen anything of it at all. When he lived in Essex he certainly did see something of it, once, but only in the clover, and he imagined that it came with the seed, he having that year purchased foreign seed. It was a parasite which came, he believed, in the same way as smut and other diseases of plants. It was a most difficult thing to get rid of, and those who were subject to it must keep their men almost continually at work. Recurring to the subject of ryegrass, he agreed with Mr. Williams that on the light lands and hills of Hampshire and Wilts it was very useful in producing food for sheep, and that it must therefore be grown to a certain extent in such districts; but that remark was not applicable to the midland counties generally, or to the stronger lands of the country.

The CHAIRMAN then called upon Mr. Marshall to reply; but that gentleman declined to do so, observing that he did not remember anything that called for a reply.

On the motion of Mr. Trethewy, seconded by Mr. Sidney, thanks were awarded to Mr. Marshall for his introduction; and on the motion of Sir James Duke, M.P., thanks were also accorded to the Chairman, and this terminated the proceedings.

EXTIRPATING WEEDS WITH THE ROLLER.—The use of the roller is said to be a most effective way of killing thistles, mulleins, and other large weeds on grass lands. The Genesee farmer adds:—"No doubt the scythe makes a clean sweep; so does the surgeon when he cuts off a leg; but let a crushed limb remain attached to the body, and the end will be mortification and death."

THE DISTILLATION FROM BEET-ROOT.

CORRESPONDENCE BETWEEN M. CHAMPONNAIS AND M. CHRISTOFLE.

[Translated from the French from the *Journal of Practical Agriculture*.]

No. I.

"Sept. 16, 1858.

"My dear Sir,—You have properly interrogated me upon my beet-root distilling, and my cultivation of sorgho. The results that the former has given me for the season of 1857-58 are not brilliant. Without presenting you with a detailed copy of my account, the following is a summary placed in the hands of all the cultivators :

"I have worked upon 3,000 kilogrammes of beet-root per day. The average return has yielded me a little less than one hectolitre of alcohol of 90°, which I have sold at 54 f. To this sum we must add the value of 2,000 kilogrammes of pulp, for which I have debited my dairy and piggery at the price of 9 f. per 1,000 kilogrammes, or 18 f. Thus $54 + 18 = 72$ f.

"The expense includes 3,000 kilogrammes of beet-root, which I have charged to the credit of my farm at 15 f. per 1,000 kilogrammes, or 45 f.; one working distiller, one mechanic, and one furnace man, 4 f.; one man and woman for washing and macerating, 5 f.; charcoal 6 f. 70 c.; incidental expenses 1 f. 35 c.; interest 2 f.; rectification 16 f.; total outlay 80 f. 5 c. This is without reckoning the royalty I shall have to pay M. Champonnais, and exhibits a loss of 8 francs per day.

"In the face of such a result I feel it impossible to go on, to my great regret, for I have always set great store upon my pulp for the cows and pigs, following the advice given me by an eminent agriculturist, M. de Hamoir, of Saultain, near Valenciennes.

"Such, my dear Sir, is what I can certify on the subject, and I trust the returns may be useful to agriculturists.

"I am, yours very sincerely,

"CHARLES CHRISTOFLE."

No. II.

"Paris, 23rd Sept., 1858.

"Mr. Editor,—The considerable reduction that has taken place in the price of alcohol has for some time raised the important question, 'Is there or is there not room for the cultivator to continue for the present season the distillation?' The agricultural press has been nearly unanimous in deciding in the affirmative; but, according to you, 'the distillation of beet-root will, this year, involve a loss, whilst it would be advantageous to consume directly, by cattle, the prepared, but not distilled beet.'

"In support of your opinion you publish a letter of M. Christofle, from which it would follow that during the last season his distilling has been carried on at a

loss of 8 francs per day, and that hence that honourable agriculturist considers it impossible to continue, to his great regret, because he has always made much of his pulp.

"Allow me, Mr. Editor, to throw myself into this debate, not in order to go back upon an unnecessary discussion of figures, which are only of secondary interest in the question, but to appreciate the facts at their true value.

"This divergence of opinion proves completely that heretofore we have looked rather at the industrial than at the agricultural side of the question of distillation, accustomed as we were to derive large profits from the sale of spirits whilst the enormous price of that article existed. We looked upon the pulp only as an accessory, which the distiller did not scruple to get rid of at a low price, and the farmers to give of it in profusion to his cattle. Hence that kind, I will not say of discredit, for no accident has as yet arisen, in spite of the abuse made of it, but that depreciation to which the pulp has been subjected, like all other low-priced articles. And yet from the report of all the cultivators it is an excellent food. Some give it a value in nutritive power, at least equal, and others much superior, to the raw beet-root, taking weight for weight.

"Setting out upon this principle—which is incontestable, since it is confirmed by numerous correspondents, by the published accounts, and by the declaration of the Director of the College at Grignon, who in your number of the 5th of this month, page 182, declares that an experiment of three years has convinced him that 100 kilogrammes of residue of beet-roots distilled by my process is worth much more, especially for fattening, than 100 kilogrammes of raw beet-root—how can we admit the conclusions of M. Christofle, availing ourselves, without an argument, of the elements of his letter?

"I will willingly accept his figures of the expenses of fabrication, which is 19 f. 5 c. for working 3,000 kilos., or 6 f. 68 c. per 1,000 kilos., although that expense now little exceeds 5 f. in other distilleries; but this difference is explained by the small quantity of beet-roots treated daily, and by the employment of steam, always more expensive than firing.

"Neither will I discuss with him the return in alcohol, which has not exceeded 3 per cent. of the beet-root, and which is doubtless owing to the small proportion of saccharine of the beet-root, or to some defect in the working, for the report of M. Bauclement states that the average return of sixteen distilleries visited by the committee of the Central Society of Agriculture in 1856, has been 4.19 per cent.

"I shall confine myself to this simple comparison: Since the pulp has a nutritive value at least equal, and

even very superior to the raw beet-root, why is this set down at 15 f. per 1,000 kilogrammes in M. Christoffe's account, and the pulp at only 9 f.? Why 9 f. rather than 15 f., and even 16 f., the price at which Grignon, in his account of 1856, declared he derived a profit from its consumption by his cattle. But is not M. Christoffe himself of this opinion, when he says that 'he has always set a great value on his pulp?'

"This is understood with him better than any where else, for the emptying of the washing-tubs are thrown upon an asphaltic floor, from whence pulps and vinegar are conveyed into a large tub with the forage cut, in order to submit them together to a boiling by means of a jet of steam, so that nothing is lost of the constituent principles of the beet-root except 6 or 8 per cent. of the saccharine converted into alcohol. We might therefore say with good reason, we must not only reckon upon 66 per cent. of pulp, as M. Christoffe has admitted, by analogy undoubtedly with what has taken place in distilleries where they have the bad habit of allowing the pulps to drain, but rather 80 per cent. at least, to which he fears not to add also the water of condensation of the steam admitted into the vat, which allows of the augmentation of the quantity of dry forage.

"It is, therefore, unquestionable, Mr. Editor, that in accepting even the reduced statement of 66 per cent. of pulps, be it 2,000 kilos., at the price of 15 francs per 1,000 kilos., the worth of the pulps would be 30 francs instead of 18 francs, and the account of M. Christoffe would be balanced by 4 francs of profit instead of 8 frs. of loss; and that without looking at the unfavourable conditions of which we have spoken, especially of a return below the minimum, and which would otherwise sensibly increase the return price of the alcohol.

"Does not this reasoning in other respects agree with experiments upon the value of the pulp? How, indeed, can we admit that 3,000 kilos. of raw beet-roots—valued at 45 francs before their employment—have only a value of 18 francs after being deprived of only 6 to 8 per cent. of sugar; and when, above all, they have been washed, rasped, and half boiled—that is, reduced to the best condition for assimilation by the cattle?

"You will doubtless acknowledge, Mr. Editor, that I was perfectly justified in saying that heretofore we have too much sacrificed the agricultural side of distillation.

"Let us now, therefore, examine what advantages agriculturists might derive from giving to their cattle beet-roots properly prepared, without distillation, as you have recommended.

"First, what are we to understand by these words, 'Properly prepared?' (*convenablement préparées*). Undoubtedly you proscribe by that the use of raw beet-root—unfortunately still too much practised in the country, and so pernicious for cattle, by predisposing them to pleuro-pneumonia, which makes such ravages in the stalls.

"There remain, therefore, two methods of preparation, one of which consists in previously having the

beet-root chopped and mixed with small quantities of cut straw and hay.

"But experiments have shown that this plan admits of allowing the use of only a very limited quantity of dry forage, requiring a very prolonged fermentation, with the addition of hot water, and often in conditions of uncertain success; whilst these forages, mixed in a greater proportion with the hot pulps of distilleries, enter quickly into fermentation, and are impregnated with that peculiar odour of the *vinasse*, which causes them to be eagerly devoured by the cattle.

"The sugar equally disappears under fermentation; and, besides, the price of the beet-root is increased by the processes of washing, cutting, and manipulation, which are nearly the same as in distillation.

"The other method, which consists in cooking the beet-root, and afterwards giving them to the cattle, with or without fermentation previously, is, without contradiction, preferable to the preceding as a mode of alimentation; but it involves expenses almost as great as distillation, since it is equally necessary to wash, cut, and boil the beet-roots, which last operation costs little less than 1 franc per 1,000 kilos., as for distillation.

"If you think, Mr. Editor, that the farmers can profitably consume, by their cattle, the beet-root thus prepared, what advantages would they not derive from distilling them, without more expense, as we may say, and thus obtaining a pulp in the best conditions for assimilation, and of which the price will be considerably reduced by the produce of the sale of spirits, whatever may be the market price of them?

"Under these considerations it will be difficult for me to believe that M. Christoffe will persist in his determination; and doubt not that they will appear to you of a nature to modify your views upon this question.

"In any case, I shall feel obliged by your insertion of this letter in the next number of your journal.

"I am, &c.

"A. CHAMPONNAIS."

The preceding letter admits that the distillation of beet-root reduces at least one-fifth, others say a fourth, and even a third, the alimentary quantity to give to the animals. This point suffices for us to say, that in a year of scarcity of food this distillation is not an operation that we ought to advise, or which can produce generally a profit. It is true that M. Champonnaix thinks that the preparation given to the cattle by his system is less expensive than any other mode of cooking or fermentation. We believe that this is an error, and we have seen in Bourgogne an excellent food made, composed of beet-roots, cut, and half-cooked with portions of straw and unhusked wheat and a little oilcake, which food was much cheaper than the produce of distillation.

From the *Journal of Practical Agriculture* of the 20th October, 1858:—

"The year 1858 is memorable for the drought and the scarcity of its cattle-food; consequently the articles used in feeding cattle are dear, and they only will yield profit. It is for this reason that we have recommended the non-distillation of roots, and particularly beet-root. The objections and attacks which have resulted from it

have not disturbed us; and in few words we have repulsed the arguments of our adversaries. Again, we have in this had the agriculturists on our side. Between us, M. Christoffe has answered to our appeal when we demanded in practice a verification of the principles. Our readers have had before them the answer made by M. Champonnais to M. Christoffe. That reply was a confession, and it will be amply confirmed by the second letter addressed to us by M. Christoffe.

No. 3.

"Sautins, Oct. 14, 1858.

"My dear Sir,—The observations of M. Champonnais certainly require that we should break off, and the good faith with which they are presented stamps a great value upon them.

"In the mean time, I think that M. Champonnais, in invoking the agricultural side of the question, forgets a very important point.

"Many motives have decided me to come to the resolution of not distilling this year. The first of these is the loss upon the products of the distillery, which I have pointed out in my former letter. M. Champonnais corrects my calculation, and, giving to the pulp a value equal to the beetroot, he discovers a profit of four francs, when I find a loss of eight francs per day.

"We readily acknowledge that admitting this new mode of reckoning is to make my distillery gain in order to inflict a loss precisely of the same amount upon my dairy and pigery which must consume my pulp at the price of 15 francs instead of 9 francs, which would involve for them an expense of 12 francs per day upon the 2,000 kilos. which they consume.

"If we take the question under another point of view, we shall find the same difference in the products.

"I say, and I maintain, that 3,000 kilos. of beetroot give me 2,000 kilos. of pulp; otherwise, for the demonstration I have in view, I might admit the statement of 2,500 kilos. advanced by M. Champonnais; 1,000 kilos. of beetroot, therefore, are taken away each day from the alimentary resources of my farm during six months or 180 days, in order to give me, by admitting the benefit of 4 francs resulting from the calculation of M. Champonnais, 720 francs at the end of six months of a working which is not without some difficulty.

"This 720 francs represents 180,000 kilos. of beetroot, which sold at 15 francs would yield me 2,700 francs instead of 720. It is true that from these 2,700 francs it would be necessary to deduct the expense of cooking, valued by M. Champonnais at 1 franc per day per 1,000 kilos., and which I reckon at 5 francs for my 3,000 kilos. of beetroot—say, 900 francs for the 180 days. There remain, therefore, 1,800 francs, less 720 francs, or 1,080 francs of net profit by not distilling.

"The difference will be still greater if I give to the beetroots, according to the table of M. Boussingault, their value corresponding with their equivalent in hay. The nutritive equivalent of Silesian beetroot, compared with that of hay, being of 462, we may say that 1,000 kilos. of beetroot is equal to 216 kilos. of hay; but the hay being now worth 70 francs per 100 trusses of 5 kilos., 1,000 kilos. of beetroot are really worth 30 francs

24 cents. Such is the true value we must now attach to the 1,000 kilos. of beetroot as compared with hay, when we have in view the feeding of cattle and the production of milk.

"Now, is it not rational that every cultivator who makes this calculation should prefer purchasing beetroot at 15 francs, and even at 25 francs? Mixed with a little straw and hay, it will economise to him the purchase of hay at 70 francs per 500 kilos. In conclusion, desirous as I am that the light should shine on all, I propose to M. Champonnais an experiment.

"Do not forget that I am a milkman. I will separate my cow-house into two parts of twenty cows each. I will feed one lot with my soup, composed of—

30 kilos. of pulp	} per head.
2½ kilos. of hay	
5 kilos. of straw	
1 litre of barley flour	
60 grammes of salt	

For the other lot, the mixture shall be the same, only substituting beetroot for pulp.

"These soups, you will recollect, are cooked in a valved boiler, into which I introduce a jet of steam during from three-quarters of an hour to an hour, according to the method of M. Hamoir de Saultain. We shall see what is the comparative production of milk from these two lots.

"In order that this experiment be complete, it is necessary to increase the ration, and put a certain number of cattle to fatten; but I have only two in excess of the twenty employed in the experiment, and that will not be a sufficiency. I would desire that the experiment should be watched by a person appointed by M. Champonnais.

"Such, my dear sir, is the idea suggested to me by my desire to seek truth and make it known. Let M. Champonnais be well convinced that I am not a partisan, and that if I am deceived I shall feel pleasure in acknowledging it. He has rendered a great service to agriculture; but this year, I much fear, in consequence of this exceptional circumstance of the dearth of forage, and the low price of spirits, it will not yield a profit from his fine invention. We must not lose sight of the fact that the principal advantage that the farm ought to derive from distillation is the cheap feeding of cattle.

"Be assured, &c.,

"CHARLES CHRISTOFFE."

We see that M. Christoffe has resolved to suspend the distillation of beetroot for the same motives as M. Bella at Grignon, for the reason that they cannot this year sacrifice an amount of nourishment so important as that which in the sequel of the amount is employed in producing spirits from beetroot.

THE DEVON ESTATES IN IRELAND.—Mr. KERKEWICH, M.P., said, at the Woodbury Ploughing Match dinner: With regard to my connection with Ireland, I have always looked on the Irish as my brethren. I have felt it sometimes difficult to deal with them, but I have always received the greatest possible kindness from them. There was a time when they were dreadfully

depressed. I felt it my duty, as far as in me lay, to endeavour to raise them from the abject state in which they were placed. Through much distress, and when famine was around them, that noble estate, of which I had the charge, paid very little rent, and was very badly farmed. What is the condition in which it is now? It has been stated by the noble owner of the estate, by others who had inspected it, and by those who had had the management of it, that the larger part of that enormous estate of 40,000 acres is now in a good state of cultivation, that the people are happy and prosperous, that their rents are well paid, and that there is no sort of division in the class which rent on that estate. Gentlemen, this is a source of very great satisfaction to me;

but it has been done with very great care: it has been done on that great maxim of "Live and let live;" it has been done on that maxim which was so well enunciated by my friend on my left (Mr. Smith), that of not regarding men in a different light because they differed in religion. It has been done on the principle that whatever our exertions may have been, we looked to the poor as well as to the rich, because we know that this world is made up of many classes, and that because it is made up of many classes, we are constituted one great social community; and the energies of every good and Christian man should always be directed to the best manner of bestowing benefits upon all classes of the people.

EDUCATE THE RISING GENERATION OF FARMERS WITH THE KNOWLEDGE OF CHEMISTRY AS APPLIED TO AGRICULTURE.

At the Tenbury Society the following practical remarks were offered to the meeting:—

Mr. FLEWETT said—Permit me to make a few observations upon a subject which I consider is one of great importance, not only as it regards the interest of the agriculturist, but the whole community. Knowing, as we do, it is from the soil we derive all that we eat, drink, or wear, should it not, then, be our bounden duty to make the soil yield all that it is capable of doing? And how are we to accomplish this but by the application of science to the practice of agriculture? Science, that has for its object the means by which thousands of acres may be made to double or treble their produce, has surely strong claims upon the attention of both landlord and tenant, and deserves the serious and careful consideration on the part of any one who feels an interest in the welfare and the prosperity of his country. The object principally I have in addressing you upon the subject is to urge upon the landlords and tenant-farmers of this county the immense advantages they would derive from the establishment of a chemical society in conjunction with the various agricultural societies in the county at large. To show you the necessity that exists for such a society I need only mention to you that all other manufacturers endeavour, by every means in their power, to avail themselves of the helping hand of science; but the greatest and most important manufacturers of all, viz., the manufacturers of our food, in too many instances rely simply upon the word of the dealer or merchant as to the value of commodities used in farming. This, my lord, is not merely a question for the farmers; it affects the landlord to a much greater extent than they themselves suppose. I need not for a moment dwell upon the fact that the purer the farmer can obtain his artificial manure, the more is the permanent value of the land increased. First allow me to call your attention to the manure known as superphosphate, which in reality should be ground bones dissolved in sulphuric acid. According to analyses made by Liebig, Johnson, Way, and other eminent chemists, bones contain in 100 lbs. as follows, viz.:—

Organic matter, of which $5\frac{1}{2}$ lbs. are nitrogen ..	38 $\frac{1}{2}$
Phosphate of lime	55 $\frac{1}{2}$
Ditto of magnesia	3
Carbonate of lime	3 $\frac{1}{2}$
Salts of soda	3 $\frac{1}{2}$
Chloride of calcium	1 $\frac{1}{2}$

100

Seeing, then, that there are 55 $\frac{1}{2}$ lbs. of phosphate of lime in bone, it is not too much to ask our manufacturers of artificial

manures to make one-half of this quantity soluble, but out of twenty-two samples obtained from the different markets in this county, only one has been found to reach 26 per cent., the remainder varying from that down to 2 $\frac{1}{2}$ per cent. The following comparative analysis of two samples of manure made by two respectable manufacturers, and both sold at the same price per ton, will, I think, convince all present that something is requisite to be done to protect the farmer:—

FIRST SAMPLE.

Moisture	10.82
Organic matter	32.93
Silica	6.80
Soluble phosphates	15.70
Insoluble ditto	15.80
Sulphate of lime, &c.	10.25
	100.00

SECOND SAMPLE.

Moisture	12.20
Organic matter	32.35
Silica	2.80
Soluble phosphates	7.92
Insoluble ditto	4.70
Chloride of sodium with a little sulphate of soda	19.60
Hydrated sulphate of lime, &c. ..	20.43
	100.00

I need not for a moment, my lord and gentlemen, hesitate to state that such glaring inconsistencies would not exist if a Chemical Society was formed, with an eminent chemist at its head, to analyze the various manures previous to and after being purchased by the farmer; and when we are informed by the above eminent authorities that wheat alone requires 49 per cent. of phosphoric acid to bring it to maturity; that turnips require 16 per cent., together with 68 of potash, for their development, I think you will agree with me that the subject is one of no mean importance, the turnip crop being the basis of all good farming. The first and most important step towards an improved system of cultivation is thorough draining, and next to that green cropping. The farmers being under the necessity of employing artificial manures to increase and improve their crops, it behoves, then, the landlords and farmers of this county to seriously consider whether what I have here stated would not conduce very materially to their interests. And here I must do my friend Mr. John Lett, of Rushock, the justice to state that it was he who first mooted the subject of an agricultural chemical society, at the same time mentioning the

name of Mr. Traasael as being a gentleman in every way qualified to undertake the responsible duties of chemist to the society; and, from what I have been able to ascertain, I have no doubt the latter gentleman is well acquainted with the duties that would devolve upon him. Mr. Flewett here warned the farmers to avoid purchasing their manures at any of the sales where "genuine superphosphate" is advertised to be sold, and at the same time he paid a compliment to the respectable manufacturers of artificial manures. He then proceeded to show, from sixteen samples of oil-cake obtained from different markets, the extent of adulteration practised in this most valuable article. In some instances the amount of bran was found to be as high as 80 per cent. "If," said Mr. Flewett, "the parties would rest with bran alone, no great harm (with the exception of fraud) would ensue; but when the mixture is composed of mustard-seed, rape-seed, and other deleterious substances, I cannot, my lord, in too strong language point out

the necessity that exists for the formation of such a society as I have mentioned. In conclusion, permit me to observe that, in bringing this subject under your notice, I do not pretend to offer myself as the chemist to the society; my other engagements would preclude me from giving proper attention to so important an office; but I think the subject is one of paramount importance, and should at once receive the attention of the whole of the noblemen, gentlemen, and tenant farmers of this important county. Before sitting down, permit me to correct an impression respecting a paragraph that has appeared in several papers, relative to a discovery made by Professor Davy, of Dublin, respecting the existence of arsenic in plants. In reference to this subject, I may say that I have no doubt that Dr. Davy is right to a certain extent, but this arises only where superphosphate is made from acid manufactured from copper pyrites; acid made from sulphur is entirely free from that dangerous poison."

CHEESEMAKING IN AYRSHIRE.

At the dinner of the Ayrshire Society, ALEXANDER OSWALD, Esq., the Chairman, said—I believe that when country gentlemen get up to talk to practical agriculturists about farming, nothing but their good breeding prevents them from smiling. But without being practical agriculturists landed proprietors can do a great deal. You have only to look around this town, and see what an energetic proprietor can do. I believe I am not wrong in saying that the person who introduced tile-draining into Scotland on an extensive scale was his Grace the late Duke of Portland. I have found drains at Aushincruive, put there 90 years ago by Richard Oswald, my granduncle. I believe these were the first drain tiles ever put into soil in Scotland. How were they made? They were bricks with about half an inch hollowed out on each side. I suppose there was one inch of pipe to five of brick. It is not wonderful, therefore, that so expensive a mode of draining land was not pursued. But that was only the beginning, and all things must have a beginning. Now we have pipes made in any manner we require. It is owing to associations such as this that the great advances in agriculture have taken place. I am to the parent association, the Highland Society of Scotland, that I believe in a great measure the steady and constant advance which agriculture has made in this island is due. It was very recently indeed that that Association induced our neighbouring country of England to adopt a similar means of agricultural improvement. The Royal Agricultural Society of England is not 20 years old. They generally have a battle for pre-eminence when they meet; but I believe we were in our fifties when they had not reached their teens. Not only have these associations spread to England, but they have spread to France, and I believe in a few years will convert it into a very different country. I know I took a bull there, which cost me £8, and I sold it for £80. This Association has greatly improved the stock of Ayrshire; but one thing, till a very few years ago, seemed to have been totally forgotten. Fortunately, Mr. Campbell, of Craigie, remembered that the points of a cow—its horns, its tail, and its vessel—are not what we care about. He remembered that the produce of a cow is the important thing. He was the first person to suggest that we should try to make better cheese. I believe, though it is a disputed point, that General Dunlop was the first person who introduced from Holland the breed of cows which are now known as Ayrshire cows. They are spreading

over the world. They are the favourite breed now in France. These cows have now produced, as Somersetshire men have told you, cheese very nearly equal to Cheddar. I have no doubt that we shall go on improving on all those matters. Before sitting down I cannot help saying that I believe one of the reasons why you have made this advance has been that you have been put upon your mettle. You were put upon your mettle when the late Sir Robert Peel threatened to annihilate the farming interest by introducing foreign cheese and foreign wool, since which time the prices of home cheese and home wool have constantly risen. At another time I, as your representative, ventured to differ with many of you when the same statesman threatened to inundate you with foreign grain; and from that time to this the value of every farm in Ayrshire has risen. And what is it owing to but your own strong hands and clear heads? We, the proprietors, have not the right of claiming any merit at all. To the tenant farmer belongs the high honour of having got over all those difficulties, and the honour of causing the prosperity of this country to increase day by day.

Mr. CAMPBELL, of Craigie, said—It was to an English farmer and his wife (Mr. and Mrs. Harding) that Scotland was indebted for their success in cheese-making.

Mr. HARDING said—He met them with feelings of something more than friendship. They seemed to feel glad for the little good they had received from one from Somersetshire. You remember, he said, when we set out four years ago, the question was raised whether or not as good cheese could be made in Ayrshire as in Somersetshire; and you remember I told you then several times in the public prints that I had no doubt in the world that they could be made as good. I have weighed the thing a good deal over in my mind since, and can see no reason why it should be otherwise. Some of you object to the pastures, and say you are not so well off in that respect as we are in England. You give the preference to old pastures; but I beg leave to differ from you, from what I know, with four years' experience added to my past experience. On my own farm I pasture half of my cows on artificial grass—good three-year-old pasture, and the other half on old pasture; and I am satisfied I should not make as much cheese as I do now, and particularly not of such good quality, if I did not use the young pasture. As you remember, when we were in Ayrshire we made cheese in different parts of the county,

and on all kinds of land. When we had finished there were about twenty cheese altogether; and when we left I looked at them carefully, and I think no person could have picked out one cheese and said it was not like its fellow. I sent three of those cheese home to my own cheese-room to have them properly tested when they came of age. One of them was cut up by my friend Mr. Titley, and he did not know but it was one that had been manufactured in my own dairy. One of the three was made at Dalgig, another at Meiklewood, and the other on good pastureland at Holmbyres. I was satisfied that, whether we made the cheese at Dalgig, among the mountains; at Cunning-park, amongst forced grass; or among the heather at Corwar, where Mr. Wason is making the desert to blossom as the rose, there was no material difference whatever. My opinion is, that good cheese with good management, in the hands of a person who has something in the upper storey, can be made anywhere, whether at the Lands-end in Cornwall, or at Caithness in the extreme North of Scotland. From what I have seen to-day, I am perfectly satisfied my Ayrshire friends will yet make as good cheese as we in England can do. I have been perfectly delighted to see the progress you have made. When I went into that shed I was amazed—I had never seen such a sight before in my life. I venture to say that such a sight in any circumstances could not be got up in the whole county of Somerset. You are Scotchmen, and what you take in hand you seem determined to go through with. You remember the deputation you sent to us—my friend Mr. Drennan, who so well reported the result of their journey, and my friend Mr. Cunninghame. In some way or other they managed to find their way at once to what they wanted. They went out one day, and we were wondering where they had gone to; but while we were talking they were working with their eyes open, and prosecuting their inquiry; they were, in short, Scotchmen all over. In a few days a large manuscript came to me from these gentlemen, wishing me to make any corrections I saw necessary; and there was our system in full. We could not but wonder how they got hold of it. At the time when I left I scarcely thought there could be such an improvement as I

have seen to-day in that shed. From the beginning to the end I went over nearly every lot—after the judges had passed them by—silently and carefully, and made my own private remarks; and I tell you candidly, that as a whole, I don't know where such another lot of cheese could be got together. We could not, in Somersetshire; and I won't mention Wilts or Gloucestershire; because we are 10s. or 15s. above them. You seem to have the right thing in view, and to know what a good cheese is. You aim at having the quality rich and good, the texture firm and full, and the flavour sweet, mellow, and pure. We have hitherto gone on making cheese only by observation. Now, as you have already done so much in Ayr, I don't see why we should not go a step further, and get at the chemistry of the thing. We learn from the chemist that milk, in its pristine state, possesses a quantity of sugar, which, in the process towards decomposition, produces lactic acid. There are also alkalies present, which neutralise the lactic acid, until an increasing amount of the latter is generated, when the milk becomes sour. Now, what we want is an instrument, or some method by which we can get the exact amount of acidity, so that we may know when to add the rennet, and how much of it to add, in order to produce a good cheese. When such a desideratum is produced we may then hope soon to be able to make cheese, not merely from observation, but on principle, scientific and unerring. He (Mr. Harding) then suggested that the society should not only award prizes to the best cheese shown at the exhibition, but that they should depute a committee to examine all the dairies of those competing; because it was one thing to bring a good cheese to a show, and another to be in the habit of producing good ones. He then spoke of the colouring of cheeses. He said he had observed in some instances a defect in the annatto used. It left a sediment, and consequently injured the appearance of the cheese. He had not seen any liquid annatto equal to Nicholl's, of Chippenham, and of which he never heard a complaint of this kind, neither had he in using it for six or seven years found any defect at all in it, and would therefore recommend it.

KINGSCOTE AGRICULTURAL ASSOCIATION.

The first Monthly Meeting, for the present season, of this Association was held at Hunter's Hall Inn on Tuesday, November 8th. There was a good attendance of members—Mr. J. T. Harrison, the President for the year, presided on the occasion. He was highly pleased to find their funds in such a flourishing state as to enable them to offer an increased number of premiums. He now asked the Honorary Secretary to read over the prize-sheet as altered and revised by the Committee. The propriety of attaching a library of agricultural publications was then talked over and generally approved of; after which the Chairman proceeded with the discussion of the evening by reading the following paper, the subject being—

OBSERVATIONS ON THE ALTERATIONS PROPOSED, AND THE IMPROVEMENTS INTRODUCED IN AGRICULTURE DURING THE PAST YEAR.

Gentlemen, we are living in perhaps the most remarkable period of the world's history, when improvements, which formerly occupied many years, aye even centuries to accomplish, are now suggested, planned, and executed in the course

of a few or even one year. When I look back and call to mind our childish surprise at seeing the iron horse, as it was called, travelling with its train of coal waggons within a quarter of a mile of my birth-place on the Holton Railway, gaunt and grim, ungainly it would now be called, with its cylinder perched on the top of the boiler, and the long connecting rods attached to the wheels, and recollect that this was the great George Stephenson's first decided step towards enabling the people of the world to run to and fro as they do, drawn by those wonderful specimens of men's ingenuity and perseverance—the locomotive railway engines; when, again, I remember the careful toil and experimental anxiety that I day by day witnessed when Mr. Cook was laying down the first length of the electric telegraph between Paddington and Slough just 20 years ago, and now see how thought is transmitted like lightning to the end of the world by means of this invention, I say we live in an age of intellectual development, enterprise, and perseverance, far surpassing the wildest imaginations of our most speculative forefathers. The question then naturally presents itself, “What is the case with respect to agriculture?” In the midst of all this excitement, and eagerness to overcome

the obstacles presented by Nature to the intercourse and interchange of ideas, is agriculture alone standing still, or is it keeping pace with the times? To say that it is, would be simply untrue; to say that it has done, and is doing much towards it, I am told—to assert that there is in agriculture an opening for the employment of the surplus capital of the country, such as may still cause us to open the eyes of astonishment at the results, I firmly believe. One of the first obstacles that must be removed is that presented by those who possess the land of our little island home. They must rise to the occasion. They must learn that as owners of the land they have duties to perform to their country as well as rights, and the first duty incumbent upon them is to remove every obstacle that presents itself to the improvement of the soil. But I shall be asked, “Do landlords ever present obstacles to improvement? This is a serious charge.” Knowingly or unknowingly, and from long custom, they do. Every acre of England that requires it should be drained; every part capable of cultivation should be employed, and every encouragement should be given to the occupiers of the land to improve it to the very utmost, with the consciousness that their rights in such improvements will be respected. Then, and not till then, may we expect capital to flow freely towards the improvement of agriculture. I believe that England calls for, aye that she requires for the maintenance of the national independence, that this condition of things should be brought about. Consider the rate at which the population of England is increasing—it has doubled in the last half century. How is this enormous increase (and what, but for emigration, would it have been?) and the yearly addition to be maintained? Agriculture, no doubt, has done much to meet the increased demands, thanks be to the enterprise of the British yeoman, to the discoveries of artificial manures and food, and to the ingenuity of our implement makers, aye, and to the noble aid and encouragement given by many landlords; but is it not a fact that we are becoming, as a nation, more and more dependent upon foreign countries for some of the necessities of life? This may be a necessary condition of things, but is it right? By no means. Remember the Great Napoleon’s observations, that should England become dependent upon foreign countries for her food, she might be conquered. Thank God! England’s hope for protection in time of danger is founded on a more sure basis than that. England is taking a noble part in the world in the present day, upholding the cause of the oppressed, striking off the chains from the enslaved, and spreading the knowledge of God’s truth wherever her influence extends. Let her be true to herself, and she may go forth against the Goliath that threatens her, and God will defend the right. But is it not the more necessary that England should take every precaution, and raise herself above dependence upon her neighbour in case of necessity? The recollection of but yesterday’s famine in Ireland should at the same time keep her humble, and make her farmers above all other men feel their dependence upon God. With the millions of England’s gold and all her intelligence brought to bear upon that crisis, she was unable to prevent thousands of her fellow-subjects dying from famine. What then are the points we should aim at as agriculturists? I would suggest, then, 1st, to increase our production; 2nd, to take advantage of every appliance to diminish the cost of that production; and 3rd, to use every means to economize that part of our crops which we consume on our farms. I shall endeavour to seize on a few of the alterations proposed, and the improve-

ments introduced under these three heads during the past year:

1. TO INCREASE OUR PRODUCTION.

Under this head it is very difficult to bring any striking instance of improvement or alteration before you. Our journalists reiterate the recommendations to drain and plough deep, carefully preserve your manures, apply them freely, increase their value by using artificial food, and be not niggard with artificial manure besides. For sandy lands the lupin has been tried, and found to yield a valuable addition to our sheep feeds. One subject deserves especial attention—the complaints which are becoming so general as to the failure of the swede crop. This is the case this year in the North of England. We find it is yearly leading to a more extensive growth of mangold wurtsel, the advantages of which are, the much larger quantity that can be grown, its excellent quality of keeping, even till the ingathering of the succeeding crop; it is especially useful to the dairy farmer, as it is chiefly wanted by him in the Spring, when it attains its best condition, and is excellent for increasing the milk of his cows. We cannot but gratefully welcome the enlarged employment of this root, at a time when the uncertainty of the swede crop would entail such serious evil. There is one point respecting the management of mangolds which demands especial attention, namely, its liability to injury from frost. The season will be long remembered by many who have experienced the effect of the unwonted frost of 1859. In future, to be pretty certain of securing, uninjured, our mangold crop, we must store them by the middle of October. The cultivation of mangolds is forcing upon us a very desirable reform in one respect—if we wish to grow them successfully, we must cultivate our land in Autumn. The old system of leaving our long stubble with their once valued crop of couche for sheep to run over in the Autumn, and for game cover, must be superseded, and immediately it is possible to set Bentall, Coleman, Woofe, or the common plough with a broad share to work in, they must go, giving the couch no time to think about darting its roots into the soil, affording all the annual wheat seeds an opportunity to vegetate, following as rapidly as possible (after, I would recommend, burning the remaining stubble and rubbish) with the plough. And here I must mention the excellent system recommended to us by our friend Mr. Burnett last winter, the satisfactory result of which we have seen in the magnificent crop of mangolds he has grown this summer. Mr. Coleman, of the Agricultural College, recommended a somewhat similar system, but I prefer Mr. Burnett’s plan—clean your field in Autumn, spread your manure, bout it up; so let it be all the Winter. A few weeks before sowing, cross-harrow, thus destroying the young weeds; re-form the old bouts, and sow. Following these instructions, you may be almost certain of a good seed bed. I should like to commence the operation by a thorough breaking up of the land with Smith’s steam cultivator. But how are we to manage this Autumn cultivation under any circumstances, in a busy time? This may fairly introduce the second subject I proposed, viz.,

II. TAKING ADVANTAGE OF EVERY APPLIANCE TO DIMINISH THE COST OF PRODUCTION.

And here increased machinery and all-powerful steam present themselves as our obedient servants, ready to do our bid. Ploughing by steam is no longer a matter of speculation; it is an established fact, and, I am persuaded, one that will rapidly cause a revolution in agriculture. In agriculture, it is established beyond all doubt, that the steam plough can do the

work equally well, and at two-thirds the cost of horse power; and further, it can do that which cannot be accomplished by means of horses. We cannot anticipate what will be the effect of the deeper ploughing and more thorough cultivation which the steam plough will produce, but I know that every year I have a crop of corn in a field of stiff clay which was drained nine or ten years ago. I have a much more abundant crop of wheat, about two feet wide, over each drain, than on the other parts of the field, which I must attribute as much to the thorough trenching the soil then underwent, as to the drain that was put in below. And such trenching, steam can, and I believe will, accomplish. But besides doing the work more cheaply and effectively than by ordinary means, the greatest advantage to be derived from the application of machinery is, the saving of time—the having the power of doing the thing when it is wanted to be done; and here it bears strikingly upon autumn cultivation. A steam engine that can plough six acres a-day when you want it, and will not eat corn when the weather is unsuitable—so that you do not begrudge his remaining in the stable—must be almost an invaluable part of the stock of a large arable farm. But I believe we are far as yet from fully appreciating the purposes for which the steam engines may be made available. I am not prepared to go into the question; it is the question of the day. We know that we can have an engine which should take itself out of its stall, and draw a good load after it—which, on arriving at the field, can scarify, plough, subsoil, drain, break-up, and cultivate our fields—which can take itself home again, and, when fixed in place, shall thrash out our corn, and prepare it for market, bruise the oats for our horses, grind meal for our cattle and pigs, cut chaff and litter for all our stock (not our sheep), crush bones and corn, carry produce to market if required, and, at last, blow off its waste steam among our chaff. There are very many farmers to whom it cannot be a question as to the expediency of employing such a coadjutor. The proposed system of steam culture may be arranged under three heads:—1st. The portable engine, which is used as a stationary engine in the field, working the ploughs or grubbers by means of wire ropes. Mr. Smith's (made by Howard) and Mr. Fowler's are the best representatives of this class: to Mr. Fowler has been adjudged the prize of £500 by the Royal Agricultural Society. 2nd. The locomotive engine travelling on Boydell's endless railway is next, dragging after it either ploughs, cultivators, or circular grubbers. To this system there will be always the objection of treading the land, and the double difficulty of keeping the unwieldy horse as well as the implement in place. 3rd. Halkett's guideway, which is admirable in conception, and, according to the published accounts, works to perfection. The first cost of it, however, is very great, and will form a formidable barrier to its extensive introduction. There are many ways, such as draining, and providing accommodation for the labourer and stock of the farm, in which capital may be expended with greater benefit to the country.

Turning from the steam engine to the more simple machines, we have the mowing machine taking a prominent place among the new implements during the past year. Having used it myself I can speak with confidence as to its great utility; and not so much in lessening the expense of the operations, although that is important, as in the command it gives of the work. Haymaking is a tedious process. There is no more valuable precept in farming than "Make hay while the sun shines;" in truth it is but then that you can make, and then in reality it makes for itself; and an implement that enables you to cut down eight or ten acres a day, just when the weather suits, is invaluable, to the grass-land farmer especially. The one I used was Wood's; its fault is, not cutting close enough

to the ground. This defect is remedied in that made by Burgees and Key; but I have no doubt it will be overcome in Wood's also, when it will be the more useful implement, as it is a reaper as well as mower, and does its work to perfection. I must mention the advantage I found in using it to forward autumn cultivation; by cutting the stubble close I was enabled to commence cultivating immediately, whereas after hand-reaping, the operation was delayed till we could mow the stubble, and clean it away; and when I tried hand-mowing last year, although it obviated this difficulty, I found the operations very slovenly. I will only add a few words on the subject of the objections raised by the labourers to the introduction of machinery. I have no hesitation in saying, that the extension of machinery will tend to increase rather than diminish labour; it may have the very desirable effect of distributing the labour more evenly over the year, but there is quite enough left undone in a general way on every farm, which it would be well to do; I have no doubt, besides, we are to grow heavier crops; and the labour required to prepare these, whether for the market or stock, will demand the spare time of all our hands. We should aim at keeping the same people at work all the year round as much as possible; and I believe that machinery, by easing the heavy pressure of harvest and other busy times, will enable us to accomplish more at the same cost, and keep nearly the same staff of men employed constantly. I would now call your attention to—

III. THE NECESSITY OF OUR USING EVERY MEANS TO ECONOMISE THAT PART OF OUR CROPS WHICH WE CONSUME ON OUR FARMS.

This subject is becoming year by year more interesting; and the attention of scientific and practical men is being so directed to it that it bids fair shortly to deserve the name of a science. Farmers have been accustomed for many years to use oilcake, bran, meal, &c., &c., in addition to their hay, straw, and roots, in fattening their stock; but the principles upon which the advantages gained are dependent, are far from being understood; a good result from a certain system is established, and it is followed by many; but the point to aim at is the best result—we want to know how to turn our straw, hay, and roots to the best advantage. The subject, although it may not appear so to us, is surrounded with difficulty, as admitted by Dr. Anderson, in his highly interesting and scientific address to the Highland and Agricultural Society of Scotland. I shall endeavour to bring, as clearly as I can, under your notice the present position of the question. Our cattle, during the summer months, rove at large about our fields, using with discrimination those grasses which their instinct tells them are best for them, and showing us very readily where our management is defective, by leaving the grasses that are sour and unpalatable. During the winter our system of feeding necessarily becomes artificial, and we ought to use our reason as the cows do their instinct, and make the proper selections of food for them. It is well known that could we consume the grass, from which we make our hay, in its green state, it would yield a much larger return. It is also known that the more rapidly the grass grows, and the younger, in reason, it is eaten, the more good it does the stock, which probably arises from its being more easily digested and assimilated. It is also determined that the early-made hay is much more valuable than that made from grass allowed to stand till the seeds are perfected; and the straw contains a large portion of woody fibres, as when ryegrass is allowed to ripen it is considered but little better than straw. The question then is, having a large portion of our winter provender in this dried state, can we by any means restore it to its original digestible condition? Will steaming do it? How

doctors disagree! While some say that it merely makes musty food more palatable, and does little good besides, Mr. Horsfall says, "My experience of the benefit of steaming is such, that if I were deprived of it I should not continue to feed with satisfaction." Mr. Horsfall is no mean authority, but fairly deserves the title of the founder of scientific feeding. Others, again, think highly of the plan of mixing the pulped roots with chaff, allowing the mass to lie some hours, and then using the fermented food, supposing that the heat thus produced so impetuously in a great measure answers the same purpose as steaming. Both these systems call for further careful trial and exact comparisons. Mr. Horsfall, however, by no means depends upon steaming his food merely, for success; he studies the demands made upon his cows, and providing them with the food he finds they require, he succeeds both in summer and winter in maintaining an abundant supply of milk of superior quality, at the same time that his cows improve in condition, and eventually fatten for the butcher. To show the result of his treatment, he mentions an experiment he commenced in conjunction with two of his neighbours—one of them fed his cow on good hay, the other on somewhat inferior hay, ground oats, and turnips, whilst he fed his on the mixture he recommended. At the end of the trials the first cow had lost weight, the second remained stationary, whilst his own had gained weight. Making allowance for this accordingly, and valuing the milk produced, the result was, that whilst the cost of food was respectively 7s., 7s. 0½d., and 8s. 7d. per week, the profit was, 2s. 11d., 4s. 3d., and 10s. 10½d. The extra expense he was at in cooking and attendance he considered was fully compensated for by the improved quality of his milk. The difference is certainly sufficiently decided to demand attention. Now, mark, this result is not obtained by any process of trials and error, but is the result of a close and scientific examination into the subject. Mr. Horsfall does not confine his practice to dairying; he applies the same principles, with success, to fattening his stock. In his following remarks, viz., his first paper to the Royal Agricultural Society, in 1856, Mr. Horsfall appears to have fully foreseen the importance this subject would rapidly assume: "I think," he says, "that substances peculiarly rich in nitrogenous and other elements have a higher value for special than for general purposes; and that the employment of materials, characterized by peculiar properties, for the attainment of special objects, has not yet attained the attention to which it is entitled." Other enquiries have followed Mr. Horsfall, and Messrs. Lawes and Gilbert have made some interesting experiments, and Dr. Anderson has introduced some of them to elucidate his views, in his address to the Highland Society. They examined the carcasses of different animals in various stages of fatness, and found that, whereas in animals in store condition the proportions of fat and flesh do not differ more than two to one, the increase of fat during the process of fattening is eight or ten times as great as that of the flesh, thereby showing the much larger proportions of the fat than of the flesh-forming substances that are required to be assimilated by fattening animals. They show, however, that animals can assimilate only five per cent. of the nitrogenous flesh-forming compounds contained in the food; whereas, of the fatty matters they can assimilate ten per cent., or twice as much, which in some measure accounts for the great value set upon those foods which contain a large percentage of nitrogenous compounds. To introduce Dr. Anderson's views to you, I will make one or two extracts from his address. He says: "The question reduces itself to determining how the crops commonly cultivated on the farm can be most advantageously used for feeding cattle, and whether they are best used alone or supplemented by

food not forming part of the usual farm produce." Again, "The advantage of those substances (artificial foods) seems to depend on the fact, that in many kinds of food the proportion of nitrogenous matter is too small to permit the full benefit to be derived from the saccharine constituents of the food, and their effect is not confined to adding a certain quantity to the nutriment consumed, but serves to reduce invaluable substances existing in the ordinary food, and which, under other circumstances, would be lost." And he illustrates his views by experiments on feeding some oxen, which appear to prove his point. Here, then, is a new step in the investigation, and if thoroughly established, a most important one. Mr. Horsfall's position was to supply the animal with the substances he found it assimilated, either in the shape of milk or meat; in addition to what it required to maintain its animal heat, respiration, and its constant tendency to loss of muscle, &c., &c. Dr. Anderson goes a step further (which, however, Mr. Horsfall, in extract given before, in some measure anticipated) and shows that by a judicious supply of artificial food, not only does that food give a good account of itself in the improvement of the animals, but, besides, increases the absolute value of the ordinary food, by enabling the animal to more thoroughly assimilate it. The facts mentioned above, as ascertained by Messrs. Lawes and Gilbert, that only five per cent. of the nitrogenous, and ten per cent. of the fatty compounds of ordinary food are assimilated, show that there is a wide margin for such a result, and that there is probably a great loss of nutritious matters in using simply the products of the farm by themselves. Are, then, Thorley's and other cattle foods, that are offered to us—nay, almost forced down our throats—the grand desideratum? do they possess this talismanic power of turning, as it were, dust into gold? There is no doubt that the (apparently, at least) exorbitant price at which they are offered has raised a strong prejudice against them. In offering them at so high a price I think the makers are acting contrary to their own interest. By aiming at a smaller profit, on a more extensive scale, they would be much more likely to keep their secrets to themselves, and become popular. As it is, they are stimulating the energies of many to discover their secret, and possibly in the process to produce a more valuable condiment. But is Thorley's Food really valuable? We have Messrs. Lawes and Gilbert's analysis, which, no doubt, is right as far as it goes, but it is impossible almost to determine the ingredients of which it is composed. Most old shepherds can tell us the wonderful effect of fenugreek, which seems to be one of the ingredients. May there not be others equally efficacious? Messrs. Lawes and Gilbert do not, however, found their condemnation merely on the analysis, which shows the food to be composed of a mixture whose market value is only one-quarter of that charged for the food, but they have tried experiments on feeding pigs, the result of which, so far as it goes, is decisive against the food. But this trial alone does not carry conviction to my mind; pigs are always fattened on the best of food. Let the issue be fairly tried in fattening cattle, using the cattle-food with roots, against oilcake and bran-meal of the like value, with hay and roots, and let us know the result. Not having experience, I cannot give an opinion, but I fear prejudice is too apt sometimes to warp the judgment; and I am free to believe there may prove to be more excellence in Thorley's Food, when properly applied, than it has at present credit given it. I must mention a new and apparently very valuable introduction, viz., the cotton cake, which, when decorticated, seems to equal oilcake in value, whilst it is not nearly so costly. In closing, I must express my sense of my inability to compress in the short compass of this paper the many subjects that its

title would justify or call for. I have endeavoured to seize upon a few of what seemed the leading questions of the day, and which perhaps appear to stimulate to further enquiry, and urge to investigation and experiment, rather than to let us settle down on our lees, and comfort ourselves with the consideration that we have already attained to the highest point of agricultural science and practice.

The various topics alluded to were then commented on. It was thought reaping and mowing machines would shortly become general implements of the farm, but that they were not yet perfect; that cultivation by steam power might answer on heavy working soils where the holdings are large,

but not so as yet, just in this immediate neighbourhood the soil being thin, making it easy of draught for the horse, as also the number of large (or crag) stones situate so near the surface rendering it liable to a great risk by breakages. The most animated part of the conversation was on the various concentrated artificial foods for cattle. The prevailing opinion, however, was that they are much too dear to admit of being used as a general food with any degree of profit.

A vote of thanks to Mr. Harrison for his able and interesting paper concluded the proceedings of the evening.

THE PRESENT CONDITION OF AMERICAN AGRICULTURE.

The season of agricultural shows has just terminated, and our farmers are free to return once more to the sobriety and tameness of every-day life. The almost universal success realized by the societies would seem to argue a state of prosperity in the country; and such is really the case, despite "June frosts" and the thousand ills which hypochondriac writers predicted as imminent. If the wives of our farmers could be persuaded to wear fewer foreign goods, and the husbands would treat their farms with more judgment, there would be but little discomfort to be apprehended from a partial loss of crop in any one season. At the shows there has been displayed an unusual wealth of ingenious machines; and to see the grand displays of the United States, New York, Illinois, and Saint Louis societies, one might naturally infer that now-a-days the farmer needs only to sit in his house, and have his crops planted, tended, and harvested by automatic action.

Of the more important of the smaller implements, I do not remember to have seen at the shows anything which interested me more than the grain-binding apparatus to attach to a reaping-machine. At the Illinois state show there were two contrivances, entirely dissimilar in principle, and yet both tolerably effective. One, the invention of John P. Manny, of Rockford, Ill., has an endless canvas belt—in place of an ordinary wooden platform—and another of equal width set to make an inclined plane connecting with the former. Both belts have the usual wooden ribs to catch and carry the fallen grain. Light slats over the inclined belt prevent the grain from being blown away. Arriving at the summit it tumbles into a cradle, in which a strong band with a light iron hook at one end has been placed; and enough for a sheaf having accumulated, an attendant, who has a seat behind the driver, trips a lever with his foot, the cradle revolves, the knotted end of the band catches in the hook at the other end, and the sheaf, securely bound, falls to the ground outside the next track of the reaper. This is a very ingenious contrivance, and by having a proper arrangement for arresting the delivery of grain over the belt when desired, it will no doubt be practical. The inventor is an old hand at the manufacture of reaping-machines, and will assuredly not give up until he has

secured a thorough machine. The other binder, and the one which took the medal, was invented by Allen Sherwood, of Auburn, N.Y. Instead of string he binds with small wire, twisting the ends together in a tight knot, and at the same operation making the preparatory twist in one end of the next band. Let me explain. You have seen the triangular table of the Wood's machine which Mr. Cranston has shown in England for the two past seasons; well, now let there be fixed behind the driver's seat another for a binder, whose feet rest on a place behind a shield, which is placed on the inner edge of the platform; the rake's-foot is a half-circle shield of sheet-iron, to guide the sheaf as raked to within reach of the binder. Behind the shield is an elbow-joint, the short arm perhaps a foot long, and the long one something more, with a handle on its end. Along the upper side of both parts are eyelets, through which a No. 20 wire is guided to the handle, after having passed from a spool fixed between the driving-wheel and platform along the under-side of the platform and up through it to the eyelets. The binder, to commence, puts the end of the wire between a pinion and spur-wheel, which hold it firmly, while he pushes the elbow-joint towards the raker, and with the return motion passes his hand along the wire, bending it to the platform and up the off-side. He has plenty of slack wire to do this each time, for it unwinds freely from the spool, and the end being held by the gearing outside, the bending back of the elbow-joint pulls wire up through the platform, and through the eyelets, as freely as required. Now, the sheaf is raked directly upon the wire that lies upon the platform. As it comes, the binder reaches out, takes hold of the handle, and pulls the elbow-joint towards him, thus causing the wire to tightly confine the sheaf of grain. He rests the end of the handle so that the end of the wire is caught between the pinion and spur-wheel, when he sets them in motion by turning a crank, and they twist the two ends of the wire together around the sheaf, making at the same time a new twist for one end of the next band; a knife cuts the bundle loose, and it falls, all nicely bound, upon the platform.

The work done by both of these binding machines is very good. I seized the sheaves by one side roughly, tossed them high in the air, and kicked them about;

but this harsh treatment seemed but to make them more compact. But does it not seem to you, that in your English grain-fields of five and six quarters to the acre, the Sherwood machine would never keep up with the travel of the knives? and even the other, although partly automatic, be, in its present state, inefficient? I saw enough last year to convince me that you and we need quite different tools for farming: certainly, if not different in principle, they must be in proportion. There, for instance, is the reaping machine. Our straw is light, and not caring to cut it very close to the ground, our reapers are set to cut usually about six inches; and often at the West, where straw is thought well-nigh worthless, a foot or more from the ground. The straw being short, we do not need very wide platforms; and the gavels, being light, are easily delivered. A man will rake off through the entire harvest, and not esteem the work much more severe than our old cradling. But take our reapers over to England, and we find that you wish your straw cut about as close as grass; and your splendid crops give such heavy gavels, that, what with pulling them up the steep inclined plane presented by the platform when the knives are set so low, and the dragging of the tops, which droop over the short American platform, the poor raker cannot work a half-hour consecutively, and the machine is declared valueless. Hence, I say, the necessity for making different styles of tools for the two markets. But because this is necessary, there is no apology for those in England and America who stoutly deny that the farm implements of the other country avail nothing in their own, with any modifications whatsoever; for intelligent men who have seen the tools and farms of both lands know full well that each possesses peculiar implements, the principle of which perfectly adapt them to the wants of their neighbour, and require sometimes but slight alteration in detail to make them favourites. When, therefore, your farmers read these descriptions of American tools, they would do well to see if they could not be made to suit their purposes.

In the black vegetable loam of the western prairies the cast-iron ploughs used on the heavier soils of the older States will not cleanse; so in their stead the farmers use light steel breasts, that when turned off from the factory are polished bright as silver. At the western shows I saw collections of two hundred perhaps of these beautiful ploughs: the wood of the beams and handles all selected with care, sand-papered, and varnished, and I assure you it was a sight to look at. There was scarce a plough in the lot that would not make an ornament for a shop window; and then at the trials, to see twenty or more of them turning over the black soil in the most effective manner, surely would gladden the heart of Allen Ransome.

At the city of St. Louis, away from this city fifteen hundred miles, they have the most successful agricultural society and best show-grounds in the country. The Society is only four years old, and yet it offered £4,000 in premiums; and its receipts at this fair were fully as large as our national society, say £3,000. The

charge for admission is only one shilling on all the days, and no entry free is charged exhibitors, and no shed rent for anything, all being furnished *gratis* by the Society. The grounds comprise fifty acres of park-like woodland, finely set in "blue grass," surrounded by a high neat fence, which is lined with rows of white-painted stalls, with arched doors. Right fountains play continually, and mingle their waters to form a lakelet, which is stocked with gold fish; broad winding gravelled avenues lead to the several points of interest; commodious structures of brick, in different styles of architecture, are appropriated to the displays of machinery in motion, farm products, flowers, and fruits, paintings and statuary, and textile fabrics; while in the centre of the grounds, on an elevated plateau, is an amphitheatre capable of sheltering 25,000 persons. This enormous structure (which cost several thousand pounds sterling, and which is said to be larger than the ancient Coliseum) is intended solely for the exhibition and examination of stock. The plan cannot be too highly commended. At the top of a bell the wide entrance-gates at one side are swung back, and all the animals of a class are led in by their grooms. They pass around the enclosure in full view of the people. The judges (for whose accommodation a tasteful pagoda is erected in the middle of the arena) make their examinations, award the prizes, and the blue (first prize) and red (second prize) ribbons are tied on then and there. If there is favouritism shown, or lack of judgment, or malice, the voice of an immense audience reverses the decision with loud clamour. Thus, not only are fair awards, in great measure, secured, but the whole people can see all the stock without the fatigue of walking around an area of fifty acres.

This amphitheatre is peculiarly beautiful. Light pillars, with airy arches between, support a roof with a richly ornamented cornice. Circles of seats rise in tiers one above another; wide promenades at the top and bottom of the banks of seats enable one to pass to any part of the building. In the centre a level arena, strewn with tan-bark and yellow saw-dust in alternate stripes; a two-storey pagoda in the centre, with a circle of sod about it, a fountain on either side, and evergreens set here and there; while on the mast, around which the pagoda is built, the national ensign floats a hundred feet above the ground. The amphitheatre is some 900 feet in circumference. By taking a stroll through the several "halls," one can see all the implements and other inanimate objects, and all the labour of sight-seeing will be accomplished; for as to the stock, he sits at his ease, under shelter, and that is brought before him.

You may imagine what it must be to see, as I did at St. Louis, twenty or more three-year-old bulls led into "the ring" in one class. They had all been washed, and brushed, and rubbed with silk handkerchiefs, until their hair fairly glistened in the sunlight. A grand prize of £200 had been offered for the best bull, and all the strength of the Western country was called out. Mr. Alexander, of Kentucky, showed the 2nd Duke of Airdrie, a grandson of Grand Duke, and Albion, a remarkably fine son of Grand Turk; Mr. James B. Clay;

Kentucky, Fordham Duke, by Duke of Gloster; Captain Brown, of Illinois, King Alfred, by Cheltenham, out of the Bate's cow Heart's-ease, and bred by Jonas Webb; Mr. Chamberlain, of Ohio, Knickerbocker; and other leading breeders other famous bulls. At the given signal the procession entered the ring, headed by the snow-white Albion, and was greeted by shouts of applause. After careful and protracted examination the blue coronet was bound on the brow of the 2nd Duke of Aldrie, thus laying one more tribute at the feet of your Mr. Bolden.

I had the curiosity to ascertain the size of three of the most superior animals, and, in the belief that they will prove interesting to your readers, present them herewith. I feel confident of their correctness, for I made each measurement twice; I also add, for comparison, the partial measurement of Knickerbocker, and New Year Day, which were taken by the judges at the Illinois Fair.

Animal.	Albion.		2nd Duke of Aldrie.		King Alfred.		New Year's Day.		Knickerbocker.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
Throat-hatch.....	4	0½	4	2	3	11	4	0	4	0
Bristle.....	8	9	8	9½	8	9½	8	9	8	10
Girth.....	8	0	7	11	8	1	8	1	8	1
Crops.....	8	3	8	1	8	2	8	9½	8	9
Flank.....	8	4½	8	0½	8	2	8	0	8	0
Depth of flank.....	3	5	3	1	3	2½	3	3½	3	3
Width of hips.....	2	3	2	0	2	3	2	3½	2	4
Length of rump.....	2	8½	2	7½	2	8	2	8	2	8
Length.....	7	5½	7	7½	7	9	8	0	8	0
Arm.....	3	0½	2	4	2	7½	3	2	3	0
Shank.....	0	9	0	10	0	9	0	10	0	10
Hind-shank.....	0	10	0	10½	0	9½	0	10	0	10½
Stifle.....	2	11½	3	0	2	10	..	..	..	..
Length of body.....	3	2	2	10	3	1½	..	..	..	..
Rump-back measurm't.	2	2	2	2	2	3½	..	..	..	..
Hip-bone to hock ..	3	8½	3	6½	3	10	..	..	..	..
Age.....	3 yrs.		3 yrs.		4 yrs.		over 4		over 4	

* Length from behind the poll.

You will readily perceive the remarkable development of Albion's flank. He imparts the peculiarity to his calves; so much so, that at Mr. Alexander's annual sale, this year, where there were perhaps twenty calves standing in a row, Albion's could almost be selected by feeling their flanks. I have been told that Mr. Alexander proposes to show him against your best bulls at the next Royal Show. If he does you must look well to your honours.

But, for the moment, bulls and every other of our old agricultural idols have given place in public favour to the one great question of the age, and the proportions and performances of our steam-ploughs are the general topic of discussion. I have enjoyed very favourable opportunities of witnessing the several trials at our shows, and feel convinced that we are nearer the possession of an effective and simple steam-plough than yourselves. How near, I propose to demonstrate in my next communication.

H. S. O.

New York, Oct., 1859.

THE FUTURE OF SMITHFIELD MARKET.

There are many nuisances and difficulties that time alone would seem quite able to deal with. How shall we purify the Thames, or tone down the tom-foolery of the Lord Mayor's Show? What means will ensure a cabman's civility, or thin out the blockade on London Bridge? Has any really reliable plan yet been adopted for finding a policeman when he is wanted, or for keeping a coach-horse on his legs over the stones? Let us confine ourselves to metropolitan evils; for it is with one of the first of these that we yet have to deal. Perhaps there never was such a target for the satirist or the mere grievance-monger to shoot his wit at as was Smithfield Market. How bravely, too, it stood the charge! How proposal on proposal came on with the boldest of fronts, only to fall helplessly one over the other before its omnipotence! Old ladies still continued to be almost driven or frightened to death. Much-bewildered bullocks, quite strangers on town, week after week would lose their way, and, naturally enough, step into some shop to inquire. The drovers swore, and their dogs barked. The public wrote letters and the papers wrote leaders. And yet Monday morning found the same crowd and confusion, only a something worse and greater than ever. But time works wonders, and even Smithfield market at last had to acknowledge the force of the precept. The market left Smithfield, and the busy world of London turned its attention to something else.

So old an acquaintance, however, was not to be slighted all at once in this way. Although the market might be gone, Smithfield itself remained; and the difficulty sprung up, mushroom-like, on its own soil, nearly as great a one as ever. What was to be done with Smithfield? Or, rather, as the speculators put it, what was *not* to be done with Smithfield? Rumour very soon applied it to every possible purpose the ingenuity of man could hit on. One week it was to be the site of a new theatre; by the next it was to be a City parterre; or, more literally, a *Nursery-garden*. Then it was officially announced that the City Solicitor was going to transform it into the one grand Terminus of all the railways. This was afterwards as officially contradicted, and a dissenting chapel on a large scale, a range of warehouses, and a dead-meat market, each in turn was declared to be "the base uses to which we had come at last." But report, unfortunately, did little more, until at length no one appeared to think anything at all about Smithfield, or what was to become of it. Save only perhaps, when on his way to the Eastern Counties, a sportsman, as he cast his eye over so cramped a country, would think what a nice place it would be to teach a young one to go in and out clever. Or a salesman, fresh from the nipping breezes of Islington, sighed over the desolation before him, as he remembered the stroke of business he had done on that classic ground in days gone by.

And old association, after all, is hard to conquer: The very names of some places involuntarily suggest

the purposes, at any rate, to which they should be applied. Although it be true that by this the old Hay-market is but a colony of casino, café, and oyster shop, the old Smithfield Market is by no means inclined to change its skin, or lose its character after such a fashion. Smithfield Market *will* be a market still. Time has overcome even another of its difficulties. The Common Council have sat. Their Committee has reported, and the Government has consented. A congenial use has been found for the neglected desert of Smithfield, and the faithful who still linger on its boundaries have new hope and life. With a kind of retributive justice, moreover, the object to which the site is now to be devoted is, beyond all others, the abolition of a neighbouring nuisance. In a word, the north side of Smithfield is to be converted into a dead meat market, and Newgate Market is to be done away with. The latter has long been an abomination. Too close and confined to be wholesome, it has been equally injurious to buyer and seller. Nowhere is there so much bad meat as in Newgate Market, nor where, from the very inconvenience of the place, the duties of Inspectors and other sanitary officers are so seriously interfered with.

The City, as we are assured on very high authority, propose to spend something like two hundred thousand

pounds in properly fitting up the market. Sir George Lewis has signified the consent of the Government to the proposal, as well as to the rate of tolls to be levied. A plan of the market lies in the office of Mr. Pearson, the City Solicitor, at Guildhall; and the only thing now wanting is the formal adoption of the Committee's report by the Common Council. There is of course little or no question of this following, and the future purposes of the site of Smithfield Market may be looked upon as determined.

Somewhat in connection with this step are two or three projects on the part of different railways for carrying their several lines more into the heart of London. The most important line, however, as far as the future of Smithfield is concerned, will be a very short, but at the same time a very necessary one. There must be some direct railway communication between the Cattle Market at Islington and the Meat Market in Smithfield. The one certainly can never be considered perfect without the other; and they should properly be contemporaneous undertakings. If, too, the Smithfield Club is also to go to Islington, we shall have the connecting link yet further to be strengthened, and the City must not be content with half-measures. So far the scheme sounds well enough; but, to be a great one, it must be *carried out*.

THE HERD BOOKS.

COATES' HERD BOOK; containing the Pedigrees of improved Shorthorned Cattle. Volume 13th. By Henry Strafford, Buxton-square, London.

EYTON'S HERD BOOK OF HEREFORD CATTLE. Volume 4th. By Thomas Duckham, Baysham Court, Ross. Phillips, High Town, Hereford.

DAVY'S DEVON HERD BOOK. Volume 3rd. By John Tanner Davy, Rose Ash, South Molton. Longman and Co., London.

If the popularity of our three more celebrated breeds of cattle is to be estimated by the size or material of their several Herd Books, a conclusion is easily arrived at. In the autumn of this same year, Mr. Strafford issues another very bulky tome, Mr. Duckham one of far more modest pretensions, and Captain Davy a chronicle that scarcely exceeds the weight of a pamphlet. The adoption of any such a criterion, however, can only be made on certain considerations. Coates' Herd Book was an established authority long ere the others were thought of. It has, too, been well and carefully done from the first, and, moreover, proportionately well supported. The first great difficulty with it has been long since surmounted. Breeders have come to see how greatly it is to their interest that their stock should be entered in such a record; and there is no longer that hard whipping-up which might have been once so much required. In fact a shorthorn without a duly registered pedigree, has now comparatively no value. Both the home and the foreign market are equally alive to this, and a buyer's first ques-

tion is far more likely to be, "How's he bred?" than "What's he like?" or, "What's his price?" No wonder, then, that each succeeding volume of Coates' book is larger than its predecessor, or that Mr. Strafford, fairly under weigh, dispenses with further preface, and leaves his work and its component parts to speak for themselves.

Mr. Duckham and Mr. Davy, on the contrary, are still in the throes of their labour. The Hereford Herd Book, after a very short career under the auspices of its originator, Mr. Eyton, and his successor, Mr. Powell, was on the point of falling through, when its present conductor, but a year or so since, took it in hand. It is not too much to say that in so short a period he has really done wonders with the work, while his official position in connection with the agricultural society of the county must tend more and more to the completion of such a register. But the breeders hardly yet appreciate the importance of this. We were assured at the recent meeting that many herds of pure Herefords have never been entered, and that no persuasion can put their owners to "the trouble" of making a return. This indifference can eventually only tell one way. It may be very well for a neighbour to rely on another for what he wants; but, if the Hereford cattle are to increase in extent and repute, if they too, as would now seem to promise, are to have their price for exportation, they must be traceable through the pages of their own family Pedigree. This is the

great thing, and very wisely too, that the foreigner or colonist feels he has to rely upon, and it will soon come to pass that an animal that is not worth entering is certainly not worth looking at.

Captain Davy is in every way a younger man. His record has only now reached its third part, while, unlike his two brother-editors, he succeeds to no other's duty, but is himself the originator of his book. It is perhaps, only fair to add, that so well has he satisfied the breeders of Devons with what he has done, that they are now engaged in getting up a testimonial to him, as "a public acknowledgment which ought no longer to be deferred." The Devon Herd Book deals less in repetition, and generally more in compression than its fellows. This may, in some measure, account for its smaller supply of material, although a list of contributors goes of itself to show that the high-bred North Devons are in the hands of comparatively but few breeders. Still there is hope for both Mr. Duckham and Mr. Davy, as the Shorthorn volumes come more frequently and of greater size, just as the work and its object is more and more known.

Although those out of the ring may not understand it, there are no more agreeable volumes to turn over by those in any way interested in the pursuits to which they refer. The increase of our agricultural shows gives even a further zest to this kind of lore, and a man traces out the happy cross or good old strain in "the first prize," with equal amusement and advantage. It is for this that we continue to insist on the names of the successful animals being given in the prize lists, convinced, as we are, that such information conveys of itself a lesson that must otherwise be lost. There is nothing more profitable just now than the study of good blood. It comes out in all sorts of ways—in first prizes, high prices, and lasting reputations; and

we would have the gold-medal beast as well known as the winner of the Derby. The herd books, of course, give the stamp and character to all this, and it is a pleasing duty to see them each in the care of gentlemen so well qualified to conduct them. Mr. Duckham and Mr. Davy are themselves successful breeders of the sorts they represent, while Mr. Strafford, whether as an artist, and more especially as an auctioneer, is as thoroughly identified with the Shorthorns. It is said a man rarely succeeds without some innate liking for what he undertakes. In these three instances, at any rate, we have natural taste and early associations very happily directed.

Coates' Herd Book is the only one that now offers any pictorial illustrations of the breed its pages are devoted to, and this volume contains no less than a dozen portraits of celebrated animals. These include Mr. Bolden's Grand Turk, Captain Gunter's Grand Duke of Oxford, Colonel Towneley's Royal Butterfly and Rose of Towneley, and Mr. Brown's gold medal heifer, with other selections from the herds of Mr. Sanday, Mr. Torr, Mr. Chaloner, Mr. Tracey, Mr. Bate, and Mr. Duff. On the commencement, however, of the Hereford Herd Book, Mr. Byton gave four plates of animals, "illustrative of the colours usually seen among Hereford cattle." The first of these was a "mottle-face" bull, Wellington, sold in 1816 for £283 10s.: the next was a "grey," Victory, sold at two years old for £100; the third a "white-faced," Cotmore, the first prize Hereford at the first meeting of the Royal Agricultural Society; and the fourth a "light grey and white," Brockswood. Of these varieties, as is well known, the white faces are now all the fashion. But the lithographs have still their value, and serve admirably to mark the different epochs in the history of the breed.

WHAT IS TO BE DONE WITH THE FROZEN MANGOLDS.

I had the pleasure to offer some suggestions immediately after the late severe frost, relative to the best course for the further storing of the crops; the chief suggestion being to leave them alone till a renewal of growth became evident. This would be seen by small leaves showing on the top, and by the recovering of their colour within; when these signs appear, then it is safe to store all the roots so restored, the frozen or decaying ones to be left out. What then is to be done with these frosted and decaying roots? Those wholly decayed, or those very nearly rotten, are, I fear, nearly a total loss. It may be worth while to gather them daily, or as they are wanted for use, and cast them into the fold yard to be browsed over by cattle and pigs. In this way many may be consumed to advantage. Both cattle, and that not over-nice animal the pig, will feed on them, the latter voraciously, and, in connexion with meal or corn, will be found to do well. The cattle will require good dry cereal food, or hay, cut chaff, beans, or old pea straw, &c. This is the best that can be done with these very bad roots. Don't give them to sheep.

The far greater portion of the frosted mangolds are, I am happy to say, very nearly restored to their natural state; and all those growers who have been prudent and patient enough to wait, can bear good testimony to the surprising effect and the great benefit the roots have derived from the fine weather of the few weeks subsequent to the frost. For my own part I am inclined to think those roots which have fully recovered their colour and partial growth are all the better food for present use; they contain less of that watery nature which is so injurious to stock when first taken up. I had about twelve acres standing with their tops on during the frost; they were taken up last week, Nov. 9th, 10th, 11th, and 12th, and stored in graves, with every prospect of success. A few (about half-an-acre) were topped, those suffered most; they were taken up immediately after the frost, and are now in course of consumption by ten two-year-old steers, all of which are doing well; and, although they have a liberal allowance, not one of them shows symptoms of scouring. In the adjoining yard are twenty-one fatting cattle; now these

have not so many given to them; but being from the twelve acres lot, secured before the frost, nearly all of them are suffering from looseness of body, *i. e.*, scouring; in fact, to-day their allowance has been further curtailed. These twenty-one have a small quantity of hay daily; the steers only wheat straw. Is not this difference owing to the abstraction of watery particles by the action of the frost?

My counsel then is to consume those roots first which stood out in the frost, and as there is, undoubtedly, more danger of their safety in grave, by all means give them freely to all and every kind of stock now, cattle, sheep, horses, pigs; run no risk; save other food on which reliance can be placed, but make the best use possible of the damaged crop. The best roots may be selected for pulping, which, mixed with cut-chaff from

almost any kind of good straw, would make good food for young cattle. For cart horses a moderate allowance of sliced roots is best, although they will eat the pulped food with avidity and much benefit. By no means try any new scheme, such as sugar-making, brewing, &c., but let the consumption go on as fast as good judgment dictates. The graves or heaps should have ventilating holes, or a slight opening at top, to be immediately closed on the appearance of frost. Every grower will have to depend upon his own judgment; but with ordinary care and foresight, and much good contrivance, the untoward season may not prove so disastrous after all. There is a vast weight for consumption. The crops are astonishing; from 30 to 40 tons per acre is considered now but a moderate crop. The globes have greatly improved by cultivation.

REVIEWS.

THE WILD-FOWLER.

A TREATISE ON ANCIENT AND MODERN WILD-FOWLING, HISTORICAL AND PRACTICAL.

By H. C. FOLKARD, Esq., Barrister-at-Law.

London: Piper, Stephenson, and Spence, Paternoster-row.

Turning over the leaves of this volume is like opening a new page of stirring history, adorned with a brilliant pen. Unlike the generality of sporting works in which there are such overdrawn, cloudy, and fabulous statements, "The Wild-fowler" stands apart from them all, carrying with it, in every page, unmistakable evidences of fairly-drawn, clear, and truthful facts. The author modestly tells us in his preface that he is a junior Barrister of the Western Circuit; and lest his readers should imagine him to be careless of his profession, he emphatically states that he is "ardently attached to it, and delights in the toil and devotion it demands." Here, then, is his reputation staked for the truthfulness of the matter contained in his book; and this is confirmed throughout the work, by references to the authorities from which he quotes on the subjects of "ancient methods of fowling."

It is positively reproachful to the sporting *litterati* that such a fund of interesting detail should have been hitherto so imperfectly explored; it proves also that many writers upon sporting subjects write theoretically, making free use of the text of others, and, with a very imperfect knowledge of the practical part of the subjects they discuss, make up a volume, stamp it with an attractive title, and send it forth as their own individual experiences. Such impositions are soon detected by practical sportsmen. In "The Wild-fowler," however, the reader finds evidences of truthfulness in every page. On the one hand no one but a thoroughly practical and experienced wild-fowler could give us such vivid descriptions, such minute details, and explicit instructions for pursuing the sport in all its branches; and, on the other hand,

no one but a scholar and highly-gifted writer could have given them in such a fine style of composition. The historical portions of the work are in no way inferior to the writings of some of the greatest authors of the day; and the anecdotes are told with a brilliancy and liveliness of humour that cannot be excelled, and which lay open the whole proceedings of the adventurous art so clearly, that the reader almost feels himself transported to the scenes of wild-ducks, gagging geese, dreary moors, icebergs, and moonlit rivers.

In fact, the true sports and varieties of wild-fowling have never before been made known. No author has ever before attempted to write the history of this charming sport. We have hitherto remained in ignorance of the hundreds of arts and contrivances for shooting and capturing the beautiful varieties of water-fowl.

Every class of the reading and inquiring public will pounce upon this elaborate volume, and derive very much instruction and amusement from its pages. We have no hesitation in saying that it will become a standard work in every library, as well as a favourite and popular treatise with every sportsman. It ranks amongst those of the highest class of sporting literature, and will occupy a prominent position in the libraries of science and natural history.

There is so much trash published at the present day in the shape of "cheap literature," that it is quite a luxury to meet with a good wholesome volume, beautifully printed on paper of the finest quality, and illustrated with steel engravings, highly finished in the most modern style, by the most talented artists of the day.

The volume commences with the earliest history of wild-fowling, explaining from the classical authors the various modes of fowling adopted by the Greeks. The artifices of the Anglo-Saxons are also explained, chiefly from the Cottonian, Harleian, and other manuscripts in the British Museum. There is also a chapter on Egyptian fowling; then follows "the history of decoys,"

with minute details for planning and working the decoy-pipe, decoy-ducks and dog; these chapters are full of interesting detail, and upon a subject only very imperfectly understood by the general public. The flight-pond and mode of capturing dun-birds also form two highly-amusing chapters; the proceedings connected with it are very minutely entered upon, because the subject is entirely new in the literary world. By way of sample of Mr. Folkard's style of writing we quote at random from this chapter:

"During many years after decoys were invented, no means could be discovered for taking the large flights of pochards which daily and constantly frequented the decoys, to the vexation and annoyance of many an indefatigable fowler, who, day after day, raked his brain in vain to discover, by some ingenuity, a means of capturing them. The fowler saw them come and go to and from the waters of the decoy with impudent independence; they seemed to defy his efforts and ridicule his eagerness to take them. This state of things continued for many years after decoys were employed, with considerable success and profit; and it is evident that the flight-pond was not known until long after decoys had been used for taking all other species of wild-fowl frequenting inland waters.

"Throughout my researches I have been unable to trace any other original allusions to flight-ponds than those few scanty notices referred to in the introduction; from which it must have been impossible for any novice to arrive at the faintest idea of the true principles upon which the flight-pond was constructed, much less of the fowler's contrivances for taking his birds.

"Before proceeding to explain the cumbrous machinery employed for taking dun-birds at the flight-pond, it is well worth while to inquire into the reasons which must have suggested so successful a trap. The dun-bird, it is well known, cannot rise suddenly in the air as a wild-duck; but in consequence of its legs being so far back, and its wings so short, it skims the surface, and proceeds many yards at an exceedingly low flight ere it can make an ascent, so gradually rising higher in the air as the distance increases from the spot whence it first took flight. The formation of the dun-bird is adapted by nature for diving and holding itself under water, but it is ill-suited for rising quickly, or making a rapid or very lengthened course in the air. With these facts daily before him, the inventor must have felt pretty certain of the success of his project when he first reared the flight-poles; and thus spread a net which carried certain destruction to every pochard which chanced to strike against it."

There are also highly-amusing chapters on punting, and the management of punts and punt-guns, both by night and day; also wild-geese shooting in every branch. In reference to the grey-lag goose Mr. Folkard observes:

"They often alight, just before dusk, in fields of green wheat; on the blades of which they feed greedily, always taking up their position in the most central part of the field, and seldom within range of an ordinary shoulder-gun. But they are not always secure in their rural position on the farmer's fields; indeed, most farmers in the flat counties are familiar with the habits of grey-geese, and often contrive, on being honoured with a visit by these birds, to stalk and kill one or more of the gaggle with a small shoulder-piece. Cunning sportsmen have sometimes stopped six or eight of these noble birds at a shot, when a gaggle has been, unsuspectingly busy, feeding in open fields or meadows.

"Whilst feeding in small fields they are generally perfectly mute; but when disturbed, their cackling is exceedingly loud and noisy; their note is a clangulous sort of call, sounding like 'haunk!' 'hawnc!'"

The anecdotes told by Mr. Folkard of punting, and wild-fowl shooting at midnight, are highly amusing; and some are of hair-breadth escapes and perilous adventures; but wild-fowling is an adventurous art, and those who follow it up with spirit and success must be prepared to encounter, on some occasions, dangers and difficulties; more especially by night, or among drift ice and strong currents.

From the very instructive chapter on "wild-fowl shooting in the fens" we quote at some length, as it contains much interesting matter befitting our pages:

"It is much to be regretted that so few particulars of fowling have been handed down to us in histories of the fens. It is evident that wild-fowl must have delighted in such regions; and before the drainage of the Great Bedford Level they were very abundant among the swamps, lakes, and islands in that district. According to Drayton, the wild-fowl which were taken in the Lincolnshire fens (part of the Great Bedford Level) were considered of superior flavour to those of the "foggy fens" of Holland.

"These fowls, with other soils although they frequent be,
Yet are they found most sweet and delicate
in me."

Most of the species of aquatic birds formerly bred in this country, were, without doubt, hatched and reared in the fens of the Great Bedford Level, before it was drained and cultivated; indeed, so long as a vestige of fen land remained, considerable numbers were annually bred in various parts throughout the level; and this long after partial cultivation had commenced; although their numbers were greatly decreased by the progress of agriculture.

The Great Bedford Level contains a tract of sixty computed miles in length, and forty in breadth. It was originally a wooded country: the sea is supposed to have burst in upon it, and overwhelmed the whole tract, leaving a thick deposit of silt, beneath which modern excavators have discovered whole forests of firs and oaks; some of the latter, fifteen feet in girth and sixteen yards in length; many of them burnt at the roots, thus indicating the ancient method of falling timber which is adopted by uncivilized nations. Others appeared to have been rooted up by the force of the current rushing upon them.

Many years after these encroachments of the sea, and when a thick alluvial deposit had been extensively spread over the level, the Romans, with indefatigable perseverance which has never been equalled by the people of any other nation (except those of the Netherlands), raised an embankment, and thereby regained many thousand acres of land which the inundations of the sea had converted from forest into fen.

Pennant remarks that it was the complaint of Galgacus that the Romans exhausted the strength of the Britons "in sylvis et paludibus emunendis."

There are abundant evidences of these facts; and among them Roman tumuli, coins, and other relics, which were found in the immediate neighbourhood of the level.

It appears that the laborious exertions of the Romans were not immediately inherited by the Britons, for when

that industrious people deserted our island, the drains and embankments which they had made were neglected; and in process of time the sea again burst over them, when the level became a region of fens, lakes, and swamps; and so continued through many centuries: offering by far the most extensive and favoured haunts for wild-fowl of any in the kingdom; so that thousands of water-fowl thronged the district of the level at all seasons of the year.

After the inundations of the sea and embankment by the Romans, the Great Bedford level contained upwards of 300,000 acres of fen land.* In addition to which it was bounded by other extensive districts of fens, extending into the respective counties of Lincoln, Norfolk, Suffolk, Cambridge, Huntingdon, Northampton, and the Isle of Ely.

There were eight principal rivers formed by nature† for conveying to sea the waters of this extensive waste; these were the main arteries of the fens, and most of them originally united by connecting or tributary veins or streams; forming themselves at different situations into large estuaries, and thus making natural and excellent resorts for water-fowl.

Art has long since changed the current of these tributary streams and estuaries, so that scarcely a trace can now be found of the original works of nature.

These extensive tracts of land, in their wild and uncultivated state, abounded with game, were studded with lakes, and afforded admirable scope for the sports of the field.‡ Such a country, as might be expected, was far better adapted to those pursuits than the regular operations of husbandry. The opportunities it afforded for enjoying the pleasures of hunting, fowling, and fishing were unrivalled.

"The abundance then is seen, that my full fens do yield,

That almost through the isle, do pester every field."

Whittlesea Meer and Ramsey Meer were two of the largest pools in the fens; the former was especially celebrated for its great variety of water-fowl and abundance of fish.

It was strongly urged at the time of the proposal for draining the Lincolnshire fens, that the scheme, when carried out, would drive away the feathered and finny occupants of the meers, and spoil both the fowlers' and fishers' sport. A bold standing in behalf of these two classes was made, in opposition to the promoters of the undertaking; when the defence was, that there were many meers and lakes which would be left in their original state; that the fish and fowl preferred rivers and channels to wide-spreading waters, and that the additional number of such receptacles would tend to the greater preservation and increase of fish and fowl, rather than the extermination of them.§

Previous to the drainage and cultivation of the fens, Lincolnshire was termed the aviary of England for

wild-fowl;* and that county, conjointly with Cambridge-shire, was the best of all for fen-bird shooting. These were the falconer's and wild-fowler's first and favourite places of resort. Their best sport was to be found in the wild and impenetrable swamps and dykes of those counties. Thousands of wild-fowl used annually to be bred among the bulrushes, sedges, and reeds which abounded in those parts, and formed the very strong-holds and nurseries of the aquatic species; and whilst fens and moors remained as nature left them, the numerous and beautiful varieties of waterfowl revelled in the luxuriant feedings of such sequestered spots, which seemed specially planned by nature as the habitations and breeding haunts of bird, whose home, whose resting-place and subsistence are on the waters and in the fens and moors. In those days their greatest enemy was a species of rapacious bird, which is alluded to by Pliny as haunting lakes, fens, and standing waters for the purpose of preying upon water-fowl. But now there is scarcely a moor in the land, and only a few fens, but such as have been drained and cultivated to such an extent as to have seriously injured, if not completely uprooted and destroyed the retreats of the aquatic species.

Thus the sportsman learns with regret, that whilst the greedy agriculturist has attained his ends, and converted many thousand acres of swamps and fens into arable and meadow land, such conversion has only been attained at a partial sacrifice of one of our most healthful and interesting sports, and the driving from our shores of a variety of the largest, rarest, and most beautiful and useful of the wild feathered tribe.

* * * * *

A sportsman living in the country of moors and fens, near the sea-coast, may even at the present day have sport without end, and wild-fowl shooting, in severe winters, to his heart's content; provided he takes that delight in the sport which will incur the necessity of early rising, with energy and indefatigable exertion.

Many and many are the pairs of duck, mallard, and teal that I have brought down with the shoulder-gun before daylight, when there was only just sufficient light to see an object clearly enough to shoot it; and without knowing, until my dog brought it to my feet, what species of fowl it was.

The secret of success in this branch of our pastime is to rise early, and be at the most likely dykes just at dawn of day. The sportsman should move on briskly from one dyke to another; and if there be any wild-fowl among the sedges or reeds, and the dyke not very extensive, they will rise without the assistance of a dog, or any extra alarm from the sportsman; whose object should be to pass on quickly, that he may get as near to his birds as possible, and be the more certain of killing.

This kind of wild-fowling, when the birds are moderately abundant, is an enviable sport; and they may be considered tolerably abundant when a sportsman is able to kill, on an average, four or five pair a week. The sport is unequalled by any with dog and gun; but success depends mainly on the time chosen for the walk. The sportsman should be on the moor, of a morning, as soon as he can see an object in the air with sufficient distinctness to knock it down.

The beauty of this kind of sport is, that whilst walking the moor, there are also fen-birds of various species to be met with, to say nothing of the numbers of snipes; and when the sportsman has tried all the ditches for wild-fowl without success, and day-light has risen upon him, he need not return home with empty pockets. He has nothing to do but draw the large shot from

* Well's History of the Drainage of the Fens: 1830.

† *Ibid*, p. 6.

‡ *Ibid* p. 55.

§ "As for the decoy of fish and fowl, which hath been no small object. agst. this public work, there is not much likelihood thereof; for, notwithstanding this general draining, there are so many great meers and lakes still continuing, which be indeed the principal harbours for them, that there will be no want of either; for in the vast spreading waters they seldom abide, the rivers, channels, and meers being their principal receptacles; which being now increased, will rather augment than diminish their store."—*Dugdale on Em-banking*: A.D. 1772.

his gun, put in smaller, and go in search of snipes and plovers."

Among many other interesting details, the various modes of shooting and capturing fen-birds, snipes, and woodcocks are explained, together with the curious artifices of wild-fowling employed in foreign countries.

In conclusion, we simply ask our readers to compare Mr. Folkard's work with that of Colonel Hawker, or indeed with that of any other author who has attempted to describe the art of wild-fowling; it is by comparison with such works that the merits of the author may be traced, and the pages of "The Wild-fowler" appreciated.

ROUTLEDGE'S ILLUSTRATED NATURAL HISTORY. PART VI.

By the Rev. J. G. Wood, M.A., F.L.S., &c. Author of *Anecdotes of Animal Life*, &c.

With new designs by Wolf, Harvey, Weir, Coleman, &c.
London: Routledge and Co., Farringdon-street, and New York.

This is a well-written, amusing, and instructive work, the author of which is well known as a naturalist of extensive acquirements and mature judgment. The present part is chiefly taken up with the history of the dog in all its varieties, the engravings of which are faithful and spirited representations of the originals. Mr. Wood justly considers the parent stock of the dog a very doubtful question. Like that of the cereal plants, it must be traced up far beyond any period when an original type can be identified. That there are, and always have been, wild dogs in many parts of the world, is not to be disputed. But both the fox and the wolf, to which some naturalists have referred the origin of the dog, have characteristics and instincts entirely different from that animal; and the unconquerable enmity between it and the wolf is a strong proof of their separate descent. Nor can we, when reflecting on the wide differences in the various breeds of dogs, believe that they all owe their origin to one stock. Be this as it may, the dog is in every country the friend and companion of man, and to his master displays an attachment which ceases only with life. Mr. Wood's work brings out the characteristics of the various breeds of dogs, as well as of other animals of which it treats, in a pleasing and lively manner.

BRITISH FERNS AND THEIR ALLIES: an Abridgement of "The Popular History of British Ferns," and comprising the Ferns, Clubmosses, Pepperworts, and Horsetails.
By THOS. MOORE, F.L.S., F.H.S., &c. Author of several works on Ferns, &c. Illustrated by W. S. Coleman.

London: Routledge and Co., Farringdon-street, and New York. 1859.

The cultivation of this beautiful tribe of plants has been deservedly fashionable since the invention of Ward's glass cases, which has introduced them into the drawing-room. But independent of this, their extreme elegance of structure and the ease with which they are cultivated, have made them favourites with many persons whose taste for vegetable life does not include a knowledge of botany. To those, however, who have studied that branch of science, the ferns, in all their varieties, possess characteristics of great interest, independent of their beauty of conformation. It is, however, to the former class of readers, or to the student of botany, that Mr. Moore's present abridged work is chiefly adapted, as an introductory essay; and to such we recommend it as an instructive and entertaining epitome of the history of this elegant tribe of plants.

THE JOURNAL OF AGRICULTURE, AND THE TRANSACTIONS OF THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND. (October Number).

Published on the 1st January, 1st March, 1st July, and 1st October.

William Blackwood and Sons, Edinburgh and London.

This present number contains several useful and interesting

papers. One on Maritime Pisciculture is quite new, and deserves particular attention, as bearing on a subject little understood, but involving an abundant supply of wholesome and delicious food. A letter on "Steam Culture," which is an exposition of Halkett's System of Guideway Steam Agriculture, will be found of importance to landowners who are desirous of making the most of their property. Two papers of "Notes;" the first on the Warwick Meeting of the Royal Agricultural Society of England, the second on the Agriculture of the Netherlands, &c., by R. S. Burn, will be found interesting. A paper by R. Russell, F.R.S.E., on the Absorbing Powers of Soils, &c., contains valuable information, as does also one by H. Tanner on "The Manure of our Farms," in the Transactions. The character of this periodical is fully sustained by this number, both in a scientific and a practical point of view, and it will be read with interest and advantage by those with whom the progress of agriculture is an object of national or a subject of individual importance.

BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

A meeting of the Council was held at Taunton on Saturday, Oct. 29. Present: J. Silfiant, Esq., in the chair; Messrs. T. Acland, Drewe, Daw, Moysey, Jonathan Gray, John Gray, Pitman, C. Gordon, Pitts, Hooper, Archer, Langdon, Knollys, T. Newman, Badcock, Danger, J. Hancock, Farrant, G. Harbin, Hussey, Wippell, Pool, Captain Tanner Davy, and Captain Adair.

The minutes of the last meeting and various communications were read; among the latter a letter from the Mayor of Truro, inviting the Society to hold its meeting in the town of Truro in 1861, stating that a public meeting had been held at Truro, at which it was unanimously resolved, "That this meeting, believing the exhibitions of the Bath and West of England Society to have rendered the most important services to agriculture in all its branches by affording ample opportunity for the full trial and consideration of all recent improvements, is anxious that Cornwall should avail itself of the earliest opportunity of participating in those advantages."

Mr. ARCHER explained that the county of Cornwall had taken up the matter warmly, that in round numbers £1,200 had already been collected, but the local committee expected to raise £2,000. £700 of this is already subscribed by the inhabitants of Truro. The Royal Cornwall Agricultural Society have voted £150 in addition—the remainder is made up by private subscriptions. Mr. Whitley is appointed Secretary to the Local Committee.

After some discussion on the motion of Mr. Daw, seconded by Captain J. T. Davy, it was resolved "That the meeting of this Society be held at Truro in the year 1861, provided the deputation of this Society, who will visit Truro at an early period, make a report satisfactory to the next meeting of this Council;" and "That a letter be written to the Mayor of Truro, transmitting this resolution, and thanking him for his courteous application," and informing him that a deputation, consisting of the following gentlemen, will visit Truro on the 16th or 17th of November:—

Messrs. Silfiant, Acland, John Gray, Jonathan Gray, Gillett, Pitman, Poole, Gordon, Walrond, Newman, Neville Grenville, Langdon, Badcock, R. Smith, Widdicombe, Harbin, Moysey, Archer, Knollys, and Captain J. T. Davy.

It was resolved, "That the Secretary communicate with the Mayor of Truro, enquiring whether the 16th or 17th of November would be the more convenient day for the deputation to visit the sites for the proposed meeting in 1861.

Lord Falmouth was elected a member of the Society.

DEATH OF MASTER BUTTERFLY.—We regret to state that the celebrated shorthorn bull, Master Butterfly, which it was intended should have been exhibited at the show at McEaw's Bazaar, on Thursday, died on the road to Melbourne, on Tuesday last. It will be remembered that this

splendid animal was imported to this country in 1856, having been purchased by his late spirited owner at Chelmsford, Essex, in the show-yard of the Royal Agricultural Society, from his breeder and then owner, Colonel Towneley, of Towneley Park, Lancashire. Master Butterfly had, in that year, made a clean sweep of the first prizes at every show at which he had been exhibited in the United Kingdom, and also at the Paris Universal Exhibition, and besides was awarded the first prize as a two-year-old at the Chelmsford show. The price received for him by Colonel Towneley was 1,200 guineas, the largest sum on record as ever having been

given for a bull of any breed.—*Bell's Life in Victoria*.—[A portrait of Master Butterfly appeared in "The Farmer's Magazine" for April, 1856, four months previous to his sale at Chelmsford, and on the strength of his having been the first prize of his class at both Lincoln and Carlisle. He was by Frederick, out of the famous Butterfly by Jeweller. It will be remembered that at the Warwick meeting this year the Australians, through Mr. Robert Smith, offered the same price of twelve hundred guineas for an own brother to Master Butterfly. The Colonel's representative, however, asked and held out for two thousand.—Ed. F.M.]

THE ALMANACS FOR 1860.

JOHNSON AND SHAW'S FARMERS' ALMANAC AND CALENDAR. Edited by Cathbert W. Johnson. Ridgway, 169, Piccadilly.

MORTON'S NEW FARMERS' ALMANACK. Edited by John C. Morton. Blackie & Son, Warwick-square.

THORLEY'S FARMERS' ALMANACK. Edited by W. Burness. 77, Newgate-street.

THE WEATHER ALMANAC. Edited by Orlando Whistlercraft, Barton, Ipswich.

PEAT'S FARMERS' DIARY AND ACCOUNT BOOK. Edited by David Peat. Thirsk.

THE ILLUSTRATED ANNUAL REGISTER OF RURAL AFFAIRS. Luther Tucker and Son, Albany, U.S.

The gentleman who, in one of Coleman's comedies, refers in his song to the peculiar aptitude his father evinced in compiling an almanac, must by this have surely regretted that he had not himself followed so profitable a profession. If we only take the number of these annuals now issued, the endless variety of class readers they are addressed to, and the circulation they enjoy, nothing would promise to pay better. Of course a considerable proportion of any such advantage is arrived at by rather an indirect means. One calendar will advise you not only as to the day of the week or month, but even go on to say where you may obtain a good pair of cheap trousers. Another will introduce itself perfumed like a milliner, and imbuing every day in the twelve months, be it either whole holiday or black Monday, with couleur de rose, and bouquet à la Jockey Club. A third, taking a far more sombre view of things, pathetically associates the fleeting of another year with the economic rates at which funerals can be performed. A fourth, on the contrary, encourages us to live on, disinterestedly recommending not only what we should eat ourselves, but what even to give to our horses and cattle; while a fifth has a wondrous hair-oil to rub in, a gallon of whiskey to drink, a prime cigar to smoke, or some other as efficacious a plan for putting old Time back a notch or two instead of on. In fact, it is rather a difficult matter to define where the information of an almanac ends and the advertisement begins—that is always excepting our old acquaintance, Johnson and Shaw's Farmers' Calendar. The peculiar character, indeed, of this almanac is its clear division into two parts, entirely independent of each other. In the first you have all the data and detail of such a guide, admirably adapted to agricultural purposes; and in the next an almost complete catalogue of everything the farmer may require in the prosecution of his business. Never was an advertisement sheet so judiciously arranged; and never would such a means seem to be so serviceable to either buyer or seller. It is not every body that cares much for this kind of reading; but in an every-day book, like

the almanac, this second division of the work reaches to a far higher standard than that of the mere puffing of wares or persons. The part opens, for instance, under the authority of the Royal Agricultural Society, the Smithfield Club, and the Central Club, each with a page of prospectus. And then come in due order all the great implement houses, with all they are famous for. Few, however, of our readers will ask us to dwell on the merits of *The Farmers' Almanac*, distinguished as it now must be from a younger contemporary, *The New Farmers' Almanac*. The latter is necessarily very much on the same plan as the original, although of course not as yet with its weight or influence. Either culls with care from the discussions of the past year, as something of a guide for the next. Each is alike diligent in reminding us when wheat-sowing is to be finished, turnip-hoeing to be attended to, and manure to be applied. The proceedings of the several societies and clubs are in turn referred to, and Johnson and Shaw in particular contains a long list of Agricultural Associations and Farmers' Clubs, not a tithe of which, we fear, are at present in actual existence. These need very strict revision. Mr. Morton attempts little in this way, beyond availing himself of our list of Meetings to Come.

Another new annual offering trenches very closely on the advertisement direct. Of course Thorley's Almanac abounds in directions for the management of stock, and when the famous food may be advantageously administered. This, like the chorus to the drinking catch, would appear to be

Every day in the week, I think,
Why should I have but one day?

Still the main object is very nicely disguised, and Mr. Burness has contrived to weave in a good deal of useful matter with the more important points of what is to be done with a horse when he is out of sorts; or how a sheep should be prepared for market. A very lively bull calf and a highly ornamented horned ram figure amongst the signs of the zodiac, in fitting illustration of the general purposes of Mr. Thorley's text word. They remind one strongly of those well-fed animals we meet with so continually at railway stations and on way-side walls.

But a man of business wants even something more than an almanac that can tell him how to clean a crop, or feed a beast, or buy an implement. He must have a work of his own; and Peat's Diary and Account Book is becoming deservedly established. The simple system of its entry is excellent, while its few divisions really seem to be all that are required. No farmer need be afraid to encounter it, and almost every one might be the better for using it. The Diary this year comes out under the countenance of Lord Carlisle; a dedication very handsomely and properly permitted—that is, if dedications did ever

mean anything at all, a point which the world is coming more and more to question.

We have received only just in time to add to our list the Weather Almanac, and Tucker's American Register. Mr. Whistlecraft, the compiler of the former, has already a weather-wise reputation in Suffolk, that he is

now trying to increase by vaticination in the manner of the once-illustrious Mr. Murphy; while the American work is carefully edited, nicely printed, and profusely ornamented with wood engravings. At "twenty-five cents" it should be both a credit and a profit to its producers.

THE WINTERING OF YOUNG SHEEP.

The defective quality of the Swedish turnip crop has of late years induced many growers to substitute man-golds, kohl rabi, cabbage, &c., &c.; common turnips in every variety, and coleseed (rapeseed) yet occupy a large breadth as a fallow crop; but complaints are made of their quality as healthy feeding crops. I should be the last man to speak in disparagement of artificial manures, or hint a doubt as to their healthy applicability in producing those beautiful and bulky crops everywhere to be seen, and wholly owing to their influence upon the soil and plant; but there is something unaccountable in it after all. Plain practical men like myself readily discern that their young sheep do not thrive so fast and so well on crops thus artificially raised as upon those raised from faldyard dung. It is the same with turnips as with coleseed. I should like to see an analysis of these crops, to show us the chemical properties discovered in each variety, grown under both orders of culture. It is manifest that the bulb of the turnip and the plant of the coleseed do imbibe some quality from the soil or manure, in the one case differing from the other. It is either something deleterious to the young stock, or the absence of nutrition, or other of those fattening or growing qualities which we look for in such crops, gluten, starch, phosphates, &c., &c.

Now, in these modern times we require to be informed upon these points, in order that our artificial food may be so applied as to counteract any injurious tendency inherent in these crops. In fact, it is absolutely necessary. There can be no doubt upon the point. Young sheep fed upon these artificially produced crops require a different treatment to what would be requisite if fed from crops produced by well fermented farm-yard manure. This is my reason for once more taking up this oft-repeated subject.

In cases of this kind we must judge from analogy. The chemical analysis is not before us. From what cause our young sheep suffer we do not know; but we do know how they are most injuriously affected. They do not grow, or at most very slowly. Why is this? The chemist would tell us, "Your food is deficient in those elements which constitute bone; you want phosphates, chalk, starch, lime, &c." Well, then, give food containing these ingredients. Bean-meal, pea-meal, oats, &c., cut chaff from barley, oats, or wheat straw; all the pea and bean straw they can eat. A moderate feed of linseed cake will aid much in any case; but they don't thrive "just where they are for weeks together." The chemist again tells us, you require gluten, sugar, starch, albumen, &c., &c.; give in addition to the above, meadow hay, clover hay, and straw in abundance, you cannot do better; but do it, or your young flock will soon go wrong. The quantities to be given must be in accordance with good judgment. For lambs or hoggetts from half-pint to a pint measure of bean or pea-meal is a fair allowance daily; three-quarters of a pint of oats is a good allowance daily, and half-a-pound of the best linseed cake is a good feed early in the season, to be increased to one pound as spring approaches. Cut chaff *ad libitum*; straw ditto. Bean and pea-straw contains a great proportion of lime. This, if possible, should be

allowed liberally. By close attention to these suggestions much loss will be avoided, and a great good will be obtained. It is so very provoking to see a beautiful lot of well-reared lambs gradually dwindling or "wasting away," and many, no doubt, dying from the unhealthy food they are feeding upon, although to all appearance very suitable. It ought to arrest attention, and should stimulate breeders to renewed care and exertion to provide against these no uncommon contingencies. The present season has added much to our difficulties. The severe frosts have greatly injured every kind of vegetable food, and unless artificial remedies and preventives are resorted to, much loss of young sheep stock must ensue. "To be forewarned is to be forearmed."

Young sheep should be placed at winter-keeping early in the season. The best of the grass and clover eddishes being sufficiently depastured by these young sheep (i. e., weaned lambs), they should be turned over to the ewe flock at the close of September, and the lambs turned to their winter-keeping. On no account should this be deferred later than the middle of October. It is true they will at first be very chary in taking to this change of keeping, but the longer it is deferred the later are they in getting habituated to it, and if very cold rains or severe frosts and snows set in, they suffer greatly; but if they have laid well hold of their keeping, and fill themselves satisfactorily, it is not a little stormy or unfavourable weather that will do them much harm. If they fill themselves well with good turnips or coleseed, and with these receive good rations of cake or corn, they will defy the storm: the food sustains their warmth. When first put upon this winter keeping it is very desirable to take them off occasionally, and put them into a "fall-back" (i. e., field of stubbles or grass, or, what is better, old over-eaten eddish) for a day or two. They then empty themselves of the rich "colicky" food, and the return to a good stomachful of old grass, or the weeds, &c., of the stubble field, does them essential service. Prior to their leaving the eddishes in the first instance, they should be taught to eat cake and corn, as this is a mainstay to them on their great change from grass and clover to "cole and turnips." The sheep will generally do best on coleseed by having a large range; indeed it is customary to stock the whole field. This is, however, a very wasteful expenditure of food. The better practice is, to give them first a moderate-sized fold, sufficient for their service, without trampling it down speedily; afterwards, as it becomes eaten tolerably close, let them have an ample daily allowance, but no more. In consuming the common turnip crop a daily supply is also best; and it is a good practice to keep a good allowance of sliced turnips in troughs, to which they can resort at pleasure. In consuming the Swedish turnip crop all should be sliced; and the cleaner they are made before slicing the better. The shepherd should be continually with them, to administer the food at regular times. The cake and the corn should be given the first thing in the morning, and the last at night. It is a warm soporific at night, and a dry astringent in the morning. The al-

lowance of straw should be great; and if stacked in the field as a shelter, all the better. As they increase in size their rations of corn or cake should also be increased gradually. Dry lairage is of most essential importance to their well-being; and should this be found an impossibility in the turnip field, they must at once be removed to some dry locality, and their food be brought to them. It is far better to do this immediately that it is thus ascertained, rather than wait till cold and inflammatory symptoms unmistakably appear. I have occasionally taken mine into fold-yards for a day or two in the most inclement of seasons. Some individual animal or other has derived benefit from it.

Judgment, good judgment is the main qualification in a flockmaster: he will find abundant scope for it in every winter. If the sheep do not thrive satisfactorily, he must of necessity resort to the best artificial aid he can command. It is absolute folly not to keep them well. On the contrary, in a fine beautiful season like the past week they may progress too fast. He must now be doubly watchful. If they become lazy and sluggish a little exercise will do them good—a slight walk only. Should symptoms of repletion occur, he must resort to bleeding at the nostrils and the administration of diuretic drinks and a change of food.

THE FAILURE OF THE CENTAL.

Some time since, the attention of our readers was directed to the question of an uniformity of weights and measures, which, it was expected, would have occupied the deliberations of Parliament in the then approaching session. But the struggles between the "ins" and the "outs" were so strong, and absorbed in their consequences so large a portion of time, that it was impossible so comparatively trifling an affair could be attended to, when matters of far greater moment were, from sheer necessity, held in abeyance. Now, however, when we trust there is the appearance of a more settled session, and we hope less of party agitation, it is probable time may be found for introducing a measure for settling this vexed question in a satisfactory manner, and a universal standard of weights and measures agreed on for the whole United Kingdom.

Since the subject was last agitated in this journal, the committee of the corn trade in Liverpool (rather rashly, we think) took the matter into their own hands, and established the cental on the corn market of that city, in the sale of all kinds of grain, flour, and seeds. By these means—as they could not enforce the system beyond their own precincts, and it was not adopted by any other market—the Liverpool corn-dealers found themselves completely isolated, being compelled by their own by-law to adhere to the cental, whilst they were equally compelled to purchase *anyhow* at other places, according to the local customs and usages of the market. Whether the Liverpool merchants conceived that their weight in the kingdom was great enough to ensure the enforcement of their example, or expected that the excellent working of the cental in their market would convince the gainsayers, and recommend the system to the whole trade of the kingdom, we cannot tell. Certain it is that they have been disappointed; and after a year's perseverance in the endurance of inextricable confusion, have been compelled to abandon the plan, and resort to the old imperial bushel, or that of 70lbs., as before.*

A letter has been sent us from a member of the Liverpool Corn Association, announcing the fact of failure of the cental, and proposing the universal sale of corn, nominally by the imperial bushel, but really by weight, the standard being "60lbs. for wheat, 50lbs. for barley, and 40lbs. for oats; other grain and seeds to be regulated with equitable care. By these means the name of the imperial quarter will be preserved, known as the

British standard in the sale of grain, as also for freight, all over the world." We have before stated that, as far as the corn trade alone is concerned, it matters little whether the plan to be adopted is that of the cental or of the imperial bushel. There are advocates for both systems; but we believe, if it were put to the vote, the latter would be carried by a large and overwhelming majority. On the other hand, however, the advocates of the cental look forward to the time when the decimal system will force itself upon the legislature, which the return to Europe of Sir John Bowring, the most strenuous promoter of that system, will cause to be agitated. Assuredly the endeavour will not be confined to the coinage alone, but will, by a comprehensive measure, be made to embrace the entire mode of trade and commerce of the United Kingdom, with a view of abolishing all the old weights and measures, and enforcing the desired uniformity. It is a question, therefore, whether it is judicious, with such a prospect before us, to agitate an isolated portion of the trade for procuring a measure which may be abrogated when the whole system of commercial and monetary transactions comes to occupy the attention of the legislature. The only argument in favour of the present Liverpool plan is that the corn trade itself is an isolated or distinct branch of commerce, and that its settlement would not interfere with arrangements for applying the cental to every other branch. Certainly, if this were not the case, the monstrous discrepancies and absurdities in the traffic of corn would have materially affected our prosperity. But notwithstanding we have a different weight or measure in almost every market for the sale of corn, other trades and markets having a regular and uniform standard have gone on prospering, whilst a corn-merchant is compelled to serve an apprenticeship in every market he frequents before he is able to cope with the local anomalies he has to encounter.

It is to be feared that the hasty attempt of the Liverpool merchants to establish the cental, without reference to the other markets of the kingdom, will do more than disappoint themselves; and that the unsuccessful experiment will endanger the speedy settlement of the question, by affording the opponents of a change a vantage ground they did not previously possess—an instance of failure. This, however, ought not to be the case; for although the Liverpool corn-merchants have failed to establish the principle of the cental on their own market, it by no means follows that a change is not needed, or that the system adopted was not a good one. On the contrary, the necessity of the change is as apparent as ever; still more that of the most stringent measures for enforcing whatever law may be adopted by the legislature, and for punish-

* It ought to be stated that this refers to the Committee of the Corn Association as an institution only, and not to individual merchants; one of the most influential of whom, Messrs. Bidyard and Co., still adheres to the cental in the purchase and sale of wheat only.

ing every infraction, so as to compel that uniformity which is so desirable throughout the United Kingdom, but which is at present set at defiance by the upholders of the ancient customs and usages.

In conclusion, we would repeat what we said on this subject last year, and strongly recommend the leaders of the agricultural interest to direct their earnest and immediate attention to this subject. In the preparation of a bill, and its introduction into the House of Commons, they are sure to have the sanction and support of the county members, which, in a matter not involving any political principle, would carry the support of the Government. As respects the corn trade, we believe the great body of those concerned see the necessity of, and are prepared for, a change; and the only difference of opinion lies between the advocates for the imperial bushel and those for a standard of weight. It is probable that the former exceed the latter; but we would advise them to reflect upon the possibility of the adoption of the decimal system, in which case the corn trade, as well as every other, would be included in the change, and the imperial bushel consequently be done away with. The first step, however, should be another Committee to hear evidence on either side, and to report in accordance with what would appear more sensible and *feasible*.

CHESTER ROOT SHOW.

For some long time past, Mr. Chivas had felt that an exhibition of farm roots would be productive of benefit to the Cheshire farmers, and accordingly he made arrangements for carrying out that idea. He advertised his intention, and requested exhibitors to contribute specimens of their root crops, to the best of which prizes would be awarded, supplied by the private purse of Mr. Chivas. In answer to such invitation, a number of Cheshire farmers sent roots, and even from Surrey specimens were sent; but the interest evinced only succeeded in making up 85 entries. These were neatly arranged in the Corn Exchange, and on Wednesday and Thursday the public were admitted to the show. Many of the specimens were particularly fine, especially of mangold wurzel, and in turnips some rare produce was shown. The attendance of visitors was very small, scarcely any interest being awakened among any but the actual exhibitors themselves. Mr. Chivas was confined to his home by illness, but the arrangements were efficiently carried out by Mr. Weaver. The judges were Mr. Wm. Hassell, Bubney, Whitechurch, and Mr. Henry Maddock, Sealand, Chester, who awarded the following prizes:—Class 1, swedish turnips: For the best six roots, £2, John Parry, Dunham-o'-the-Hill; second best, £1, Sir R. W. Bulkeley, Baron Hill, Beaumaris; commended, Joseph Parry, Westwood, Kelsall. Class 2, common turnips: For the best six roots, £1, Thomas Atherton, Speke, Lancashire; second best, 10s., Henry Mowbray, New Hall, Neston; highly commended, George Mangles, Givendale, Ripon; commended, William Palin, Stapleford Hall, Tarvin. Class 3, orange jelly turnips: For the best six roots, £1, W. Beecroft, Upton, Chester; highly commended, Marquis of Cholmondeley. Class 4, long wurzel: For the best six roots, £2, James Ball, Norley, Frodsham; second best, £1, Hon. T. P. Lloyd, Pengwern, Flintshire; commended, W. Roberts, Eyton, Denbighshire. Class 5, globe wurzel: For the best six roots, £2, Hon. T. P. Lloyd, Pengwern, Flintshire; second best, £1, J. H. Broadbent, Sealand, Chester; commended, Joseph Parry, Westwood, Kelsall. Class 6, carrots: For the best six roots, £1, St. John Charlton, Apley Castle, Shropshire; second best, 10s., Col. the Hon. Thomas Cholmondeley, Abbot's Moss Hall, Cheshire; commended, ditto. Class 7, potatoes: For the best six roots, £1, George Mangles, Givendale, Ripon, Yorkshire; second best, 10s., James Collinge, jun., Kinnerton Lodge, Flintshire; highly commended, James Collinge, jun., Kinnerton Lodge, Flintshire. —*Chester Chronicle*.

MOPS AND STATUTE FAIRS.

An influential meeting, convened by Lord Lyttleton, Lord-Lieutenant of the county, in compliance with a numerously-signed requisition from the clergy, gentry, agriculturists, and other inhabitants of Worcestershire, was on Saturday, Nov. 12th, held at the Shire Hall, Worcestershire, to adopt measures for the suppression of mops and statute fairs, and the substitution of a better mode of hiring servants. Lord LYTTLETON occupied the chair.

The noble CHAIRMAN explained the object of the meeting, and said that he was strongly in favour of the establishment of a society, with a working committee of management, whose duty it should be actively to promote this object, to manage details which were known to be difficult, and carefully to watch the working of the registration offices.

Sir JOHN PAKINGTON moved the first resolution, to the effect that the present system of mops was not conducive to the interests of masters or servants, and that an alteration or amendment of the practice was most desirable, expressing his conviction that statutes or mops, without answering the useful purposes for which they were intended, brought about a considerable degree of evil and mischief. The abolition of statutes, he believed, would not be injurious to agriculturists; they were a clumsy and inconvenient contrivance to effect what might be much better done without them; and he could not disbelieve all that was told him from every quarter with reference to the very demoralising tendency of these statutes. Indeed, it was a well-known fact that bad and infamous characters were in the habit of attending them, to impose on the employers of labour, and to inflict great moral injury on those who came to be hired. Only two arguments in their favour had been alleged; first, that there was a necessity for continuing such gatherings to provide labour for those who were in search of it. But surely it was possible to devise some other mode, equally good, but free from the evils which attended statutes. The second was that it was hard to deprive the labouring classes of their holiday. Now, the promoters of the present movement were as anxious as any could be not only to preserve, but to increase the innocent recreation of the labourer. If holidays were desirable, as no doubt they were, other arrangements might be made to afford them that enjoyment in an innocent manner, free from the great and manifest evils of statutes. The question lay in a nutshell; and he left it to those who followed him to show that by some system of registration the object of the employers of labour might be attained on the one hand, and on the other that great benefit might be conferred on the peasantry of the district.—Mr. B. HALL seconded the resolution, which, as all the others, was unanimously carried.

Mr. CURTIS moved a resolution for the establishment of registration offices in Worcester, and such market towns as were convenient, and entered at some length into the practical evils of mops.—Mr. J. WALKER seconded the motion.

Mr. GURST proposed the establishment of a Worcestershire Servants' Registration Society, which was seconded by Mr. T. TRINDER; and the other resolutions for the appointment of a committee, &c., were moved and seconded by the Rev. J. PEARSON, Mr. J. LITT, Sir E. LECHMER, and the Hon. F. LYGON. After a vote of thanks to the noble Chairman, the business terminated.

A HUNTSMAN'S VIEWS ON DRAINING.—“Will Danby is quite a key to Yorkshire hunting history; but tiles have, of latter years, become his thorn in the flesh. ‘This draining, as he emphatically observed to us, when we took counsel with him near the Hurworth kennels, ‘is just the ruin of scent; I wish they'd be done with it; when I was a boy, we could hunt from morning till night.’ He was born near Hornby Castle; and the ruling passion with him was strongly fostered at fourteen, when one of the farmhouses, included in his father's lease, was converted by the Duke of Leeds into a kennel for his hounds. This was the crisis of his fate, and henceforward he devoted his attention much more to helping the feeder to walk the hounds about, than to grounding himself in the elements of agriculture. His expressed views on drainage would, in fact, have militated so strongly against his advancement, that it was well that he established himself in the good graces of Kit Scalfie the huntsman, and found a more genial outlet for his energies.”—“*Silk and Scarlet*” by “*The Druid*.”

CALENDAR OF AGRICULTURE.

Plough stubbles and leys for Lent crops; in fresh weather repair old fences and make new ones; continue the cutting of drains so long as the weather allows; mend roads, and cart up earths for making composts. Collect for manure, in some shape or form, all earthy and vegetable substances that can be got.

Flood meadows, and lay dry occasionally.

Cut underwoods, and fill up vacancies by planting and layering; plant all kinds of forest trees, especially ash and oak; keep plantation fences in good repair to prevent trespassing, a very sure mark of slovenly management. Raise turnips, and store the bulbs in dry fresh weather; give the tops to young cattle in the yards, and to the store sheep in the fields.

Early lambs will be dropped during this month in some localities. Feed the ewes very amply, and provide good shelter.

During frosty weather thrash grains very frequently, and litter the yards very often. Collect earths for the compost heaps, and carry lime to be mixed with the earths. Cart stones to the places required for draining: carry fuel, timber, and faggots.

This being the first month of winter, the proper arrangements must be made for a systematic management in every department of the winter operations. The live stock require a vigilant and unremitting attention in being amply and regularly

fed, and in having a dry and comfortable bed in the yards and sheds. Keep the steamer in constant work, and give cooked food daily to the work-horses, cows, pigs, and poultry. Give it fresh, and without any sourness. Give to the cattle the turnips from the store pits; but in fresh weather bring the roots daily from the fields. The drains and culverts must be all in good going order, to conduct the urinary liquids to the tank. The cattle in the yards should eat under cover, especially in high cold latitudes. This purpose may be easily effected, by having the whole area of a farmery roofed over, like the terminus of a railway. This subject has not yet received the due consideration.

The crops of grain, the animals, and all moveable articles, being the property of the farmer, should be insured at his cost, and the buildings at the expense of the proprietors. We beg to direct the attention of our readers to the Farmer's Insurance Office, 3, Norfolk Street, Strand, London, where all kinds of insurance are effected on the most moderate terms, including the damage from hailstorms. This office does much business, and supports a high reputation of integrity and stability. The neglect of yearly insurances commits an injustice to farmers and proprietors, and to the public at large.

CALENDAR OF GARDENING.

KITCHEN GARDEN.

Frost may set in early, and therefore every means of defence for plants in frames, under glasses, and in warm borders, such as matting, littering, straw and fern, ought to be at hand. In this way, late-sown radishes are preserved under straw, which however should be raked off in open sunny weather. Little can be added to the directions for November. All is carting out, and if the weather be open, there is every probability that it will be wet; and then to trample in, and work ground saturated with water, is only to do mischief.

Sea-Kale: Pot and excite a second set of plants. Brick pits and darkened frames, with good linings, would be a great convenience, and prevent much litter.

Asparagus is easily forced upon deep beds of leaves raked from woods and parks, avoiding those of laurels and evergreens generally. The plants should be prepared in proper beds for the express purpose, and selected from the best two or three year old stock. Brick pits are the best erections; but good frames set upon leaves with warm linings will do well.

FLOWER GARDEN.

Cover the ground with half-decayed leaves, or lay cakes of moss among the shrubs, keeping them in order by flint stones; and in the event of snow falling, lose no time in brushing it off the evergreens before the sun shines hot upon them: alternate meltings and freezings ruin foliage.

DIXON'S LAW OF THE FARM.—Second Edition, 18s. Stevens and Norton, 26, Bell Yard, Lincoln's Inn. That there is a large number to whom this book will be welcome is plain from the constant questions of the law relating to agricultural circumstances which are every week addressed to the agricultural papers. The volume contains an extended notice of the agricultural customs of the English and Welsh counties, forms of agreements for all manner of sales and purchase of any agricultural interest, and definitions of all kinds of property of either landowners or tenants. Its chapters are on Interests in Land, Easements, Trees and Fences, Dangerous

Animals, Water, Servants, Conveyance of Cattle, Distress, Husbandry Covenants, Trespass and Game, Tithes, Landlord and Tenant, Contracts and Sales, Horses and Cattle, and various appendices. It is a volume of 600 pages densely packed—with a capital index to its contents—full of illustrative cases, so cited and epitomised as to interest the reader; and of such number and variety as to furnish a parallel to almost every possible case of legal difficulty of which a solution is desired. It ought to be in the hands of all business men in the agricultural world.—*Gardener's Chronicle and Agricultural Gazette.*

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR
NOVEMBER.

From nearly all parts of the country very satisfactory accounts have reached us in reference to the progress of outdoor farm labours. Ploughing and sowing upon both light and heavy soils have received very little interruption, and it is pretty generally understood that those important operations are now seasonably forward. Although the price of wheat still rules low, the usual course of cropping has been carried out, and our impression is that quite as much land will be sown with wheat this season as in the general run of years. In all parts of the kingdom much anxiety continues to be manifested on the subject of the probable range in the value of wheat between this and the spring. At one period of the past month there was decidedly more firmness in the trade, and prices advanced fully 2s. per qr. That improvement, however, has not been supported, and the trade has relapsed into its former dull state. Considering that there are very few influences at work calculated to have much depression in the demand—because we must bear in mind that an enormous consumption of bread is now going on—and that scarcely any foreign flour, either French or American, is on offer, it is somewhat surprising that wheat should have for so long a period continued at its present low figure, more especially as some kinds of spring corn are selling readily, at comparatively high rates. That wheat has seen its lowest range in value, must, we think, be admitted by all who have watched the course of the trade; and that there is ample room for an upward movement in price, is evident from the extent of the demand for flour. The heavy shipments from the South of Russia, and the extensive transactions in grain off coast from the westward, have greatly interfered with the country demand at Mark Lane and at the large outports, and, if our reports be correct, there is still a large quantity of Russian wheat on passage from the Black Sea. With the prospect of heavy supplies from the westward, extensive speculative purchases of foreign wheat in warehouse can scarcely be expected. Besides, we must not forget that the stocks of grain in stack in this country are seasonably large, though not of such fine quality as in some former years. Looking at the trade in a general point of view, however, our impression is that fine and useful wheats will become dearer shortly after the close of the year. Very little really fine barley has been on offer of late, and for which very high prices have been paid. Grinding and distilling sorts, owing to extensive importations from the Continent, and to steady arrivals from Scotland—in which country the new crop has turned out very abundant—have been much less active, and the quotations have had a drooping tendency. Most other descriptions of spring corn have sold at full prices, and the demand has continued tolerably active.

Some difference of opinion still continues to prevail in various quarters, in reference to the stocks of potatoes now on hand. Some persons have assumed that not only is the supply small, but that the bulk of it is much diseased. We, however, entertain a different opinion. It can hardly be assumed that there are more potatoes on hand than usual; but we firmly believe that it will prove equal to our wants during the remainder of the season. Under the impression that we shall have high prices, the growers, both in Holland and Belgium, are making preparations to ship largely; but we think that the surplus produce on the Continent is not a large one. At present, home-grown potatoes are selling in our markets, at from 70s. to 120s. per ton.

The low value of money in the discount market, and the general activity in the trade, have produced a steady effect upon the colonial wool sales now in progress. Up to the present time the whole of the parcels offered have changed hands at an advance in the quotations, when compared with the previous series, of from $\frac{1}{2}$ d. to fully 1d. per lb. At the corresponding sales last year the opening advance in prices was 1d. to $\frac{1}{2}$ d. per lb. In English wool, both in London and the manufacturing districts, only a limited business has been

transacted; yet no material change has taken place in prices. The quantities on offer and in farmers' hands are represented as very large.

Although the duty on hops has been declared at a high figure—though somewhat lower than was at one time anticipated—prices have kept up remarkably well. Weald of Kent and Sussex pockets have advanced from 2s. to 4s. per cwt., and a fair average business has been passing in other kinds, at full quotations. The stocks on hand are large.

In Ireland and Scotland the grain trade has shown signs of improvement, but the amount of business doing in most articles of produce has not been so extensive. The exports of wheat, barley, oats, &c., from Ireland have continued on a limited scale. Farm labours are represented as tolerably forward.

REVIEW OF THE CATTLE TRADE DURING THE
PAST MONTH.

Notwithstanding that the Metropolitan, as well as most of the country markets, have continued to be well supplied with stock as to number, and that large supplies of meat have been on show in Newgate and Leadenhall from Scotland and various parts of England, the trade generally has ruled somewhat active since we last wrote, and prices have had an upward tendency. The great activity in the trade and commerce of the United Kingdom has no doubt had considerable influence upon the demand; but it is to be regretted that such enormous numbers of both beasts and sheep should have been disposed of in little better than a half fat state. In most districts graziers have exhibited some anxiety to sell at present prices, which, in a comparative sense, are remunerative. Still we entertain great doubts whether much larger profits would not be realised by holding back a portion of the stock until it should become more suitable to first, or at all events second-class consumption. As far as we can judge—and past experience must be our guide to some extent—the graziers have very little to fear from foreign competition during the next three or four months. We shall possibly receive our usual amount of supply from Holland; but from Jutland no arrivals can be looked forward to; hence prices will continue to rule high. Indeed, we should not be surprised to see the value of mutton fully 4d. per 8lbs. higher than it now is. As the season is fast approaching during which prime animals will be forthcoming—and common report says that the forthcoming Christmas supplies will be of unusually fine quality—the price of beef can hardly rule much higher than at present.

The wonderful improvement in the general weight and condition of the sheep imported from Holland during the last two months is the subject of general remark. Very few Dutch sheep now arrive otherwise than in the best condition, and numbers of them lately disposed of—and which bear signs of crossing with our heavy breeds—have weighed from 15 to 16 stones each. The contrast between the Dutch and German sheep has now become remarkable. In the former, as we have just observed, the improvement is very great; but the latter have unquestionably fallen off, both in weight and quality. This will be evident when we state that some of the sheep shipped at Rotterdam have produced fully 70s., whilst those from Germany via Hamburg have with difficulty sold at 15s. each! Upon the latter the charge for freight, commission, &c., is 2s. 6d.; so that the German grazer obtains a sum equal to only 12s. 6d. for each head sent to London!

Some very useful Herefords and Devons have been on offer; but the stock that has commanded the most money, from its great superiority, is that derived from crossing the Shorthorns with the Boats. Hitherto the system has been productive of the best results, and its extension to every county in the United Kingdom may naturally be anticipated.

Generally speaking, the health of the stock, both beasts and sheep, has continued good, very few losses have resulted from disease; and the supplies of winter-food are everywhere abundant.

Throughout the Continent, and even in Germany, the price of meat is represented as very high. Consumption, especially in France, appears to have rapidly increased. Both in Spain and Portugal stock is too high in price to admit of profitable shipments to this country. The arrivals of stock from Ireland have been in good condition, and this remark may be applied to both beasts and sheep, which, for the most part, have sold at high currencies.

The annual return shows the imports of foreign stock into London since last month:

Beasts	5,927 head.
Sheep	21,907 "
Lambs	271 "
Calves	997 "
Pigs	159 "
Total	29,261 "

IMPORTS AT CORRESPONDING PERIODS.

	Beasts.	Sheep.	Calves.	Pigs.
Nov.	4,787	18,258	1,174	156
1858	4,787	18,258	1,174	156
1857	4,409	12,839	2,687	136
1856	6,102	16,380	1,152	309
1855	7,867	17,094	1,127	454
1854	7,120	16,604	1,108	369
1853	7,390	22,565	1,629	919

The total supplies exhibited and disposed of in the Great Metropolitan Market were as under:

Beasts	26,492 head.
Cows	522 "
Sheep	120,840 "
Calves	1,299 "
Pigs	2,800 "

COMPARISON OF SUPPLIES.

	Beasts.	Cows.	Sheep.	Calves.	Pigs.
Nov.	24,856	534	114,643	1,437	2,970
1858	24,856	534	114,643	1,437	2,970
1857	25,383	505	103,120	3,002	3,037
1856	24,711	457	97,460	1,585	3,535
1855	25,444	515	105,750	2,096	3,415
1854	23,442	512	101,031	1,848	2,726
1853	25,760	562	127,150	2,615	2,790

Included in the return for last month are 13,380 short-horns and crosses from Lincolnshire, Leicestershire, and Northamptonshire; 2,000 of various breeds from other parts of England; 894 Scots and crosses from Scotland; and 2,520 oxen and heifers from Scotland. Beef has sold at from 3s. to fully 5s.; mutton, 3s. 2d. to 5s. 2d., veal, 4s. to 5s. 4d.; and pork, 3s. 6d. to 5s. per 8lbs. to sink the offal.

COMPARISON OF PRICES.

	Nov., 1856.				Nov., 1857.				Nov., 1858.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Beef, from 2	8	4	10	3	0	4	10	2	8	4	10	
Mutton ..	3	2	5	2	3	0	5	4	2	8	5	0
Veal	3	8	5	4	3	10	5	4	8	4	5	0
Pork	3	6	5	4	4	0	5	2	2	10	4	2

The trade in Newgate and Leadenhall has continued steady, at full prices. Beef has sold at from 2s. 8d. to 4s. 4d.; mutton, 3s. 2d. to 4s. 6d.; veal, 3s. 8d. to 4s. 6d.; pork, 3s. 6d. to 5s. 2d. per 8lbs. by the carcase.

SUFFOLK.

Not only did the wetness of the weather frustrate many good intentions as to the prosecution of Autumnal cultivation in September, but the continued rainfall since that period has materially tended to check all outdoor farming operations. Wheat sowing has been greatly retarded. At the present time much wheat has yet to be drilled; and sowing generally will not be fully completed for a week or ten days. The whole process of ploughing, harrowing, and drilling has been unusually hard work for the horses upon the clay lands; and the harvesting the large breadths of mangold wurtzel, now annually grown, has been a most serious and laborious operation. The great weight of roots per acre, and the wet condition of the soil, have caused much injurious poaching or treading on the naturally stiff

retentive lands, whilst the early frost in October, and the fear of its repetition, have operated to prevent delay for finer weather in securing this most valuable crop of roots. We never in any previous year have seen the crop so generally good. At the Framlingham Farmers' Club, one exhibitor (Mr. D. Smith, of Easton) grew upwards of 48 tons per acre of cleaned roots, exclusive of the leaves; whilst Mr. C. K. Cordy, of Trimly, who exhibited for one of the prizes at the Ipswich Farmers' Club, grew upwards of 42 tons per acre. The heaviest single root exhibited at Ipswich was 58lbs. In different cases the number of roots per acre have been counted, as well as the entire crop weighed, and it is clearly established that the heaviest crops were produced where the roots were of medium size, and reasonably thick in plant, and vice versa. The weight per acre of the mangold wurtzel crop was nearly double that of the swede and common turnip crop, where weighed; and it consequently need be a matter of no surprise that the culture of the mangold is yearly greatly on the increase, to the partial supplanting the turnip and swede, the growth of which is yearly diminishing in acreage. In a few cases the mangold wurtzel was injured by the early frost, where pulled and exposed; but generally they are unharmed, thoroughly secured, and of excellent quality. Beasts have been bought for Winter grazing at prices slightly in favour of the buyer, but we hear of different cases of pleuro-pneumonia, and of some deaths from the disease. The loss of lambs has, in some instances, been, from some unknown cause, serious, as in other parts of the kingdom. We incline to the belief that it has been caused by too early turning upon the pastures, before the evaporation of the dew, when larvae remained on the herbage, which larvae afterwards lived in the stomach of the animal and sucked its very life-blood. Hundreds of worms have been discovered after death both in the eson and stomach of the lambs. Both the wheat and barley crops disappoint expectation in yield; and the barley proves to be as much damaged by the rains and the hot growing weather in harvest as the most depending statement predicted. Much barley has been sold at from 16s. to 30s. per qr, whilst the best quality of unstained ungrawn barley has commanded from 40s. to 50s. We are glad to observe a growing aversion to the malt tax, and an increased determination to press the unfairness of its continuance, with a fixed resolve either partially or in toto to blot it from the statute book of England. In an excellent address to the members of the Ipswich Farmers' Club, the chairman of the evening, Sir Fitzroy Kelly, remarked: "I don't say, gentlemen, you can at once prevail on the legislature to take off some three or four millions of taxes, but I do believe that if those who possess the influence were to unite in entreating the attention of members of both Houses of the legislature to all that relates to the malt tax, you would succeed in making that among the first, which, if not taken off altogether, would be materially reduced whenever the whole subject shall come under the consideration of Parliament." We believe no other class than the agricultural interest would have tolerated so unfair an impost with such equanimity for so long a period; but we hope growing intelligence and the pressure of circumstances have combined to effect the downfall of such rampant injustice to the agricultural interest and the poorer classes of England.—Nov. 23.

ISLE OF ELY.

Our reports lately have all been more or less tinged with gloom; and, unhappily, we have no change of a favourable character, this month, to record; for, added to the very deficient crop of wheat lately and expensively harvested, and the unremunerative price realised for it in the public market, we have the serious injury sustained by our mangold and coleseed crops, in consequence of the unusually severe and destructive frosts which occurred towards the end of October. Our losses this year will be fearfully heavy, and will make many a man wish he were anything but a farmer. "Farmers are proverbially grumblers"—at least, so the world says. We question the justice of the assertion; but, whether it be true or no, they certainly this year are not grumbling without a cause, as any man gifted with common sense and common sagacity cannot fail to see. Our great hope is that, another year, Providence may graciously interpose, and bless the as

tion with an abundant harvest, that producer and consumer may have occasion mutually to rejoice, and that "no complaining" may be heard "in our streets." But, to return to the damage resulting to both the mangold and coleseed crops from the severity of the frosts—From observation, we find that the mangolds put in a frozen state into the pits will not keep long, but should be immediately used. Those allowed to remain in the ground until thoroughly thawed, and until a free circulation of the sap was restored, promise to keep better, and appear less injured. The leaves also partly protected them, and prevented the frost exerting so serious an effect upon them. Those taken up, topped and tailed, and left exposed upon the ground, without any protection, must be half-spoiled, and will very soon begin to rot away. Our own, where taken up, were placed in rows, and well covered down with leaves; and when carted, those exposed through an imperfect covering were put to themselves for immediate use, some of them being slightly injured; whilst the others were put into pits for subsequent use. The coleseeds are even more seriously hurt than the mangolds. At least half the crop is absolutely destroyed, and very much of the fattening property taken from

the other half. The crops sown for seed purposes, as well as those for feeding, are nearly all rendered almost worthless; and the lands must be resown with some other crop. The wheat-seeding, but in a few exceptional cases, is completed, and, so far as putting in the seed is concerned, satisfactory. It, however, vegetates very slowly; and but few green fields are yet visible. It very seldom happens that the seed is so long in the ground before showing itself. The very early-sown wheats, such as were up before the October frosts, were seriously cut, and for a time looked anything but well, but have since become greatly improved. Horses are now busy breaking up stubble-lands for next year's fallow, and ploughing for oats, beans, and other spring crops. Thrashing is very forward, and the steam-engines are well employed. The price of meat continues good. Store cattle also sell well. The injury to the coleseed has made the trade for lean sheep slow; and prices are scarcely as good as they were. The corn trade has been slightly better, but to-day is dull again, and prices offered are 1s. to 2s. per qr. lower. Potatoes of good quality sell well, but are a light crop, and will yield a small return.—YOUR FEN REPORTER.—Nov. 21.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BATTLE FAIR was one of the best we have had for many years. The attendance was very large, and the prices satisfactory.

BEDALE FORTNIGHTLY FAIR.—We had a good supply of all kinds of stock. The average quality of fat Beasts was low, so prime animals sold well. Beef 6s. 6d. to 7s. 6d. per stone, Mutton 5½d. to 7d. per lb.

BOSTON HORSE FAIR.—The show was smaller than last year, and the sale was slow. The few good cart colts and fillies exhibited fetched a good price, but indifferent ones could not be disposed of. Scarcely any nags showing.

BRECON FAIR.—There was a large number of cattle disposed of, some of which were particularly good, and realised a slight advance in price. There were few Welsh sheep shown, but those that were exhibited for sale were apparently very useful and healthy animals. In the pig market there was a goodly number of useful store and bacon pigs that changed owners; and a great many small ones were offered, but these did not appear to sell as well as the larger sizes.

CHESTER FAIR.—No fat stock, and very few milkers. Sheep were scarce, and beef and mutton remained at previous prices. Pigs sold readily at higher prices. The horse fair produced a very small show of anything good, for which few buyers were about.

CHESTERFIELD FAIR.—The number of cattle was far beyond the demand, sales extremely dull, and prices for all descriptions had a downward tendency. The chief business done was in fresh barren cows. New calvers, near hand incalvers, and meaty beasts more ready sale, at nearly late prices. A great number of young and aged animals unsold. Very few good horses, and lower in value than of late. Very many Irish horses, but few found customers. Scarcely any sales in the sheep pens. Pigs very few, and sales at late prices.

CROWIE FAIR.—The show of cattle for this season of the year was very large, and a fair amount of business was transacted. The horses were in general of a meagre kind, and very few appeared to change hands. There was a very large quantity of pigs, and very high prices were asked, particularly for the smaller kind.

DOUNE LATTER FAIR.—North and West Highland met a ready sale, more particularly those that were within six months' keep of being fat, and all sold at prices equal to those obtained at recent markets. The rates of heifers were from £4 to £7 5s.—a shade lower than the prices got at the preceding market, and ten per cent. above the October Falkirk Tryst. Two-year-old stots £4 10s. to £7 5s.—last Downe Fair prices. This kind was short in numbers, and would be about fifteen per cent. above Falkirk October Tryst. Few fat cattle upon the ground; and what was exhibited brought equally good prices, according to quality, as at Hallow Fair. The spotted beasts, of all ages, would be at least two-and-a-half per cent. above recent markets; but it must be taken

into consideration that the rise was in consequence of their superior condition, and the inferior kinds of this class would be somewhat similar to what has been recently obtained. The two-year-old wethers, with few exceptions, met equally good encouragement. The prices, according to condition, were fully higher than the corresponding prices of last year.

EAST WILTON FAIR.—Many sales were effected in the morning, and a brisk business done; but later on in the day trade became very heavy, and numbers left unsold. A good many cows were exhibited, and present calvers found ready buyers at very high rates, but spring calvers were not easily disposed of, and brought considerably less money. For all descriptions of stock prices varied greatly, which makes any quotation of figures uncertain.

GUILDFORD FAIR.—The supply of all kinds was short, consequently the trade was very brisk, the attendance of buyers being good, so that an early clearance was effected. A moderate supply of fat stock also brought high prices. Milch cows, from country dairies, from 14 to 16 guineas; short-horn ditto, from 20 to 21 guineas; steers in good order, from 11 to 14 guineas; stock heifers, from £8 to £9 10s.; in-calf ditto, from £12 10s. to £15; down cows, £7 to £11; fat cows and heifers, from £14 to £19. A very short supply. The sheep pens were very scantily supplied. Business brisk, at the following rates: Ewes, 35s. to 40s.; full-mouthed ewes, 30s. to 36s.; wethers in good condition, 47s. to 49s.; useful tegs, 32s. to 38s.; wether lambs, 25s. to 28s.; ewe ditto, 28s. to 27s. per head. Fat mutton, 5s. 4d. to 5s. 8d. per stone. The horse fair produced some excellent colts on sale, from 28 to 40 guineas; ponies, £8 to £14; well-built cart horses, 28 to 36 guineas; cart colts, 25 to 35 guineas.

HALTWHISTLE FAIR.—Notwithstanding that it was the largest show of stock there has been here for several years, a comparatively small number was left unsold, and both sellers and buyers transacted their business in excellent spirits. There were 30 cartloads of pigs. Shots ready for feeding were in great demand, and sold at good prices. Small pigs not a good sale, and prices low.

HEMPTON FAIR.—The show of store cattle was large, and more than equal to the demand, consisting of Scots, short-horns, Devons, and Irish. The general quality and condition of all breeds were but middling, and the inferior sorts commanded but little notice. The attendance of buyers being small, sales progressed slowly, those effected being in favour of the purchasers. Scots, 4s. to 4s. 6d.; a few choice lots, 5s.; shorthorns, 3s. 6d. to 4s. 6d.; Devons, 3s. 6d. to 4s. 6d.; and Irish, 3s. to 3s. 6d.; fresh in condition, 4s. per stone of 14 lbs., when fat.

LOUTH FAIR.—The show of beasts and horses was larger and the prices realised were considerably good. The supply of fat stock was very limited, so that rather extreme rates had to be submitted to by needy buyers.

MARLBOROUGH FAIR was well supplied with sheep. There was a large attendance of dealers. In the morning the trade was dull, and lambs were from 1s. to 2s. a head lower. Ewes sold quite as well as at late fairs, and realized from 30s. to 45s. each; lambs, from 28s. to 41s. There was a good show of horses, and the best sold at from £35 to £45 each.

MONMOUTH FAIR.—A great quantity of all descriptions of stock sold well and realized excellent prices.

NEWPORT FAIR.—There was a tolerably active trade. Welsh beasts ranged from £4 to £7; the shorthorns and home-breds from £8 to £12. Of horses there was a tolerable sprinkling, but they were a dull sale, and prices lower; Welsh ponies fetched from £5 to £8, and a drove of other sorts £6 to £9, and changed owners pretty freely.

RIPON FAIR.—A moderate show of cattle, but a heavy market for lean stock. Fat descriptions were scarce, and sold at 7s. to 7s. 6d. per stone. A small number of calving cows sold readily at good prices.

RUGBY FAIR.—First class carriage and hunting horses brought high rates; dray horses were rather scarce, but in good request at good prices; cart colts brought from £24 to £26 each. There were some prime fat beasts fit for the Christmas market, which obtained high rates, but the inferior quality sold about the same as at the last fair. Mutton was said to be lower than in London on Monday.

SOUTHALL, (Wednesday last.)—Trade was good for all prime qualities. Beef made from 2s. 6d. to 5s. 2d., Mutton 4s. to 5s. 4d.; Veal 4s. to 5s., Pork 3s. to 4s. 4d. per stone of 8lbs., sinking the offal.

TOWYN FAIR.—The supply was not so large as we have seen it, nor were the beasts in good condition. A tolerably good number changed hands, but the butchers were very cautious in purchasing, knowing that some of the farmers would be compelled to sell for want of fodder. Beef fetched 5½d. per lb., sinking the offal. Three-year-old bullocks fetched £7 15s. each, two-year-olds £5 10s., yearlings £4.

TRURO FAIR was well supplied with both beasts and sheep, which met with a ready sale. Amongst the former were a lot of very prime French bullocks, which sold freely at 65s. per cwt.; but the general price of fat beasts was about 60s. Lean cattle sold at from 42s. to 45s. per cwt., and sheep brought about 6½d. per lb. on the average. Nearly a clearance was effected.

YORK FAIR.—There was a large supply of animals in the beast market, but next day being fortnight market day the extent of business was limited, buyers and sellers deferring transactions, and the market was dull.

SALE OF SHORTHORNS AT SHETHIN.

Mr. Shepherd's annual sale of young Shorthorn bulls and heifers took place on Thursday, Nov. 3. The celebrity of Mr. Shepherd's stock—one of the very best in the district—drew together a large attendance, and the result at the sale must have been very satisfactory, as high prices were obtained. One object of great attraction was the very fine prize bull, "Cherry Duke Second," the victor both at Aberdeen and Edinburgh against all Scotland. After a very capital lunch, of which about 200 partook, the sale commenced, Mr. Mitchell, Mill of Fortrie, acting as auctioneer, and carrying on the business with much tact and spirit. The following is the sale list:—

	Guineas.
Marmion, red with white, calved 5th Feb., 1858, by Bosquet	
—Mr. Deuchar, Australia,	48
Prince of Orange, red, calved 1st August, 1858, by Bosquet	
—Mr. Garland, Ardlethen,	56
Prince of Holyrood, roan, calved 1st Jan., 1849, by Bosquet	
—Mr. Garland, Ardlethen,	51
Fitzmaurice, red and white, calved 2nd Jan., 1859, by Bosquet	
—Mr. Chivas, Rora,	30
Fitz Eustace, red, calved 2nd Jan., 1859, by Bosquet—Mr. Cowie, Cromleybank,	27
Harbinger, red and white, calved 8th Jan., 1859, by Cherry Duke Second—Mr. Milne, Haddo,	25
Damian, red, calved 24th Jan., 1859, by Speculator—Mr. Reid, Danestane, Grandholm, Aberdeen,	1
Armstrong, roan, calved 28th Jan., 1859, by Cherry Duke Second—Mr. Garland, Ardlethen,	27
Ridman, red, calved 28th Jan., 1859, by Speculator—Mr. Grant Duff, of Eden,	24
Forest Monarch, roan, calved 3rd Feb., 1859, by Speculator—Mr. Dehucar, Australia,	81

Aristides, red, calved 11th Feb., 1859, by Cherry Duke Second—Mr. Moir, Knockhall,	23
Rothschild, red roan, calved 27th Feb., 1859, by Speculator—Mr. Garland, Ardlethen,	48
Trumpeter, roan, calved 14th March, 1859, by Speculator—Mr. Milne, Haddo,	23
Barl of Rose, red, calved 22nd March, 1859, by Cherry Duke Second—Mr. Campbell, Kinellar,	59
Lord Canning, roan, calved 29th March, 1859, by Cherry Duke Second—Mr. Milne, Mains of Waterton,	52
Senator, red, calved 31st March, 1859, by Cherry Duke Second—Mr. Ruxton, Dorchhill,	30
Baron Hess, red roan, calved 27th April, 1859, by Speculator—Capt. Grant, Monymusk,	25
Lord of Lorn, roan, calved 18th May, 1859, by Cherry Duke Second—Mr. Marr, Uppermill,	48
Florist, red with white, calved 14th May, 1859, by Speculator—Mr. Wilson, Tochnieal,	20
Roan Knight, roan, calved 12th June, 1859, by Speculator—Mr. Cockburn, Corbeshill, New Deer,	19

HEIFERS.

Red Heifer, calved 11th Jan., 1859, by Speculator—Mr. Wood, Midtown, King Edward,	24
Red Heifer, calved 22nd Jan., 1859, by Speculator—Mr. Wood, Midtown,	23
Red Heifer, calved 6th Feb., 1859, by Cherry Duke Second—Mr. Moir, Tarty,	30
Red and White Heifer, calved 13th Feb., 1859, by Bosquet—Mr. Thomson, Drumbrack,	29
Red Heifer, calved 19th Feb., 1859, by Bosquet—Mr. Moir, Knockhall,	16
Red Heifer, calved 2nd March, 1859, by Cherry Duke Second—Mr. Chalmers, Oldwhat,	23
The average for the bulls is £39 14s. 10d., and for the heifers £27 2s. 6d., which sufficiently indicates the quality of the stock, and the value put on Shethin blood. Mr. Deuchar bought several of the bulls to go to Australia, and it is understood that Mr. Garland's, Ardlethen, are also for Australia.	

THE HOP DUTY.

An account of the duty on hops, the growth of the year 1859, distinguishing the districts, and the old from the new duty:—

DISTRICTS.	DUTY.
Barnstaple	£44 11 0½
Cornwall	1 0 9½
Canterbury	124,528 14 6½
Essex	1,032 0 10½
Gloucester	23 2 10½
Grantham	24 6 1½
Hants	22,014 16 2½
Hereford	35,019 2 6½
Iale of Wight	15,816 0 8
Lincoln	137 0 8
Lynn	20 10 2½
Northampton	40 12 0
Nottingham	72 11 5½
Oxford	23 19 3½
Reading	197 7 3½
Rochester	263,211 4 2½
Sheffield	747 6 1½
Stourbridge	7,486 0 9½
Suffolk	1,268 6 0
Surrey	571 1 2½
Sussex	126,940 13 2½
Wales (Middle)	71 2 2½
Ware	82 13 2½
Worcester	9,709 3 ½
<hr/>	
	£599,083 6 8
Old duty, at 1d. 12-20 per lb.	328,070 2 10½ 16-20
New duty, at ½d. 8-20 per lb.	242,486 12 7 4-20
Additional duty of 5 per cent., per Act of 3 Victoria, cap 17	28,526 11 2

£599,083 6 8

CHARLES S. HAWTHORNE, Assistant-Accountant and Controller-General, Inland Revenue Office, Nov. 4.

REVIEW OF THE CORN TRADE DURING THE PAST MONTH.

As a whole, the month of November has turned out much more favourable than the heavy rains of the first week promised. There was then a complete stoppage to field work and wheat-sowing, but the weather gradually improved, and good opportunities were again presented for the resumption of these labours. The wells as well as reservoirs are now better supplied than for two years past, and the country will, therefore, be under no apprehension of drought. The frosts are said again to have caught the root crops where exposed, having been occasionally severe, and the prospect of abundant cattle feed has considerably diminished, so it is well that the yield of hay was good and well secured. Though the wheat trade has been raised into more susceptibility, with an occasional advance, we can report very little gain in the course of the month, though greater confidence obtains as to future prices. England, indeed, now seems the exception among other countries, all of which have kept steadily rising. The impression is still retained by some that the abundant years 1857 and 1858 have left us with a stock of old that will fill up the void of this year's deficiency, aided by moderate foreign imports: whether profitable or not, time will tell its own tale, and as Christmas payments are near at hand, the weekly sales up to then may continue large, but it seems improbable that when that period is turned farmers will be free sellers, at rates literally lower than many foreign markets, and relatively below all. At least, in America price is the great consideration with growers; for the decrease this season at New York on 31st October, as compared with 1858, amounts in flour and wheat to about 1,106,000 qrs. wheat, entirely as the consequence of reduced rates. France, which till lately took the place of the United States in the liberality of her shipments, has now reached about our own rates. Belgium has found a market for moderate imports hence; Naples is still in want; and the markets in Spain are rising at a rate which must urge on the Government again to adopt free imports; while in Portugal the Government are about proposing the admission of all corn free of duty excepting maize. Odessa itself, which for a long period had been quiet, has been forced up, first by the extensive purchases of wheat for Naples, and afterwards by a demand for rye for northern Europe, as well as for maize for the south. Now, as this unusual demand has been made so soon after harvest; as France, Spain, Portugal, and Italy have also fallen short in their respective harvests; as Spain has commenced hostilities with Morocco, and Italy is in a state of high political ferment, an important decline before next harvest seems impossible; while any great European outbreak, or any untoward appearances in the growing crops, must send up markets considerably.

The following quotations show the value of

wheat in the different foreign markets: At Paris the quotations for the best quality were 48s. 6d.; at Nantes, 45s.; Bordeaux, 48s.; Louvain wheat in Belgium was worth 52s. to 53s.; Polish Odessa at Amsterdam, 55s.; red marks at Hambro', 47s.; at Rostock, red wheat was worth 48s.; high mixed at Danzig, 48s. to 51s. per qr. The range of Odessa prices was 35s. to 44s.; white wheat at Leghorn was held at about 52s.; Berdianski red at Genoa, 48s. 6d. Santander, the cheapest port in Spain, quoted 58s. as a top price, but at Barcelona prices were 68s. to 72s., and at Seville 64s. to 74s. per qr. New York quotations for the best white were 52s., red to 46s. per qr.

The first Monday in London opened on the back of a fair English and moderate foreign supply. The morning's show from Kent and Essex was moderate, and the condition being somewhat improved, full prices were realized on fine qualities, with an occasional advance on picked parcels, of 1s. per qr.; but inferior sorts were only a rather better sale. The lower sorts of foreign also brought 1s. per qr. more money. The early markets in the country were generally 1s. per qr. dearer, though Hull and Gloucester were only firm, while Bristol Derby, Nottingham, Leicester, Lincoln, Norwich, Newcastle, and the markets held on Saturday, were generally 1s. to 2s. per qr. higher. London also evinced more tone on Friday, with the prospect of a rise next market. Tuesday's market at Liverpool was about 9d. per qr. dearer, and Friday advanced as much more.

The second Monday was characterized by a dense fog, with a very short supply of foreign wheat. The near counties having sent up but few samples this morning, notwithstanding the darkness, was more animated than for some time past, the best English qualities going off freely at 2s. per qr. advance. Holders of foreign also demanded an equal improvement, but the fog was so dense all through the morning, that it was difficult to distinguish white samples from red, and therefore scarcely anything was done. Several important country markets were below the London advance, as Birmingham, Hull, Newark, Market Rasen, and Melton Mowbray; but Bristol, Gloucester, Leeds, Spalding, and several more quoted a rise of 2s., while Lynn and Newcastle were up 2s. to 3s. per qr. Though Liverpool was 4d. per cental dearer Tuesday, the tone of Friday's market was more subdued, with less business passing.

The third Monday had a liberal foreign supply, with a moderate arrival of home-growth. The morning's supply from Kent and Essex, though only moderate, with former prices asked, did not find purchasers; millers, perhaps, under the excitement of the previous week, having bought freely. Some sales were made at about 1s. per qr. reduction at the Kentish stands; but Essex factors

being against any concession, held over for a better market. The sales of the overleft parcels were made on Wednesday, at 1s. below the nominal prices of Monday, and the final market was unaltered. The advices from Mark Lane created much disappointment in the country, Birmingham and Wolverhampton being 1s. to 2s. per qr. cheaper, the Yorkshire and Lincolnshire markets noting a decline of 1s. per qr.; but many places were only dull at the previous rates, Liverpool giving way on Tuesday 1d. to 2d. per cental.

The fourth Monday commenced on good foreign and fair English supplies; but the show of samples from Kent and Essex was only moderate. The weather having changed to wet, there was a want of condition in many of the samples, and they only sold slowly at 1s. to 2s. per qr. decline on the nominal rates of the previous Monday.

The four weeks' imports into London have been 37,018 qrs. English wheat, 42,874 qrs. foreign, against 28,517 qrs. English wheat, 49,431 qrs. foreign, in Oct. last season.

The flour trade, so far as town quotations are concerned, has been unaltered throughout the month, 43s. still being the top price, but country sorts have shown some fluctuations in value, there being on the first Monday a decline of 1s. per sack on Norfolks, which was recovered on the second Monday, since which no change of value has ensued. Foreign arrivals have remained extremely small, the French markets having continued rising, though some shipments have appeared from America of medium and inferior quality, the former being held too high for millers, say equal to 38s. per sack. The month's imports into London were, in country sorts, 85,319 sacks, in foreign 309 sacks 4,286 brls.—against 66,945 sacks English, 2,308 sacks 4,402 brls. foreign in October, 1858.

The barley trade, with fair supplies, has been moving upwards, the increased value of malting qualities being 1s. to 2s., and 1s. for other sorts. Very few samples of fine English malting barley have come to the London market, and this has increased the value of Scotch and Saale qualities; while the extensive demand for pig feeding, with only moderate arrivals from the Black Sea, have gradually raised the lower descriptions 1s. to 1s. 6d. per qr. As no foreign imports can make up the deficiency of malting qualities, high rates seem likely to rule to the end of the season; as high as 51s. has been paid for selected samples in the country, and up to 46s. in town for Scotch. The imports into London during the month have been 28,442 qrs. British and 42,440 qrs. foreign—against 13,220 qrs. English and 67,098 qrs. foreign in October, 1858.

The high prices paid for the best barley has kept up the value of fine malt, a very extra parcel having realized 80s. per qr. on the third Monday, but the sale of inferior qualities has been slow.

The supply of oats through the month has been on a very small scale; and though large stocks have remained in granary, the rates to needy consumers have been gradually improving fully to the extent of 1s. on all sorts, and rather more on Russian descriptions. As all the Irish markets have been

advancing, as well as those of Scotland, and the winter must shortly reduce Baltic supplies, there seems no probability of a return to the low rates lately paid, a further improvement being far more likely. The entire month's supply has been 99,542 qrs., including 10,153 qrs. English, 5,139 qrs. Scotch, 5,245 qrs. Irish, and 759,005 qrs. foreign—against a total of 264,794 qrs. in October, 1858.

Beans, which for the month previous were neglected and receding in value, through the falling off in foreign arrivals and an increased demand for splitting, have risen 2s. Splitters had allowed their stocks to run too low, in the expectation of better supplies from France and Egypt; but the former country seems likely to send but little, and the latter less than usual, so we may expect firm markets through the winter. The imports into London for the past month have been 5,712 qrs. English and 2,627 qrs. foreign, against 3,614 qrs. English and 12,434 qrs. foreign in Oct. 1858.

In peas there has been very little change, those for hog feed scarcely bringing so much money, more especially maples, through some foreign supplies; but the tendency of boilers has certainly been upwards, and against buyers 1s. to 2s. per qr., but trade has not been active. The imports into London for the month were 5,224 qrs. English and 1,457 qrs. foreign, against 2,114 qrs. English and 10,029 qrs. foreign in Oct. 1858.

The linseed market, with good arrivals and a fair export trade, has been steadily advancing, a rise of fully 2s. per qr. being reported in the month, which principally took place at the commencement. Linseed cake has followed the course of crushing-seed; and foreign advices all noting but a small yield and advancing prices, there seems no prospect of returning to easy terms. Very little as yet has been doing in the seed trade.

The uncertainty yet hanging over the yield of English red cloverseed having kept the trade in abeyance, though unusually low prices have ruled in France lately, there has been more stir in that country as well as in this, and the expectation of commencing the season on low rates seems likely to be disappointed. About 50s. per cwt. free on board at Bordeaux has ruled; and perhaps orders would now fail of execution, though purchases a month ago might have been made at 47s. to 48s. per cwt. for good seed. White, from scarcity, has remained dear, and the limited stocks have induced occasional purchases, notwithstanding the high prices. Trefoil has been steady, as well as canary, the latter remaining low—say about 64s. for good quality. Hempseed has slightly improved. New foreign spring tares, of good quality, have arrived, and might be had at moderate rates—say about 45s. per qr. These seem likely to be dearer. Mustardseed has remained in calm; and all other seeds have found but an ordinary consumption, at about the previous quotations.

COMPARATIVE AVERAGES—1858-59.

From last Friday's Gaz.	s. d.	From Gazette of 1858.	s. d.
Wheat.....	124,005 qrs. 43 1	Wheat.....	103,981 qrs. 41 2
Barley.....	96,691 35 11	Barley.....	98,839 35 1
Oats.....	12,349 21 11	Oats.....	9,402 22 11
Rye.....	232 28 4	Rye.....	144 32 4
Beans.....	5,507 40 9	Beans.....	3,543 43 7
Peas.....	2,795 39 6	Peas.....	1,114 45 11

CURRENCY PER IMPERIAL MEASURE.

		Shillings per Quarter.	
WHEAT, Essex and Kent, white, new	38 to 48		old 40 to 49
	red, new	37 44	 old 39 46
Norfolk, Linc., and Yorks., red			37 46
BARLEY, malted, new, — to	38		Chevalier, new 38 44
Grinding	26	28	 Distilling 28 30
MALT, Essex, Norfolk, and Suffolk		49 to 57	fine 60 68
Kingston, Ware, and town made		49 57	.., 60 68
Brown		48 49	
RYE		new	— 30 31
OATS, English, feed	20 25		Potato 25 29
Scotch, feed	21 26		Potato 26 29
Irish, feed, white		20 24	fine 25 27
Ditto, black		20 23	.., 25 26
BEANS, Masagan	35 41		Ticks 36 42
Harrow	37 46		Pigeon 48 50
PEAS, new, white, bollers 36	40	Maple 38	40 .. Grey 34 35
Flour, per sack of 280 lbs., Town, Households	37s., fine	41 43	
Country		31 32	 Households 33 36
Norfolk and Suffolk, ex-ship			30 31

FOREIGN GRAIN.

		Shillings per Quarter	
WHEAT, Danzig, mixed	50	— high do. —	52 extra —
Konigsberg	49 51	—	—
Rostock	51	— fine 54	old 54 —
American, white	48 49	red —	42 47 —
Pomera, Meckbg. & Uckermark	47 49	—	—
Silesian, red	42 47	white	46 50
Danish and Holstein	46 48	—	—
Russian, hard	44 46	French	40 47 white 44 48
St. Petersburg and Riga	44 47	—	—
Rhine and Belgium	44 50	—	—
Barley, grinding	24 28	Distilling	29 32
OATS, Dutch, brew, and Poland	22 27	Feed	19 24
Danish and Swedish, feed	20 24	Stralsund	19 22
Russian	19 22	—	—
BEANS, Friesland and Holstein	34 41	—	37 42
Konigsberg	34 41	Egyptian	35 37
Peas, feeding	35 36	fine boilers	37 39
INDIAN CORN, white	31 34	yellow	30 32
Flour, per sack	French 39	36 Spanish	none —
American, per barrel, sour	23 27	sweet	— —

IMPERIAL AVERAGES.

	Wheat.	Barley.	Oats.	Rye.	Beans.	Peas.
FOR THE LAST SIX WEEKS:						
Oct. 15, 1859 ..	42 6	35 10	21 3	29 7	38 9	39 8
Oct. 22, 1859 ..	42 10	35 5	21 2	29 6	38 9	37 7
Oct. 29, 1859 ..	43 1	35 6	20 11	30 4	38 9	38 2
Nov. 5, 1859 ..	42 9	35 9	22 1	30 2	39 3	38 8
Nov. 12, 1859 ..	42 10	35 11	21 5	29 7	40 3	37 9
Nov. 19, 1859 ..	43 1	35 11	21 1	28 4	40 9	39 6
Aggregate average 42 10	35 9	21 5	29 7	39 6	38 7	
Same time last year 42 2	35 5	23 0	31 9	43 4	44 11	

PRICES OF SEEDS.

BRITISH SEEDS.

MUSTARDSEED, per bush, new 10s. to 14s., brown 12s. to 16s.	
CORIANDER, per cwt.	14s. to 16s.
CANARY, per qr.	58s. to 62s.
TRIFOIL, new	24s. to 26s.
TARSE, Winter, new, per bushel	7s. to 7s. 6d.
LINSEED, per qr., sowing — s. to 60s., crushing 54s. to 58s.	
LINSEED CAKE, per ton	£9 10s. to £10 10s.
RAPESEED, per qr.	50s. to 54s.
RAPE CAKE, per ton	£5 10s. to £6 0s.
FOREIGN SEEDS, &c.	
CLOVERSEED, red 48s. to 54s. white 84s. to 94s.	
TRIFOIL,	— s. to — s.
HENPEPPER, small, 58s. per qr. Dutch — s. to 38s.	
CORIANDER, per cwt.	16s. to 18s.
CANARY, ..	36s. to — s.
LINSEED, per qr., Baltic 52s. to 56s. Bombay 58s. to 50s.	
LINSEED CAKE, per ton	£9 10s. to £10 10s.
RAPESEED, Dutch	54s. to 58s.
RAPE CAKE, per ton	£5 0s. to £6 0s.

HOP MARKET.

LONDON, MONDAY, NOV. 28.—Our market continues active, and fine samples of Weald of Kent and Sussex meet with a ready sale at rather better prices. The demand for the choicest Mid and East Kents is steady, but for second-class samples the trade rules heavy. Low and inferior sorts are still in very limited request.

Mid and East Kents	84s., 112s., 147s.
Wealds	56s., 66s., 77s.
Sussex	52s., 62s., 66s.

POTATO MARKETS.

SOUTHWARK WATERSIDE.

LONDON, MONDAY, NOV. 28.—During the past week the arrivals both coastwise and by rail have been plentiful, and more liberal from France and Belgium, and the former week's prices have been barely maintained. The following are this day's quotations:—

York Regents ..	80s. to 120s. per ton.
Lincolnshire ditto ..	70s. to 90s. "
Dunbar ditto ..	90s. to 110s. "
Perth, Forfar, and Fifeshire ditto	60s. to 85s. "
Kent and Essex ..	70s. to 90s. "
French whites ..	70s. to 80s. "
Belgian ..	55s. to 65s. "

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, NOV. 28th.—Since Monday last the arrivals of Potatoes, coastwise and by railway, have been rather on the increase, and in fair average condition. The best samples are in request at full prices, but other kinds are a dull inquiry. Last week's imports amounted to 249 tons from Dunkirk, 125 bags from Boulogne, 36 bags from Hamburg, 25 bags from Hamburg, 10 bags from Harlingen, and 100 tons from Granville.

York Regents	105s. to 130s. per ton.
Essex and Kent	70s. to 120s. "
Scotch	70s. to 130s. "
Shaws	80s. to 90s. "
Foreign	60s. to 95s. "

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s. s.	CHEESE, per cwt.:	s. s.
Friesland.....	110 to 114	Cheshire.....	6 37
Kiel.....	120 124	Cheddar.....	76 84
Dorset.....	108 110	Gloucester.....	60 78
Carlton.....	108 110	HAMS:	
Waterford.....	108 110	York.....	58 59
Cork.....	108 110	Westmoreland.....	58 58
Limerick.....	100 106	Windsor.....	58 58
Sligo.....	104 110	BACON: Wiltshire.....	60 64
FARM, per dozen 12s. 6d. to 16s. 6d.		Irish, green.....	54 60

WOOL MARKETS.

ENGLISH WOOL MARKET.

Per pack of 240 lbs.

Fleeces—Southdown Hogs	£18 10s. to £19 10
Do. Half-bred Hogs	18 10 19 0
Do. Kent	17 10 18 0
Do. Southdown Ewes and Wethers	17 0 17 10
Do. Leicester do.	16 0 17 0
Sorts—Clothing, picklock	18 10 19 0
Do. Prime and picklock	18 0 19 0
Do. Choice	17 0 18 0
Do. Super	16 0 16 0
Do. Combining—Wether matching	20 0 21 0
Do. Icklock	17 0 18 0
Do. Common	16 0 16 10
Do. Hog matching	23 0 24 0
Do. Picklock matching	17 10 18 10
Do. Super do.	16 0 16 10

FOREIGN AND COLONIAL WOOL MARKET.

	Per lb.	s. d.	s. d.
German, { 1st and 2nd Elect	3 4 to 4 6		
Saxon, { Prima	2 4 3 0		
{ Secunda	2 0 2 4		
Prussian. { Tertia	1 3 1 10		
COLONIAL:—SYDNEY—Lams	1 10 2 2		
{ Scoured do.	1 2 2 11		
{ Unwashed	0 7 1 4		
{ Locks and Pieces	0 10 1 10		
{ Slips and Skin	0 11 1 10		
PORT PHILIP—Lams	1 5 2 4		
{ Scoured do.	1 2 2 9		
{ Unwashed	0 6 1 7		
{ Locks and Pieces	0 8 1 10		
S. AUSTRALIAN—Lams	5 1 1 0		
{ Scoured do.	1 3 2 6		
{ Unwashed	0 4 1 2		
{ Locks and Pieces	1 1 1 2		
V. D. LAND—Lams	1 6 2 5		
{ Scoured do.	1 7 2 9		
{ Unwashed	0 9 1 6		
{ Locks and Pieces	0 8 1 10		
CAPE OF GOOD HOPE—Fleeces	1 1 2 2		
{ Lams	1 2 2 3		
{ Scoured	1 2 2 1		
{ Unwashed	0 7 1 8		

END OF VOLUME LL.

Rogerson, Tuxford, and Co., 246, Strand, London.

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